Journal of **Afro-Asian** Studies

Journal of **Afro-Asian** Studies

Journal of **Afro-Asian** Studies

The journal deals with the field of Afro-Asian strategic, political & economic Studies

Journal Of Afro-Asian Studies

Journal of Afro-Asian Studies

Nationales ISSN-Zentrum für Deutschland
ISSN 2628-6475

Democratic Arab Center

For Strategic, Political & Economic Studies

Berlin / Germany

Presentation of the journal
Présentation de la revue

The journal "Afro-Asian Studies", democraticac.de/?page_id=56577 , is an international peer-reviewed scientific journal, indexed by the German Federal Library and classified by the Europub database of Great Britain via: https://europub.co.uk, published periodically every three months in French and English, from the Arab Democratic Center in Berlin, Germany, via the link https://democratica c.de . It specializes in political, economic, social and scientific studies that have a direct and indirect impact on the Asian and African continents, regardless of the continent of the influential country, including America, Europe and Australia.

This journal has been published for six years, with twenty-two issues that include a valuable number of scientific articles written by researchers from all continents of the world, such as America, Europe, Africa and Asia.

La revue « *Afro-Asian Studies* », Democraticac.de/?page_id=56577, est une revue scientifique internationale à comité de lecture, indexée par la Bibliothèque fédérale allemande et classée par la base de données Europub de Grande-Bretagne via : https://europub.co.uk, publié périodiquement chaque trois mois en français et en anglais, du Centre démocratique arabe de Berlin, en Allemagne, via le lien https://democraticac.de. Elle se spécialise dans les études politiques, économiques, sociales et scientifiques qui ont un impact direct et indirect sur les continents asiatique et africain, quel que soit le continent du pays influent, notamment l'Amérique, l'Europe et l'Australie.

Cette revue est publiée depuis six ans, avec vingt-deux numéros qui comprennent un nombre précieux d'articles scientifiques rédigés par des chercheurs de tous les continents du monde, comme l'Amérique, l'Europe, l'Afrique et l'Asie.

Publication Ethics in Journal of Afro-Asian Studies

Publication ethics

The Journal of Afro-Asian Studies is committed to the ethics of scientific publishing and encourages researchers to adhere to them, in accordance with the international standards for authors set by the Publication Ethics Committee (COPE).

Thus, through the Journal of Afro-Asian Studies, we are committed to:

- Respect scientific integrity in any scientific publication.
- Adhere to the principles of the International Committee on Publishing Ethics.
- Urge the journal's editorial board to ensure that the ethics of scientific publication and research are respected.
- Urge researchers to respect publication ethics and scientific honesty
- Urge the journal's scientific committee to adhere to the quality of scientific evaluation
- Take appropriate action for any unethical practices.

Duties and Responsibilities of Publishers

- The Journal of Afro-Asian Studies is committed to the noble mission of disseminating knowledge globally.
- The Journal of Afro-Asian Studies is committed to preserving the integrity of its scientific archives for researchers.
- The members of the journal must maintain the confidentiality of the reviewers
- The Journal of Afro-Asian Studies is committed to responding considerately to all requests from researchers.
- The Journal of Afro-Asian Studies is committed to publishing corrections or clarifications whenever necessary.
- The Journal of Afro-Asian Studies is committed to maintaining paper and electronic archives to manage the journal with scientific quality.
- The journal must publish an apology when necessary

Duties and responsibilities of scientific committee members

- The Journal of Afro-Asian Studies is committed to the credibility of the Scientific Committee
- The members of the scientific committee have full authority to accept or reject a research
- The members of the scientific committee must maintain the integrity and credibility of the scientific evaluation of the research
- The members of the scientific authority must maintain the confidentiality of the evaluation of the research until its publication.
- The Journal of Afro-Asian Studies is committed to monitoring the work of all its human staff, including the Editorial Board and the Scientific Committee.

- The members of the scientific committee must evaluate only the intellectual content of the research.
- The Journal of Afro-Asian Studies is committed to verifying the intellectual property of the publisher.
- The members of the scientific committee must not use the information of a manuscript in their research, except with the written consent of the owner of the information or the manuscript.
- The referee undertakes to be completely impartial in his/her arbitration decision
- The referee undertakes to respect the scientific ethics of arbitration
- The journal accepts the membership of reviewers on the basis of each reviewer's CV
- Experience and specialization must be taken into account when accepting members of the scientific committee
- The journal has the right to revoke the membership of any reviewer who does not respect the responsibilities assigned to him/her.
- Research reviewers are selected based on the compatibility between the research topic and the reviewer's specialization.
- Under no circumstances will recommended reviewers be accepted to review a research.
- Referees must respect the arbitration deadlines
- The journal approves two reviewers for each research and may request the assistance of a third if necessary.
- The editorial board communicates with the members of the scientific committee via the official email of the journal

Duties and Responsibilities of Authors
- The researcher must submit his research in English and French only.
- The researcher must write his research according to the formal conditions of scientific publishing
- The researcher must respect the quality of the language used
- The researcher must examine all sources and references before sending the research for publication.
- The opinions published in the journal express only those of their author in the context of individual research, or the opinions of their authors in the context of collective research.
- The researcher sending the research is responsible for the approval of the researchers participating with him
- The researcher must adhere to scientific honesty
- The researcher must know that his research is part of a review program aimed at preventing scientific plagiarism.

- The researcher must agree not to submit his research to another journal
- The research evaluation process is confidential
- The researcher is responsible for the publication of any manuscript without the approval of the party responsible for it.
- The researcher must notify the journal of any changes before publishing the research
- Only topics compatible with the objectives and specializations of the journal are accepted.
- Research that does not deserve to be published is rejected because it does not contribute to scientific development
- Research whose objectives are incompatible with human rights and scientific ethics is rejected

Corresponding Author
The author of the research is considered the most important link in the dissemination of science and knowledge, and that is why the Journal of Afro-Asian Studies attaches great importance to him in terms of:
- Facilitating the author's communication with the editorial board after the submission of the research
- Facilitating the author's communication with the journal throughout the refereeing stages
- The author assumes full responsibility for scientific integrity
- Authors of collective articles assume full responsibility for scientific integrity
- The author assumes full responsibility for the opinions contained in his research
- The author is responsible for requesting permission to publish any attachments from their owners.
- The editorial board sends electronically a copy of the journal and the certificate of publication of the article to each author whose research has been published.
- The editorial board requests permission from the author to publish on its website any information or manuscript of which he or she is the owner.

Duties and Responsibilities of the Editor-in-Chief and Editors
The Editor-in-Chief of the Journal of Afro-Asian Studies is the primary responsible officer for all committees of the journal and its human staff, including the Scientific Committee and the Editorial Board, and on this basis:
- The Editor-in-Chief of the journal must respect the ethics of publishing
- The Editor-in-Chief of the journal must disclose any conflict of interest in publication

- The Editor-in-Chief of the journal must coordinate between the editors, the members of the scientific committee and the members of the editorial staff to uphold the ethics of scientific publishing.
- The Editor-in-Chief of the journal is committed to respecting the complete confidentiality of research submitted for publication, whether accepted or rejected.
- The Editor-in-Chief of the journal is committed to respecting the confidentiality of those reviewing the research.
- The Editor-in-Chief urges all members of the journal to respect the ethics of scientific publishing
- The members of the editorial staff must cooperate with the members of the scientific committee to prevent scientific plagiarism
- The Editor-in-Chief has full authority to communicate with authors for scientific purposes.
- The Editor-in-Chief and all members of the editorial staff are committed to respecting the confidentiality of unpublished research.

Scientific plagiarism

Scientific theft is dangerous for scientific research in all fields and specializations, which is why the aim of the magazine is to disseminate science and knowledge with transparency, credibility and integrity in the service of humanity, and on this basis:

- The Journal of Afro-Asian Studies is committed to protecting the copyright of its research
- The journal's editorial board coordinates with the scientific research committee to uncover scientific plagiarism
- The Journal of Afro-Asian Studies condemns any form of scientific plagiarism.
- The journal's administration has the right to take all appropriate measures against scientific plagiarism in order to protect the reputation of the journal.
- The journal's administration has the right to take all appropriate measures against scientific theft for the benefit of the owners of the stolen research.
- The journal's administration has the right to cooperate with those who appeal in the field of scientific plagiarism

President of the Scientific Committee

Dr. Salah Mohamed Ibrahim Ahmed *Professor of Economics,* **Sudan**

Scientific Committee Members

- **Dr. Lina Ghali** *American University of Science and Technology* **AUST**
- **Dr. George Wah Williams** *-University, Minneapolis, Minnesota,* **United State**
- **Dr. Fayrouz Fawzy** *-University of Quebec - Montreal -* **Canada**
- **Dr.Ammar Mustafa Alzein** *Counselor at UN in Geneva,* **Switzerland**
- **Dr. Samar Saad***-OMNES University - HEIP — Paris-* **France**
- **Dr. Mary Louis** *- School of International Business - Scandinavia -* **Denmark***.*
- **Dr. Munsif Al –Lawati** *- Manouba University –* **Tunisia**
- **Dr. Safaa Arsali** *(University of Tunis) and member of SLAM Laboratory -Evry University.* **France.**
- **Dr. Ahmed Makharish** *- South Mississippi University –* **United States**
- **Dr. Shlash N. Alzyoud***. University of Southern Mississippi-* **USA**
- **Dr.Ali Ahmed zain Alsagaf** *Jaipur University,* **India**
- **Dr. Samira Setoutah** *- Sharjah University.***Emirats arabes unis.**
- **Dr. Al-Sayed Al-Saeed Abdul-Wahhab** *- Menoufia University.* **Egypt.**
- **Dr.Saddam Suleiman** *Middle East University,* **Jordan***.*
- **a.Samar Fanos Abdulnor** *-SMU University. Texas, United State-* **USA.**
- **Dr. Nuha Qatawneh** *- Manouba University- Kingdom of* **Jordan.**
- **Dr. Ziad Latouf** *-member of the Institute of Geopolitical Studies applied in Paris -* **France**
- **Dr. Sam Zahy** *PHD -Dedman School of Law Southern Methodist University, Texas.* **USA**
- **Dr. Naif Sultan Al Shareef** *-Abdulaziz University - Kingdom of* **Saudi Arabia.**
- **Dr. Emad Mohamed Fawzy Hussein***- Alexandria University. .* **Egypt.**
- **Dr. Jihane Hussein Fakih** *-Lebanese University -* **Lebanon**
- **Dr. Patricia Al-Azzi** *- Lebanese University-* **Lebanon**
- **Dr.Tarteel darwish** *-Beirut Arab University. -* **Lebanon**
- **Dr. Hala Abu Hamdan** *-Lebanese University. -* **Lebanon**
- **Dr. Hanan Mohamed** *-University of* **Bahrain***.*
- **Dr.EMAD HEFNAWY***, Ain Shams University -* **Egypt.**
- **Dr . Randa Abd el Raouf Kamal Ali** *- Benha University.* **Egypt.**
- **Dr. Rania Taysir Adada** *- Lebanese University-* **Lebanon**
- **Dr. Zeina Mohamed Ahmed***- University of Dubai -* **United Arab Emirates**
- **Dr. Dolly Kamal Al Sarraf** *- Lebanese University. -* **Lebanon**
- **Dr. Sabrine ALJelassi** *Assistant - Sousse University –* **Tunisia.**
- **Dr. Mays Abdel Karim Ismail** *-Damascus University -* **Syrian Arab Republic.**

- *Dr . Desiree George Al-Azzi -Lebanese University- **Lebanon***
- *Dr. Jacqueline Ayoub -Lebanese University- **Lebanon***
- *Dr. Nour el houda badis. Faculte des sciences humaines et sociales de **tunis.***
- *Dr.Mayssa Abbas HAJJ SLEIMAN- Lebanese University- **Lebanon***
- *Dr. Munther Mubder Abdul -Karim alabassi- Diyala University -**Iraq.***
- *Dr. Maher Mubder Abdul Karim Al-Abbasi .-University of Diyala - Republic of **Iraq***
- *Dr. HEYAM Musa Mustafa AL –TAJ - Amman Arab University - Kingdom of **Jordan.***
- *Dr. Katia Tannous Eliane Lebanese University- **Lebanon***
- *Dr. Natalie Hanna Raphael -Lebanese University- **Lebanon***
- *Dr.Sekkal Babou Mariam -Saida University, **Algeria.***
- *Dr. Roba Fawzi Nasr -Lebanese University and Antonine University_ **Lebanon***
- *Dr. Motaz Khorshid -Cairo University- **Egypt.***
- *Dr. Mohamed ElAzaab   Faculty of Engineering - Cairo University - **Egypt.***
- *Pr.Saadi Mohamed Relizane University, **Algeria***
- *Dr. Ahmed Abdel Moneim University of Khartoum, **Sudan***
- *Dr.Benaicha Amine University of Algiers III, **Algeria***
- *Dr.Nadine Kahil Beirut Arab University, **Lebanon***
- *Dr.Ahmed Manea Hoshan Basrah University, **Iraq***
- *Dr.Filali Férial University of Algiers II, **Algeria***
- *Dr. Ahmed Mohamed Lemine El Mokhtar Nouakchott University, **Mauritania***
- *Dr. Ouarniki Ouafa Oran II University, **Algeria***
- *Dr Samar Hassan El Bagori Cairo University, **Egypt***
- *Dr.Hamdani Yamina Tlemcen University, **Algeria***
- *Dr. Abdullahi Yunusa Husaini Sule Lamido University, **Nigeria***
- *Dr. Kelkoula Nachoua l'université de Setif, **Algeria***
- *Dr. a. Asmaa Mohamed Abdel-Qader Sandouqa- Manouba University - **Tunisia.***
- *Dr. a.Aouatef Mekdiche - Manouba University - **Tunisia.***
- *Dr.Doaa Al-Hawari   - Alexandria University, **Egypt***

Publishing Rules

- Research paper should be written in English or French, as it is necessary to consider the clarity and integrity of the text and avoid grammatical, spelling and linguistic errors.

- Journal of Afro-Asian A Periodical International Journal published by the "Arab Democratic Center" Germany – Berlin accepts papers which deals with Afro-Asian strategic, political and economic studies only.

- The research paper should not include less than 4000 words and should not exceed 8000 words.

- The research paper and studied topics should be characterized by objectivity, novelty and scientific accuracy, as they should not be taken from a previous study, article, or graduation document or book.

- Papers should not be published previously or subsequently in any form

- The researchers have to adopt the scientific standards recognized in the preparation of research and studies, and references should appear at the end of each page not at the end of the article and marginalization as follows.

- For Books: Full Name of Author, Book's Title, Volume/issue, Place of Publication: Publishing House, Edition, Publishing Year, Page.

- For articles: full name of the author, "title of the article", journal title, place of publication, issue, date of publication, page.

- For web sites: full name of author, "title of article", article link, date of publication, date of access to the site.

- The researcher should send a brief biography with the article.

- Research Paper should be sent in the form of a Microsoft word to the following email:

  afro-asian@democraticac.de
- The researcher should sign a pledge that the article has not been published in any form hard copy or electronically, and not be submitted for publication to any other party (the pledge form will be sent by the editor to the researcher by the e-mail of the journal).

- The researcher will be informed of the initial acceptance of the research or rejection.

- The journal selects arbitrators to read and review confidentially the articles and researches received in the journal. The arbitration remarks will be sent to the researcher. If the article is accepted for publication but needs some modifications, thus the writer should make the required modifications within ten days of being notified of the decision of the committee.

- The received articles will not be returned back to their authors either published or not.

- The journal may make some necessary modifications to the material submitted for publication without changing its contents.

- The materials published in the journal reflect the views of the authors and do not necessarily represent the opinion of the journal.

- Any breach of the rules of the scientific research will be borne by the author of the article.

- Any research or article that does not meet the conditions will not be taken into consideration and will not be published regardless of its scientific value.

- The articles sent to the Journal of Afro-Asian Studies require the following specifications:

- Page margins should be as follows: Top 02, Bottom 02, Right 02, Left 02, Header Sheet 5, Bottom Sheet 1.5

- Title of the article: font: Times New Roman, Size: 16

- Full name of researcher: (font style: Times New Roman ont size: 13)

- Degree of researcher (font style: Times New Roman size: 13)

- Foundation of full affiliation and country (font style: Times New Roman size: 13)

- E-mail of the researcher (font style: Times New Roman font size: 12)

- Abstract: The abstract should not exceed 200 words and not less than 150 words (Font: Times New Roman size: 13, italics).

- Key words: (Between 05 and 08 words, Font: Times New Roman, Size: 13, Italics)

- The Introduction should include the following components: Introducing the topic, research questions, hypothesis or hypotheses, the importance of the study, the objectives of the study, the literature of the study (previous studies), the study curricula, the study axes. (Font style: Times New Roman size: 13 between lines: 1.5).

- For content: (font style: Times New Roman size: 13, between lines: 1.5)

- Principal Headline 1: (font style: Times New Roman size: 16, between lines: 1.5)

- First subtitle: (font style: Times New Roman size: 14, between lines: 1.5)

- Second subtitle: (font style: Times New Roman size:14, between lines: 1.5)

- Principal Headline 2: (font style: Times New Roman size: 16, between lines: 1.5)

- First subtitle: (font style: Times New Roman size: 14, between lines: 1.5)

- Second subtitle: (font style:Times New Roman size: 14, between lines: 1.5)

- Conclusion: findings and recommendations: (font style: Times New Roman size: 13, between lines: 1.5)

- List of sources and references: (font style: Times New Roman size: 13, between lines: 1.5)

- For Times New Roman size: marginalization and referrals: at the end of pages and not in the latest article, font style size: 12, between lines: 1.0

Discours de Monsieur : Mohammed Latreche
Professeur au lycée des Frères Eddrief Mazouna

Sang rose

Permettez-moi de déposer ces colliers de cents roses sur les tombes de mes semblables innocents, noir ou blanc descendus violemment un jour pour une graine de poussière ou une goutte de pétrole. Vainement fusillés pour un oui ou un non.....

Je ne cite pas les noms, je n'indique point les religions. Je m'incline tous simplement devant le silence mystérieux qu'ils ont laissé derrière eux.

Les tonnes de musique et de pages écrites, toute la poussière des statues sculptées, de liberté ou d'esclavage, les œuvres d'art écrites, les tulipes, les parfums et toute la galerie de la galanterie, ne dissimuleront jamais la frayure, et la peine, la faim et la soif, l'horreur et la peur qu'on connu ces corps broyés et ces cœurs brulés par un sniper instruit pour éteindre la fleur et la flamme de la vie d'une ville qui respirait la vie.

The twenty-third issue of November 2024
Index

The Kursk Gambit:
Analyzing Ukraine's Reckless Incursion and Its Implications for the Evolving Eastern European Conflict

Prof. Habib Badawi

Lebanese University – Beirut - Lebanon

(habib.badawi@ul.edu.lb – habib.badawi@gmail.com)

https://orcid.org/0000-0002-6452-8379

Abstract

This paper examines the strategic implications of Ukraine's reported military incursion into Russia's Kursk region on August 6, 2024. It analyzes the immediate tactical outcomes, broader geopolitical consequences, and potential long-term impacts on the Russia-Ukraine conflict. The study explores multifaceted motivations behind the operation, including energy warfare, territorial strategy, and psychological warfare. It also assesses international reactions, domestic reverberations in both countries, and the incursion's effects on global energy security. The paper argues that this event marks a significant escalation in the conflict, potentially reshaping its dynamics and challenging existing paradigms of engagement between the two nations and their respective allies.

Methodology: This study employed a qualitative analysis of up-to-date news reports, military assessments, and expert commentaries to examine the strategic implications of Ukraine's reported military incursion into Russia's Kursk region. We conducted a comprehensive review of primary and secondary sources, including official statements, media reports, and analyses from military and geopolitical experts. The data was critically evaluated and synthesized to provide a multifaceted analysis of the event's immediate tactical outcomes, broader geopolitical consequences, and potential long-term impacts on the Russia-Ukraine conflict.

Keywords: Kursk Incursion, Russia-Ukraine Conflict, Cross-Border Operations, Energy Warfare, Military Strategy, Geopolitical Implications, Eastern European Security.

Theoretical Frameworks Informing the Analysis

This analysis of the Kursk incursion is grounded in several key theoretical frameworks from international relations and military strategy. These frameworks provide a conceptual basis for understanding the motivations, dynamics, and potential consequences of this significant escalation in the Russia-Ukraine conflict.

1. **Asymmetric Warfare Theory:** The Kursk incursion exemplifies key aspects of asymmetric warfare theory, as described by Mack (1975), and later expanded by Arreguin-Toft (2001). This theory suggests that weaker actors can effectively challenge stronger opponents by employing unconventional strategies and tactics. Ukraine's cross-border strike demonstrates an asymmetric approach, leveraging surprise and targeted attacks to offset Russia's overall military superiority. This aligns with Arreguin-Toft's concept of "strategic interaction," where the weaker party attempts to negate the stronger party's advantages through unexpected or unconventional means.

2. **Deterrence Theory:** Deterrence theory, as articulated by scholars like Bernard Brodie (1959) and Thomas Schelling (1960), offers insights into Ukraine's strategic calculations. By demonstrating the capability and willingness to strike Russian territory, Ukraine may be attempting to establish a new form of deterrence against further Russian aggression. This action aligns with what George and Smoke (1974) term "internalized deterrence," where the deterring party seeks to influence the adversary's cost-benefit calculations by demonstrating resolve and capability. However, as Jervis (1979) cautions, such actions can also provoke a security dilemma, potentially leading to further escalation rather than stabilization.

3. **Escalation Theory:** The Kursk incursion can be viewed through the lens of escalation theory, as developed by Herman Kahn (1965), and refined by scholars like Robert Jervis (1976). This theory posits that conflicts can escalate through deliberate decisions or inadvertent actions, often following a "ladder" of increasingly intense stages. The incursion represents a clear

escalation from Ukraine, moving the conflict onto Russian soil. This action could be interpreted as a form of "controlled escalation," where Ukraine seeks to gain strategic advantages while carefully managing the risk of triggering a disproportionate response. However, as Schelling (1966) notes, such calculated risks can lead to unintended consequences, potentially spiraling into broader conflict.

4. **Offense-Defense Theory:** Jervis's (1978) offense-defense theory provides a framework for understanding the strategic implications of the Kursk incursion. This theory posits that the perceived balance between offensive and defensive capabilities can significantly influence state behavior and conflict dynamics. Ukraine's action may indicate a shift in the perceived offense-defense balance, suggesting that modern technologies or tactics have made offensive actions more viable. This could have significant implications for the future conduct of the war and for broader international security dynamics.

5. **Prospect Theory in International Relations:** Prospect theory, originally developed by Kahneman and Tversky (1979) and applied to international relations by scholars like Levy (1992), offers insights into decision-making under risk. This theory suggests that actors are more likely to take risks to avoid losses than to secure gains. The Kursk incursion could be interpreted as a risk-accepting behavior by Ukraine, potentially driven by a perception of being in the "domain of losses" due to ongoing Russian occupation of its territory. This theoretical lens helps explain why Ukraine might undertake such a bold and potentially risky operation.

By applying these theoretical frameworks, we can develop a more nuanced understanding of the strategic logic behind the Kursk incursion, its potential implications, and the broader dynamics of the Russia-Ukraine conflict. These theories provide valuable context for interpreting the actions of both parties and anticipating potential future developments in this complex and evolving situation.

Introduction: A Paradigm Shift in the Russia-Ukraine Conflict

The morning of August 6, 2024, marked a significant escalation in the protracted conflict between Russia and Ukraine. As dawn broke over the rolling plains of Russia's Kursk region, Ukrainian forces reportedly launched a daring cross-border incursion, fundamentally altering the dynamics of a war that had, until then, been largely confined to Ukrainian territory (Harward et al., 2024). This paper aims to dissect this pivotal event, examining its immediate impact, strategic implications, and potential to reshape the geopolitical landscape of Eastern Europe and beyond.

The choice of Kursk as the site for this operation carries profound historical significance. In 1943, the same region witnessed one of World War II's largest and most crucial battles, where Soviet forces decisively repelled Nazi Germany's final strategic offensive on the Eastern Front. This historical echo adds layers of symbolic and psychological depth to Ukraine's modern incursion, invoking memories of past conflicts and resilience in the face of invasion.

1. The Kursk Incursion: A Detailed Analysis
1.1. Operational Overview

According to Russian military sources, the operation commenced at 08:00 Moscow time with an artillery barrage, followed by a ground assault involving approximately 1,000 Ukrainian soldiers (The Moscow Times, 2024). The attacking force reportedly comprised elements of Ukraine's 22nd Mechanized Brigade, supported by eleven tanks and over 20 armored combat vehicles (Fornusek, 2024).

The primary targets of this operation were the villages of Nikolaivo-Darino and Oleshnia in the Sudzhansky district, both situated within 16 kilometers of the Russian-Ukrainian border. These locations' proximity to critical infrastructure, particularly the gas metering station "Sudja" on the Orengoy-Pomary-Uzhgorod pipeline, adds a layer of strategic significance to the incursion (Faulconbridge, 2024).

1.2. Russian response and reported outcomes.

The Russian military response was swift and multifaceted. The newly formed "North" Army Group, established in April 2024 to bolster border defenses, spearheaded the counter-operation. Working in concert with Federal Security Service (FSB) Border Guards, they claim to have successfully repelled the Ukrainian advance (Trevelyan, 2024).

Russian officials provided specific casualty figures, reporting 100 Ukrainian soldiers killed and the destruction of 54 armored vehicles, including 6 tanks and various other combat vehicles (Anadolu Agency, 2024). However, it is crucial to note that these figures have not been independently verified, and the fog of war often obscures the true extent of losses on both sides.

1.3.   Civilian Impact and Humanitarian Concerns

The human cost of this incursion extends beyond military casualties. Russian authorities reported five civilian deaths and 24 injuries, including six children (The Kyiv Independent, 2024). The acting governor of the Kursk region, Alexey Smirnov, announced the evacuation of residents from the most affected border areas, with temporary shelters established to accommodate displaced individuals (Yahoo News, 2024).

This civilian toll underscores the often-overlooked human dimension of such military operations, raising important questions about the protection of non-combatants in border regions and the responsibilities of both attacking and defending forces in minimizing civilian casualties.

2. Strategic Implications: Unraveling the Multifaceted Objectives

The choice of the Sudzhansky region as the focal point of this incursion invites careful analysis of Ukraine's strategic objectives. Several potential motivations emerge:

2.1.   Energy Warfare: Targeting Critical Infrastructure

The presence of the "Sudja" gas metering station in the region cannot be overlooked. As the sole remaining transit point for Russian gas exports to Europe, this infrastructure represents a critical vulnerability in Russia's energy strategy. By threatening this chokepoint, Ukraine may be attempting to:

2.1.1. Demonstrate Ukraine's capability to strike at Russia's economic interests, even within Russian territory.

2.1.2. Disrupt Russia's energy leverage over Europe, potentially weakening its diplomatic and economic position.

2.1.3. Force European nations to accelerate their transition away from Russian energy dependence, thereby eroding a key pillar of Russian geopolitical influence (Faulconbridge, 2024).

2.2.   Territorial Strategy: The Creation of a "Buffer Zone"

Some analysts draw parallels between this incursion and Russia's own efforts to establish a "buffer zone" in Ukraine's Kharkiv region. By penetrating Russian territory, Ukraine may be aiming to:

2.2.1. Create a strategic depth that complicates Russian military planning and forces a reallocation of resources to border defense.

2.2.2. Establish a bargaining chip for future negotiations, potentially trading withdrawal from Russian territory for concessions elsewhere.

2.2.3. Evaluate the resolve and capabilities of Russian border defenses, gathering valuable intelligence for future operations (Wolkov et al., 2024).

2.3.   Psychological and Information Warfare

The symbolic value of striking Russian soil should not be underestimated. This operation serves multiple purposes in the realm of psychological and information warfare:

2.3.1. Boosting Ukrainian morale by demonstrating the ability to take the fight to Russian territory.

2.3.2. Challenging the Russian narrative of military superiority and invulnerability.

2.3.3. Generating international media attention and potentially rallying additional support for Ukraine's cause.

2.3.4. Pressuring the Russian leadership to respond, potentially forcing them into reactive and less strategically sound decisions (Khurshudyan, 2024).

2.4. Military Strategy: Force Redistribution and Battlefield Dynamics

From a purely military perspective, the Kursk incursion may serve several tactical and operational objectives:

2.4.1. Creating a diversion for potential operations in other sectors of the front.

2.4.2. Demonstrating Ukraine's growing offensive capabilities to both allies and adversaries.

2.4.3. Forcing Russia to redeploy forces from other fronts, potentially relieving pressure on Ukrainian positions elsewhere.

2.4.4. Potentially showcasing the effectiveness of advanced Western-supplied weapons systems, which could influence future military aid decisions by Ukraine's allies.

2.4.5. Probing Russian defenses and command and control systems, gathering intelligence on response times and capabilities (Axe, 2024).

3. International Reactions and Diplomatic Fallout
3.1. Western Response: Cautious Diplomacy

The response from Ukraine's Western allies, particularly the United States, has been characterized by cautious diplomacy. John Kirby,

representing the US National Security Council, emphasized that the US had not been informed in advance of the operation and reiterated existing policies regarding the use of US-supplied weapons on Russian soil (Singh, 2024).

This measured response reflects the delicate balance Western nations must strike between supporting Ukraine and avoiding direct confrontation with Russia. It also highlights the potential limits of Western backing for Ukrainian operations that could be perceived as excessively escalatory.

3.2. Russian Diplomatic Offensive

Russia has predictably leveraged this incursion in its diplomatic messaging, characterizing it as an act of aggression and potentially using it to justify further military action. This event provides Russia with material to portray Ukraine as the aggressor on the international stage, potentially complicating Ukraine's relationships with more cautious Western partners (Méheut, 2024).

3.3. Implications for Neutral and Non-Aligned States

The escalation represented by the Kursk incursion may force nations that have attempted to maintain neutrality in the conflict to reassess their positions. Countries like India, China, and various Middle Eastern states may feel increased pressure to take more definitive stances, potentially reshaping global alignments (Brooke, 2024).

3.4. Divergent expert analyses

The Kursk incursion has elicited varied interpretations from strategic experts worldwide:

3.4.1. Neutral observers, like Swiss security analyst Alexandre Vautravers, emphasize the operation's potential to reshape

conflict dynamics while warning of uncontrolled escalation risks and erosion of international norms regarding cross-border military actions (Brooke, 2024).

3.4.2. Russian strategic experts, including Fyodor Lukyanov from the Russian International Affairs Council, frame the incursion as a desperate act justifying more aggressive Russian military action. They argue it demonstrates the need for a more robust "buffer zone" within Ukrainian territory (Méheut, 2024).

3.4.3. Ukrainian military strategists, such as Mykhailo Samus from the New Geopolitics Research Network, present the operation as a necessary step to disrupt Russian military planning and demonstrate Ukraine's ability to take initiative in the conflict (Khurshudyan et al., 2024).

3.4.4. Western military analysts, such as Michael Kofman from the Center for Naval Analyses, view the operation as a significant escalation demonstrating Ukraine's growing offensive capabilities. However, they caution against the risks of overextension and potential alienation of cautious Western supporters (Miller, 2024).

4. Domestic Reverberations: Political and Social Impact
4.1. Ukrainian Home Front

In Ukraine, the incursion likely serves to bolster domestic support for the war effort. By demonstrating the capability to strike at Russian territory, the Ukrainian leadership can present a narrative of growing military prowess and strategic initiative. However, this may also raise public expectations for further successes, potentially creating pressure for additional high-risk operations (Popeski, 2024).

4.2. Russian Internal Dynamics

Within Russia, the incursion has elicited a range of responses that illuminate the complex tapestry of Russian political thought:

4.2.1. *Communist Party Reaction:* Gennady Zyuganov's statements reflect an attempt to rally patriotic sentiment while also critiquing aspects of the government's war management (Talmazan, 2024).

4.2.2. *Elite Maneuvering:* The incursion provides an opportunity for various factions within the Russian elite to position themselves as hawks or problem-solvers, potentially reshaping internal power dynamics.

4.2.3. *Hardline Nationalist Response:* Figures like Alexander Dugin have called for an even more aggressive prosecution of the war, potentially pressuring the Putin administration to escalate further (Barker, 2024).

4.2.4. *Moderate Voices:* There may be an emergence of more cautious voices within Russia, particularly from economic circles concerned about the long-term impact of prolonged conflict on Russia's economy and international standing. These voices might advocate for a more diplomatic approach to resolving the conflict.

4.2.5. *Public Opinion:* The attack on Russian soil may serve to galvanize public support for the war effort, but it could also raise questions about the government's ability to protect Russian territory (Kullab & Hatton, 2024).

5. Military and strategic consequences
5.1. Escalation Dynamics

The Kursk incursion represents a significant escalation in the conflict's scope and intensity. This raises several critical questions:

5.1.1. Could this lead to a broader mobilization of Russian society for a more total war footing?

5.1.2. How might this impact Russia's willingness to employ tactical nuclear weapons, a threat that has loomed over the conflict?

5.1.3. Might this incident spark an escalation in cyber warfare, with both sides potentially targeting critical infrastructure and communication networks?

5.1.4. Will Russia feel compelled to respond with its own cross-border operations, potentially targeting Ukrainian command and control centers deeper in Ukrainian territory? (Miller, 2024).

5.2. Operational Lessons and Adaptations

Both sides will undoubtedly glean valuable lessons from this operation:

5.2.1. Both sides may reassess their intelligence and early-warning systems to prevent future surprises.

5.2.2. Russia will likely accelerate efforts to fortify its border regions and improve rapid-response capabilities.

5.2.3. Ukraine may refine its ability to conduct complex, combined-arms operations across hostile borders (Hambling, 2024).

5.3. Implications for Future Conflict

The Kursk incursion may serve as a template for future operations by both sides:

5.3.1. Russia may feel justified in launching its own cross-border raids, potentially targeting Ukrainian supply lines or command centers.

5.3.2. The conflict may increasingly take on characteristics of a war of attrition, with both sides seeking to gradually erode the other's military and economic capabilities.

5.3.3. Ukraine might consider similar limited incursions to keep Russian forces off-balance and strain their resources (Axe, 2024).

5.4. Technological Implications

The Kursk incursion highlights the evolving role of advanced military technologies in modern warfare.

5.4.1. *Cyber operations:* The physical incursion may have been coordinated with cyber-attacks on Russian infrastructure, demonstrating the increasing integration of kinetic and digital warfare.

5.4.2. *Drone warfare:* Both sides may have utilized unmanned aerial vehicles for reconnaissance and potentially combat roles, showcasing the growing importance of drone technology in contemporary conflicts.

5.4.3. *Electronic warfare:* The incursion may have involved sophisticated electronic warfare tactics to disrupt Russian command and control systems, highlighting the critical nature of the electromagnetic spectrum in modern military operations.

5.4.4. *Precision-guided munitions:* The operation likely employed advanced Western-supplied precision weapons, potentially influencing future military aid decisions (Hambling, 2024).

6. Economic and Energy Security Ramifications
6.1. European Energy Calculus

The targeting of energy infrastructure in the Kursk region serves as a stark reminder of the vulnerabilities in Europe's energy supply chain:

6.1.1. European nations may accelerate efforts to diversify energy sources and reduce dependence on Russian gas.

6.1.2. The incident may strengthen the hand of those advocating for a more confrontational approach to Russia within European policy circles.

6.1.3. This could lead to increased investment in renewable energy, nuclear power, and alternative gas suppliers (Faulconbridge, 2024).

6.2. Global Energy Markets

The threat to a major gas transit route could have ripple effects across global energy markets:

6.2.1. Increased interest in liquefied natural gas (LNG) infrastructure and long-term supply contracts from non-Russian sources.

6.2.2. Possible impacts on global food security, given both Russia and Ukraine's roles as major grain exporters. Disruptions to agricultural production or export routes could lead to increased food prices and potential shortages in import-dependent countries.

6.2.3. Potential opportunities for other energy exporters to fill the gap left by reduced Russian supply to Europe.

6.2.4. Short-term price volatility in natural gas and related energy commodities (Khurshudyan et al., 2024).

7. Humanitarian and Legal Considerations
7.1. Protection of Civilians

The reported civilian casualties in the Kursk region highlight the ongoing challenges of protecting non-combatants in modern warfare.

7.1.1. Both sides may face increased scrutiny regarding their adherence to international humanitarian law.

7.1.2. There may be calls for enhanced early warning systems and civilian evacuation protocols in border regions.

7.1.3. The incident could lead to debates about the establishment of demilitarized zones along the Russia-Ukraine border (The Kyiv Independent, 2024).

7.2. Legal Implications

The cross-border nature of the incursion raises complex legal questions:

7.2.1. Russia may attempt to leverage this incident in international forums, potentially seeking condemnation of Ukraine.

7.2.2. The incident may contribute to ongoing debates about the legal framework governing contemporary armed conflicts, particularly those involving cross-border operations.

7.2.3. The targeting of energy infrastructure may raise questions about the distinction between military and civilian targets under international humanitarian law, potentially leading to accusations of war crimes from both sides.

7.2.4. Ukraine's justification for the operation under international law will be closely scrutinized, particularly in relation to the doctrine of self-defense against ongoing armed attack (Kramer, 2024).

8. Future Scenarios

Based on the current situation and historical precedents, several potential scenarios emerge:

8.1.   Limited Escalation

8.1.1. Increased border skirmishes and artillery exchanges, but conflict remains largely contained.

8.1.2. *Potential triggers:* continued small-scale incursions, cyberattacks.

8.1.3. *Likely responses:* enhanced border fortifications, increased military presence in border regions.

8.1.4. *Implications:* prolonged low-intensity conflict, gradual erosion of civilian security in border areas.

8.2.   Major Escalation

8.2.1. Full-scale cross-border operations by both sides, potential use of tactical nuclear weapons.

8.2.2. *Potential triggers:* successful deep penetration into Russian territory, high-profile assassination.

8.2.3. *Likely responses*: general mobilization in Russia, increased Western military aid to Ukraine.

8.2.4. *Implications:* risk of direct NATO involvement, severe global economic disruption.

8.3.　　　International Intervention
8.3.1. Increased NATO involvement or UN peacekeeping efforts.

8.3.2. *Potential triggers:* use of weapons of mass destruction, severe humanitarian crisis.

8.3.3. *Likely responses:* deployment of an international peacekeeping force, intensified diplomatic efforts.

8.3.4. *Implications:* Potential for broader East-West confrontation, reconfiguration of global alliances.

8.4.　　　De-escalation and Renewed Negotiations
8.4.1. Parties return to the negotiating table, potentially mediated by neutral third parties.

8.4.2. *Potential triggers:* domestic pressure in Russia, war fatigue on both sides.

8.4.3. *Likely responses:* gradual withdrawal of troops from contested areas; easing of economic sanctions in exchange for concrete peace steps.

8.4.4. *Implications*:

8.4.4.1. Potential for a fragile peace but lingering tensions and distrust.

8.4.4.2. Economic recovery, though likely slow and uneven.

8.4.4.3. Possible internal political challenges for leadership on both sides. d. Renegotiation of security arrangements in Eastern Europe.

8.4.4.4. Reassessment of global alliances and partnerships (Khurshudyan, 2024).

9. A Paradigm Shift in Modern Warfare and International Relations

The Ukrainian incursion into Russia's Kursk region on August 6, 2024, represents a seismic shift in the evolving landscape of the Russia-Ukraine conflict, with far-reaching implications for global geopolitics, international law, and the nature of modern warfare. This reckless maneuver, bringing the war directly onto Russian soil, not only demonstrates Ukraine's growing military capabilities and strategic

audacity but also challenges long-held assumptions about the conduct of interstate conflicts in the 21st century.

9.1.   Strategic Implications and Multifaceted Objectives

The Kursk operation serves multiple strategic purposes for Ukraine, each with its own set of consequences and implications:

9.1.1. *Disruption of Russian Military Planning:* The incursion forces Russia to reassess its defensive strategies, potentially leading to a reallocation of resources away from offensive operations in eastern Ukraine. This could provide much-needed relief for Ukrainian forces in contested areas such as Donbas (Axe, 2024).

9.1.2. *Energy Warfare:* By targeting critical infrastructure near the "Sudja" gas metering station, Ukraine has struck at a key component of Russia's energy leverage over Europe. This action may accelerate European efforts to diversify energy sources, potentially weakening a crucial pillar of Russian geopolitical influence (Faulconbridge, 2024).

9.1.3. *Intelligence Gathering:* The operation likely provided valuable insights into Russian border defenses, response times, and command and control systems—information that could prove crucial in future strategic planning (Hambling, 2024).

9.1.4. *Military Capability Demonstration:* By successfully penetrating Russian defenses and striking at targets within the Kursk region, Ukraine has showcased its ability to conduct complex, combined-arms operations across hostile borders. This demonstration may influence future military aid decisions by Western allies, potentially leading to the provision of more advanced weaponry and increased support (Miller, 2024).

9.1.5. *Psychological Warfare:* The symbolic value of striking Russian soil cannot be overstated. It challenges the narrative of Russian invulnerability, potentially boosting Ukrainian

morale while sowing doubt and anxiety among the Russian populace (Khurshudyan, 2024).

9.2. Risks and potential consequences

While the Kursk incursion demonstrates Ukraine's growing capabilities, it also carries significant risks:

9.2.1. *Diplomatic Complications:* The incursion could strain Ukraine's relationships with more cautious Western allies, potentially complicating future aid negotiations and diplomatic support (Singh, 2024).

9.2.2. *Economic Ramifications:* The targeting of energy infrastructure could have ripple effects across global energy markets, potentially impacting food security and economic stability in regions far removed from the immediate conflict zone (Khurshudyan et al., 2024).

9.2.3. *Escalation Dynamics:* The operation may justify more aggressive Russian military action, potentially leading to a broader mobilization or the use of more destructive weaponry, including the specter of tactical nuclear weapons (Miller, 2024).

9.2.4. *Humanitarian Concerns:* Reported civilian casualties in the Kursk region highlight the ongoing challenges of protecting non-combatants in modern warfare, potentially leading to increased scrutiny of both sides' adherence to international humanitarian law (The Kyiv Independent, 2024).

9.2.5. *Legal and Ethical Considerations:* The cross-border nature of the operation raises complex questions about the boundaries of self-defense under international law, potentially setting precedents for future conflicts (Kramer, 2024).

9.3. Domestic and international reactions

The incursion has elicited a spectrum of responses, both within the belligerent nations and across the international community:

9.3.1. *Global Community:* The Kursk incursion may force nations that have attempted to maintain neutrality to reassess their positions, potentially reshaping global alignments, and diplomatic relationships (Brooke, 2024).

9.3.2. *Russian Internal Dynamics*: Varied responses within Russia, from calls for escalation by hardline nationalists to more cautious voices advocating for diplomatic solutions, illuminate the complex tapestry of Russian political thought and may influence future Kremlin decision-making (Barker, 2024).

9.3.3. *Ukrainian Home Front:* The operation likely bolsters domestic support for the war effort but may also raise public expectations for further successes, creating pressure for additional high-risk operations (Popeski, 2024).

9.3.4. *Western Allies:* The measured response from Ukraine's Western supporters, particularly the United States, reflects the delicate balance between supporting Ukraine and avoiding direct confrontation with Russia. This event may prompt a reassessment of aid policies and the parameters of support (Singh, 2024).

9.4.   Technological and Military Implications

The Kursk incursion highlights several key developments in modern warfare:

9.4.1. *Cyber Warfare Integration:* The operation likely involved coordinated cyber-attacks on Russian infrastructure, demonstrating the increasing integration of kinetic and digital warfare (Hambling, 2024).

9.4.2. *Drone Technology:* The use of unmanned aerial vehicles for reconnaissance and potentially combat roles underscores the growing importance of drone technology in contemporary conflicts (Axe, 2024).

9.4.3. *Electronic Warfare*: Sophisticated electronic warfare tactics may have been employed to disrupt Russian command and control systems, highlighting the critical nature of the

electromagnetic spectrum in modern military operations (Hambling, 2024).

9.4.4. *Precision-Guided Munitions:* The operation likely showcased the effectiveness of advanced Western-supplied precision weapons, potentially influencing future military aid decisions (Miller, 2024).

9.5.　　　Future Scenarios and Long-term Implications

As the conflict enters this new, more unpredictable phase, several potential scenarios emerge:

9.5.1. *De-escalation and Renewed Negotiations:* A return to the negotiating table, possibly mediated by neutral third parties, leading to fragile peace but with lingering tensions and distrust.

9.5.2. *International Intervention:* Increased NATO involvement or UN peacekeeping efforts, potentially triggered by severe humanitarian crises or the use of weapons of mass destruction.

9.5.3. *Limited Escalation:* Increased border skirmishes and artillery exchanges, with the conflict remaining largely contained but at a higher intensity.

9.5.4. *Major Escalation:* Full-scale cross-border operations by both sides, with the potential use of more destructive weaponry and increased risk of international involvement (Khurshudyan, 2024).

Concluding Thoughts

The Kursk incursion of 2024 stands as a watershed moment in 21st-century geopolitics, embodying the complex interplay between regional conflicts and global stability. It underscores the urgent need for innovative diplomatic approaches, robust international cooperation, and

a renewed commitment to addressing the root causes of interstate tensions.

As the dust settles on the fields of Kursk, this event will be studied for years to come, offering crucial insights into the evolving nature of modern conflict, the challenges of maintaining global stability, and the intricate dance of diplomacy in an increasingly interconnected world. The lessons learned from this incursion will undoubtedly shape military strategy, international relations, and global security policy for decades to come, serving as a stark reminder of the potential for localized conflicts to have far-reaching and transformative consequences on the world stage.

In conclusion, the Kursk incursion of 2024 not only marks a new chapter in the Russia-Ukraine conflict but also heralds a new era in international relations and the conduct of warfare. It challenges us to rethink our approaches to conflict resolution, interstate diplomacy, and the maintenance of global peace and security. As we move forward, the international community must rise to meet these challenges, fostering dialogue, strengthening international institutions, and working tirelessly towards a more stable and secure world order.

The coming months and years will be crucial in determining whether this reckless gambit by Ukraine serves as a turning point towards peace or a prelude to further escalation. Regardless of the outcome, the Kursk incursion of 2024 will undoubtedly be remembered as a pivotal moment in the history of 21st-century warfare and international relations, its repercussions echoing far beyond the immediate conflict zone and shaping the geopolitical landscape for years to come.

References

Hambling, D. (2024). Ukraine's Kursk Offensive Blitzed Russia with Electronic Warfare and Drones. *Forbes*.
https://www.forbes.com/sites/davidhambling/2024/08/09/ukraines-kursk-offensive-blitzed-russia-with-electronic-warfare-and-drones/

Harward, C., Gasparyan, D., Mappes, G., Evans, A., Barros, G., & Stepanenko, K. (2024, August 10). Russian Offensive Campaign Assessment, August 10, 2024. Institute for the Study of War.

Kramer, A. E. (2024). Russian Official Declares State of Emergency Near Border as Ukraine Advances. *The New York Times*.

Wolkov, N., Mappes, G., Harward, C., Hird, K., & Kagan, F. W. (2024). Russian Offensive Campaign Assessment, August 7, 2024. Institute for the Study of War.

Arreguin-Toft, I. (2001). How the Weak Win Wars: A Theory of Asymmetric Conflict. International Security, 26(1), 93-128.

Brodie, B. (1959). Strategy in the Missile Age. Princeton University Press.

George, A. L., & Smoke, R. (1974). Deterrence in American Foreign Policy: Theory and Practice. Columbia University Press.

Jervis, R. (1976). Perception and Misperception in International Politics. Princeton University Press.

Jervis, R. (1978). Cooperation Under the Security Dilemma. World Politics, 30(2), 167-214.

Jervis, R. (1979). Deterrence Theory Revisited. World Politics, 31(2), 289-324.

Kahn, H. (1965). On Escalation: Metaphors and Scenarios. Praeger.

Kahneman, D., & Tversky, A. (1979). Prospect Theory: An Analysis of Decision under Risk. Econometrica, 47(2), 263-291.

Levy, J. S. (1992). An Introduction to Prospect Theory. Political Psychology, 13(2), 171-186.

Mack, A. (1975). Why Big Nations Lose Small Wars: The Politics of Asymmetric Conflict. World Politics, 27(2), 175-200.

Schelling, T. C. (1960). The Strategy of Conflict. Harvard University Press.

Schelling, T. C. (1966). Arms and Influence. Yale University Press.

Khurshudyan, I., Horton, A., Hudson, J., & Oakford, S. (2024, August 9). Battles persist in western Russia after a reckless cross-border attack by Ukraine. *The Washington Post*.

The Moscow Times. (2024, August 6). Moscow Rushes Troops to Kursk Region as 3 Killed in Ukrainian Attacks.

Fornusek, M. (2024, August 7). Ukrainian FPV drone hit Russian Mi-28 helicopter in 'historic' feat, source says. *Kyiv Independent*.

Miller, C. (2024, August 7). Military briefing: Russia's advances expose 'cracks' in Ukraine's defenses. *Financial Times*.

Talmazan, Y. (2024, August 7). Russia says it's battling a surprise cross-border assault by Ukraine. *NBC News*.

The Kyiv Independent. (2024, August 7). Russian officials say 5 civilians killed, 20 injured in fighting across border in Kursk Oblast.

Faulconbridge, G. (2024, August 8). Russia battles Ukrainian troops for a third day after major incursion. *Reuters*.

Khurshudyan, I. (2024, August 8). Ukraine, powered by Western arms, stuns Russia in cross-border assault. *The Washington Post*.

Singh, S. (2024, August 8). Deputy Pentagon Press Secretary Sabrina Singh Holds a Press Conference. U.S. Department of Defense.

Axe, D. (2024, August 9). More Ukrainian Brigades Roll into Russia's Kursk Oblast as Ukrainian Artillery Blocks Russian Reinforcements. *Forbes*.

Brooke, J. (2024, August 9). Ukraine's Counter-Invasion of Russia Could Gain Bargaining Chips for Kyiv in the Event of Negotiated Peace with Moscow. *New York Sun*.

Kullab, S., & Hatton, B. (2024, August 9). Russia declares an emergency in Kursk, under attack by Ukraine. 14 die in a Russian strike on a mall. *Associated Press*.

Méheut, C. (2024, August 9). As Ukraine Pushes Deeper, Russia Sends Reinforcements to Border Area. *The New York Times*.

Trevelyan, M. (2024, August 9). Russia reinforces Kursk region as video shows evidence of Ukrainian attack. *Reuters*.

Barker, K. (2024, August 10). Russia Pushes Back at Ukraine's Cross-Border Assault, but Kyiv Presses On. *The New York Times*.

Popeski, R. (2024, August 11). Zelenskiy acknowledges Ukraine's military operation in Russia. *Reuters*.

https://www.reuters.com/world/europe/zelenskiy-acknowledges-military-operation-russias-kursk-region-2024-08-10/

Disarmament:

A Mixed Record of the UN

Maska Elmahjoub:

 PhD in political science and international relations University Cady Ayyad Morroco.

Summery

Disarmament is a challenge for United Nations, the international community wants to remove the threat of war. It sought to address the means by which nations could do so. The UN was created to "protect future generations from the horrors of war". It had to face the prospect of a war without winners or losers. Such a war would leave behind universal ruin.The UN had a compelling duty.

Nevertheless, there is a growing sense of disappointment that the UN has become dysfunctional. It is no longer a forum for negotiations on arms control and disarmament.

This article aims to evaluate the efforts made by the UN in this field, and then highlight the major difficulties it faces.

Key words: United Nations, Disarmament, Peace, threat, war.

The problem of disarmament is inseparable from peace. The solution of one cannot be achieved without the solution of the other. Disarmament evokes "the idea of a world in which states would have given up the means of fighting, in other words, they would have scrapped their battleships and aircraft carriers, blown up their fortifications, disbanded their regiments and kept only the necessary police forces"i. For Raymond Aronii, disarmament would "concern above all and especially the atomic and thermonuclear bombs on the one hand, and the vehicles on the other"iii.

Of course, the international community wants to remove the threat of war. It sought to address the means by which nations could do so. The first efforts were made before the UN. They sought to find a universal agreement on the problem. However, at the time, international society was in chaos, so his attempts were timid and unsuccessful. After the First World War, international society began to organize itself. And disarmament efforts began to take on a new character. They were much more reassuring.

When the League of Nations was created, disarmament was placed at the centre of its concerns. Since then, it has remained closely linked to the development of a collective security system.

The UN was created to "protect future generations from the horrors of war". It had to face the prospect of a war without winners or losers. Such a war would leave behind universal ruin. The UN had a compelling duty. It had to address the problem, and try to find a solution. The problem was a big one. The UN was stuck. It was unable to stop a mad arms race.

We will try to see the efforts made by the UN in this field, and then highlight the major difficulties it faces, in the light of which a resounding failure is revealed.

1: The normative framework: A Charter with little concern for disarmament and treaties with little respect.

The competence of the United Nations in the field of disarmament is based on two provisions of the Charter, namely:

Article 11 which concerns the prerogatives of the General Assembly:

''The General Assembly may consider the general principles of cooperation in the maintenance of international peace and security, including the principles governing disarmament and the regulation of armaments, and make recommendations with regard to such principles to the Members or to the Security Council or to both''

Article 26, which relates to the functions and powers of the Security Council:

"In order to promote the establishment and maintenance of international peace and security with the least diversion for armaments of the world's human and economic resources, the Security Council shall be responsible for formulating , with the assistance of the Military Staff Committee referred to in Article 47, plans to be submitted to the Members of United Nations for the establishment of a system for the regulation of armaments"

Compared to the League of Nations pact, the Charter does not give as much importance to the problem of disarmament. It is not defined as an essential objective. The maintenance of peace would not depend on it. The Charter does not contain a mandatory provision at this level. It does not oblige its signatories to provide information on the status of their military assets. Moreover, the UN has never condemned private arms manufacturing.

The founding fathers of the Charter established an extensive system of collective security. This makes disarmament conditional on security. The Security Council is responsible for drawing up the necessary plans

to limit armaments, while the Assembly considers the general principles whenever it wants to make recommendations that it considers appropriate.

The negotiations to date have gone through several stages:

On 24 January 1946, the General Assembly created the Atomic Energy Commissioniv, which was to assume an urgent mandate to control atomic energy. It oversaw the exchange of scientific intelligence, with a view to keeping it purely peaceful. This commission was also responsible for eliminating weapons of mass destructionv. After two years of work and two hundred meetings, the Commission informed the Council that its work had reached a dead end. This first attempt had failedvi.

The failure of disarmament attempts was evident. There were antagonistic positions, with opponents. They were reluctant to compromise. The United Nations found it necessary to revise the method. It adopted a more global approach. And it abandoned the use of separate commissions. As a result, the General Assembly at its fifth session acted on a proposal by President Truman. The latter suggested replacing the existing commissions by a single body. On 13 December 1950, the General Assembly entrusted a committee (Committee of Twelve) with the task of considering how to achieve the merger of the two bodies responsible for examining disarmament problems.

In 1950, a new phase opened, the Committee of Twelve created the Single Commission. It was to tackle the control of atomic energy. It also studied the reduction of conventional armaments. France, Great Britain and the United States supported this proposal. The following are the main tasks of the new body:

Exchange of information on armaments and personnel

On-site verification of information provided through an international inspection system.

Maintenance of the control of atomic energy established by the Baruch Plan[vii].

The Soviet delegate declared that he could not agree with this statement, which once again expressed the obstinacy of the Western powers. They showed no change in this respect. In doing so, he in turn defined the tasks which his government was giving to this new commission, the most essential of which were:

The unconditional and immediate abolition of nuclear weapons,

The creation of a monitoring body within the Security Council to carry out the implementation of this abolition and the reduction of conventional weapons.

Exchange of information on the respective strengths of the major powers,

Reduction of the permanent members of the Security Council by one third.

These attempts showed the irreducible nature of opposing conceptions, and the slim chances of a common agreement. Thus, the general climate was bleak. There was no agreement on a possible compromise. Under these circumstances, the General Assembly adopted the proposals put forward by the Western powers. Such a move provoked opposition from the Soviet bloc.

Nowadays, there are many agreements in this area, are negotiated outcomes between governments. Nevertheless, they involve technical difficulties and political judgments. This process will lead to the creation of the International Atomic Energy Agency.

The International Atomic Energy Agency: a weak organisation

On 8 December 1958, the American President, in his famous speech, proposed the creation of an International Atomic Energy Agency. It would be responsible for controlling the materials used to create hydrogen and atomic bombs. This agency also affirmed its willingness to cooperate with the USSR in order to use atomic energy in a peaceful manner[viii].

Eisenhower's plan suggests that :

The Soviets and Americans should conduct an extensive exchange of military information on establishments of all kinds,

Verification would be by means of aerial reconnaissance,

The two powers agreed to tolerate overflights of their territories to allow photographic views to be taken.

Eisenhower proposed a peaceful use of atomic energy. Because of the failure of the Baruch Plan, and the impasse in disarmament negotiations, the US President wanted to look for less ambitious measures that would have a better chance of success. Aware of the importance of persuading the Soviets, he asked them to enter into bilateral negotiations on his plan. There were a series of notes addressed to the USSR. These included the note of 19 March 1954, which set out the "Draft International Atomic Energy Agency". Section B.3 proposes the modalities of control, and the conditions to be prescribed by the organization:

"... to ensure compliance with health and safety standards and to verify that allocated fissile material is used for the intended purpose, the Agency would be authorized to prescribe certain design or operating conditions, impose health and safety regulations, require the maintenance of operating records and specifications, decide on the disposition of fissile material by-products and wastes, reserve the right of oversight, and require interim reports. The Agency would also have the right to verify the status of allocated material stocks and compliance with the conditions set..."[ix]

After intense negotiations and unanimous approval of its statute by 81 nations, the International Atomic Energy Agency was established in 1956. It is an organization that aims to promote the peaceful use of nuclear energy. And it aims to achieve universal disarmament.

"...acts in accordance with the purposes and principles adopted by the United Nations for the promotion of international peace and co-operation, in pursuance of the policy of the United Nations for the achievement of universally assured disarmament, and in conformity with any international agreement reached in pursuance of that policy''x.

In 1958, a draft resolution on the dangers of the spread of nuclear weapons was introduced by the Irish delegation. It was the starting point for subsequent UN action on nuclear non- proliferation. All of these efforts culminated in the development of a treaty.

The "nuclear non-proliferation" treaty entered into force on 5 March 1970xi, the treaty was unanimously accepted by the international community. These obligations are accompanied by a system of international safeguards (Article III). Added to this is an assurance of the right to use nuclear technology for peaceful purposes (Article VI).

All these obligations have been extended, through a further mechanism. The latter includes two important decisions. They are entitled "Principles and Objectives for Nuclear Proliferation and Disarmament" and "Strengthening the Treaty Review Process". The first decision is on "principles and objectives". It was to encourage states. States should make efforts to get everyone to sign up to this treatyxii.

Despite these recommendations, states have not kept their promises. Four states have not joined the treaty (Cuba, India, Pakistan, Israel). Even worse , in 1998, they conducted tests in the South Asian region.

In 1999, Jayntha Dhanpalaxiii warned of the dangers that he saw in the future of the international treaty's provisions: "First, if the current nuclear-weapon states persist indefinitely in making no substantive progress towards nuclear disarmament, I fear that the global consensus

on the taboo of nuclear weapons proliferation will gradually erode, with an ever-increasing number of countries likely to reconsider their nuclear choices, Secondly, I fear that the process of globalization combined with the growing economic and political pressure to export dual-use technologies will ultimately erode the taboos of Article I ("not to assist in any way...") and Article II ("not to seek or receive any assistance..."). The Treaty would be in great danger if either norm were to disappear''xiv.

For this expert, the absence of negotiations remains a source of disappointment. He cites NATO's strategic doctrine, announced at the April 1999 summit. This doctrine reaffirmed the principle of the first use of nuclear weapons. For NATO, it is useful, and a means of deterrence, especially against non-nuclear attacks. He also cites Russian strategic doctrine, which also reaffirms the principle of first use of such weapons. According to Jayntha, there is another indicator of risk. This is the inability of the Conference on Disarmament to agree on a work program.

Thus, it fails to make progress, especially on disarmament issues such as

Nuclear disarmament issues

Prevention of an arms race in outer space

Security assurances and the ban on the production of fissile material

As for the creation of a zone in the Middle East, he felt that there was little progress. With regard to the ratification of the Pelindabaxv Treaty and the signing of the Protocol to the Bangkok Treatyxvi, the results were not satisfactory. The 50 NPT States Parties have not concluded safeguards agreements with the IAEA. It notes with regret that the IAEA remains unable to verify "that all nuclear material subject to safeguards in the Democratic People's Republic of Korea has been declared to the Agency"xvii. All of these warnings deserved to be taken seriously. Today, North Korea is apparently a clear example of a UN

failure. Clearly, it is likely to become a nuclear power. The international community has struggled in vain to prevent this from happening again. On 3 September 2017, it conducted the sixth test of what appears to be a hydrogen bomb. This test was preceded by other successful ones, and now it has an intercontinental ballistic missile. US intelligence confirms this, saying that it has more than 60 nuclear warheadsxviii. In 2006, after the first nuclear test, the Security Council prohibited "the supply, the transfer" of "items, materials, equipment, products and technology"xix that can contribute to this programme.

''All Member States shall prevent the direct or indirect supply, sale or transfer to the DPRK of any arms and related materiel, including small arms and light weapons and related materiel, through their territories or by their nationals, using their flag vessels or aircraft, and shall prohibit financial transactions, training activities, including the hosting of trainers, advisers or other persons for purposes related to military, paramilitary or police training, services or assistance related to the manufacture, maintenance or use of arms, as well as the sending of items to or from the DPRK for repair, maintenance, refurbishment, testing, reverse engineering and marketing''xx

These sanctions are universal. This means that they are binding on all states in the world. Each state is responsible for their implementation on its territory. Military and nuclear technologies are regulated. There is a national export control system. In theory, all states should have the capacity to enforce sanctions. Export control has become mandatory since the entry into force of Resolution 1540 in 2004xxi. In this sense, the Security Council made an important decision: weapons of mass destruction and their means of delivery are a threat to international peace and securityxxii:

"Considering further that there is an urgent need for all States to take additional effective measures to prevent the proliferation of nuclear, chemical or biological weapons and their means of delivery...... Considering also that most States have entered into legally binding

obligations or other commitments under treaties to which they are party to prevent the proliferation of nuclear, chemical and biological weapons, and have taken effective measures to monitor and secure stockpiles of risk materials and to provide for their physical protection, such as those required by the Convention on the Physical Protection of Nuclear Material or those recommended by the International Atomic Energy Agency in its Code of Conduct on the Safety and Security of Radioactive Sources'xxiii'

Through the resolution 1540, the Security Council wants to have an effective response to the threats. It aims to achieve the non-proliferation of these weapons. The UN can react under Chapter VII of the Charter. This resolution stipulates that states must:

Refrain from providing support to non-state actors

Adapt the legislative framework to provide for criminalization

Put in place internal controls, including on related matters.

In fact, this resolution responds to the threats that the proliferation of "nuclear, chemical and biological" weapons can cause to international peace and security. It aims to contain these threats. It urges states to criminalize illegal activities. It also requires that measures be put in place to prohibit the misuse of controlled items.

Despite the decisions taken by the UN, the organization is still struggling to impose itself. It has not been able to enforce the resolution. This has led to an uneven implementation of sanctions. The North Korean missiles clearly illustrate this failure. In this sense, the ''RUSI Whitehall'' report describes the UN sanctions regime as "a house without foundationsxxiv.

The report highlights important factors. These explain the failure of the sanctions regime in North Korea, among them, North Korea's ability to circumvent sanctions. There is a panel of experts in charge of this sanctions regime. This panel believes that Pyongyang's illicit networks

complicate their task, and that these networks are growing in size and scope. Thus, their capabilities may reduce the effectiveness of sanctions.

The second factor concerns the behavior of states. They take individual actions. In principle, each state must respect the decisions of the Council. And to transpose them into national law. But in practice, it is quite different, which makes states dishonest for not applying sanctions

in an appropriate manner. These shortcomings allow Korea to persist in its illicit activities. The final factor concerns private sector activities. The latter undermines the impact of UN sanctions, being independent of state behavior. In fact, Security Council resolutions bind the actions of states, but not those of non-state actors. Private sector actions can only face restrictions if states transpose the advisory requirements into national law.

According to the same report, the sanctions have not been able to produce a change, as they lack force. This is compounded by insufficient cooperation from its trade ally, China. These sanctions need to be adopted both multilaterally and unilaterally if the international community is to address these shortcomingsxxv.

In general, there is a growing sense of disappointment that the UN has become dysfunctional. It is no longer a forum for negotiations on arms control and disarmament. The last disarmament conference was held on 26 August in Geneva, at the same time as the Russian takeover of the Zaporija nuclear plant. This tense context makes the bombings more intense, so an atomic catastrophe is felt.

The norm cannot control the behaviour of those who reject its legitimacy. For decades, violations of anti-nuclear norms have been committed by the five powers. They flout their disarmament

commitments, especially the provisions of Article 6 of the NPT. The asymmetry between declarations and non-proliferation control creates a nuclear apartheidxxvi.

---

i Raymond Aron, Peace and war between nations, Calmann-Lévy, Paris, 2004, p 629.

ii Raymond Aron is French philosopher and sociologist (Paris 1905-Paris 1983), was professor in the institute of political studies, Sorbonne, and practical school of high studies in Paris.

iii Ibid, p 630

iv On 23 October 1956, 81 member countries of the United Nations adopted the Statute of an International Atomic Energy Agency, which was to become operational in Vienna before the end of 1957.

v Goldschmit Bertrant, "The Origins of the International Atomic Energy Agency", IEA Bulletin, Vol 19, N4. p 14.

vi Ibid.

viiThe Baruch Plan consisted in the creation of an international organization to which would be handed the legal ownership and absolute control of all uranium and thorium deposits throughout the world, it would be in charge of scientific research and the processing of raw materials in its own plants, of the silent sale of dangerous by-products, of the investigation and punishment in all countries of all illegal operations (extraction or clandestine storage of uranium, construction or use of prohibited devices, etc.).), the United States undertook, as soon as the institution was set up, to cease the manufacture of atomic bombs, to destroy existing stocks and to communicate all the information in its possession, on condition that each of the major powers renounce its right of veto in the Security Council in the field of the use of atomic energy.

viii ''Eisenhower proposes an international atomic agency'', the guardian, archive 1953, 9 Decembre 2016, l'article est disponible sur le lien suivant: www.theguardian.com/world/2016/dec/09/iaea-international- atomic-agency-eisenhower-un-1953 .

ix John A. Hall, "The International Atomic Energy Agency: its origin, its beginnings, a continuing purpose: scientific cooperation in the service of peace", IAEA Bulletin, 2/1987, pp 48.

x Available at the following link: http://www.un.org/fr/sections/issues-depth/atomic-energy/index.html.

xi According to this treaty, nuclear-weapon states (states that have exploded a nuclear weapon as of 1 January 1967) shall not in any way assist or encourage a non-nuclear-weapon state to acquire nuclear weapons (Article I). The NPT defines five states in this way (USA, USSR, UK, France and the People's Republic of China). According to the NPT, all other States are non-nuclear-weapon States, as long as they are parties to the NPT;

xii Jayantha DHANAPALA , "Strengthening the NPT Regime: Global Challenges and Opportunities", IAEA Bulletin, N41, 4/1999. p 5.

xiii Jayantha Dhanapala, a Sri Lankan diplomat, is a member of the Board of Patrons of the Bulletin of the Atomic Scientists and was a member of the Board of the Stockholm International Peace Research Institute.

xiv Ibid.

xv It aims to make Africa a nuclear-weapon-free zone, under which "each party undertakes : Not to undertake research, develop, manufacture, stockpile or otherwise acquire, possess or exercise control over any nuclear explosive device by any means or in any place... Not to seek or receive any assistance in the research, development, manufacture, stockpiling, acquisition or possession of any nuclear explosive device; ...To refrain from any act intended to assist or

encourage the research, development, manufacture, stockpiling, acquisition or possession of any nuclear explosive device by any State. Article 3 Treaty of Pilandaba.

xvi The Bangkok Treaty aims to establish a nuclear-weapon-free zone in Southeast Asia. It was opened for signature in Bangkok, Thailand, on 15 December 1995 and entered into force on 28 March 1997.

xvii Jayantha DHANAPALA , Op cit, p 6.

xviii Daniel Salisbury, Why UN sanctions against North Korea's missile program failed, the conversation, 7 July , 2017. Disponible sur le lien suivant //www.macleans.ca/news/world/why-u-n-sanctions-against-north- koreas-missile-program-failed/.

xix Resolution 2270(2016)

xx Resolution 2270 (2016)

xxi Resolution 1540 was adopted unanimously by the Security Council on 28 April 2004 under Chapter VII of the UN Charter, and was followed by resolutions 1673 (2006), 1810 (2008), 1977 (2011) and 2055 (2012). It establishes the 1540 Committee.

xxii S/RES/1540 (2004).

xxiii Ibid.

xxiv Andrea Berge, ''the sanctions regime is thus in many respects a house without foundations , A house without foundations The North Korea Sanctions Regime and its implementation", RUSI Whitehall Report 3-17, June 2017, p 3.

xxv Ibid, p 2.

xxvi Ramesh Thakur, the United Nations, Peace and security, Cambridge University press, 2006, p 163.

L'enjeu de la population et du nationalisme tunisiens dans la propagande allemande durant la campagne de Tunisie (7 novembre 1942 – 13 mai 1943)

MOULAHI MOURAD. MA Contractuel

Institut supérieur de science humaine de Jendouba   UNIVERSITE DU JENDOUBA - Tunisie -

Résumé :

Notre contribution s'est attelée à restituer le contexte de la propagande allemande durant la campagne de Tunisie en saisissant son impact sur la population civile et les milieux nationalistes tunisiens. Nous nous sommes basés sur les archives de l'Afrika Korps compulsés par Herf (Jeffrey) dans *Hitler, la propagande et le monde arabe*(Paris, Calmann-Lévy, 2012), les mémoires dumajor Rudolph Rahn envoyé spécial d'Hitler à Tunis, avec le titre de ministre plénipotentiaire, du général Juin résident général intérimaire à Tunis (mai – juillet 1943), des deux militants nationalistes Bahi Ladgham et de Habib Nouira ainsi que le défrichement de l'organe néo destourien *Ifriqiya Al Fatat* autorisé par les forces allemandes durant l'occupation (janvier- mai 1943) et le récit-témoignage de Roger Casemajor, un des principaux responsables des Renseignements Généraux français en Tunisie sous le protectorat. Cet impact s'est révélé remuant, changeant au diapason des victoires allemandes contre les forces alliées avant le début de la campagne en novembre 1942 et ses replis et défaites par la suite. La population civile est demeurée grosso modo germanophile jusqu'à la finde la campagne et même du conflit mondial en 1945. Les milieux nationalistes divisés quant à la collaboration et l'alliance avec les forces allemandes entre les deux leaders Habib Bourguiba et Dr. Habib Thameur ne sont pas moins imperméables à la propagande antisémite nazie et demeurent attachés à l'indépendance de leur pays.

Mots-clés propagande allemande, la campagne de Tunisie, milieux nationalistes tunisiens, l'Afrika Korps

Traiter de l'impact de la propagande allemande sur la population et les milieux nationalistes tunisiens durant la campagne de Tunisie (7 novembre 1942 – 13 mai 1943), en saisir l'enjeu et en mesurer l'effet, tel est l'objet de notre étude. Cela impose le rappel du cadre général maghrébin arabe de cette propagande tout au long des années trente, contexte marqué d'abord par le précédent italien fasciste et ses visées sur la Tunisie depuis la prise du pouvoir à Rome par Benito Mussolini en 1922 [1]et ensuite l'effet des trois défaillances militaires successivement subies par les puissances de l'Axe : l'arrêt puis la défaite de l'offensive germano-italienne à Stalingrad en Union Soviétique, à Al Alamein en Egypte d'un côté et le débarquement allié en Afrique du Nord, de l'autre au Maroc et en Algérie (novembre – décembre 1942). Partant, ces nouvelles données font perdre aux puissances de l'Axe l'initiative stratégique détenue depuis l'invasion de la Pologne en 1939[2]. Ce qui va insérer la chronologie de la propagande allemande durant la campagne de Tunisie dans un contexte remuant marqué par la contre propagande anglo-saxonne[3].

Il est vrai que les Allemands encourageaient discrètement durant les années trente au Maghreb les mouvements nationalistes, tout en attisant la propagande antisémite dans les milieux musulmans et

---

[1] Cf. :- Forlin (Olivier) : La politique du fascisme italien en Méditerranée : parcours et débats historiographiques In *Cahiers de la Méditerranée*, n° 103, 2021, pp. 142 – 157.

     - Chaibi (Mohamed Lotfi) : Propagande fasciste italienne et nationalistes tunisiens 1934-1939.Histoire d'une méprise In*Les relations tuniso-italiennes dans le contexte du protectorat*. Université Tunis 1, Institut Supérieur d'histoire du Mouvement National, 1999.pp. 217 – 224.

[2] - Jürgen (Muller) : Stratégie et logistique allemandes en Afrique du Nord In *Revue Historique des armées*, n°1, 1983, pp.21 à 29.

[3] - Cherif (Fayçal) : La propagande arabe anglaise vers le Maghreb pendant la Seconde Guerre mondiale (1939-1943) In *Revue Lisa E. journal*, vol. IV, n°3, 2006.

- Cherif (Fayçal) : Fondements du discours propagandiste arabe de la Grande Bretagne au Maghreb pendant la Seconde Guerre mondiale (1939-1943) In *Revue Lisa E. journal*, vol. VI, n°1, 2008.

européens[4]. Et tout laisse à penser avec le déclenchement des hostilités en 1939 et les victoires spectaculaires allemandes réalisées en Pologne, Norvège (avril 1940) France (juin 1940) et le début de la bataille d'Angleterre (juillet 1940) amèneront l'Allemagne à jouer à fond la carte du nationalisme arabe et à tenter des agitations insurrectionnelles au Maghreb. Or, contre toute attente, l'Allemagne « *se bornera en ce qui concerne l'Afrique du Nord à une guerre psychologique longtemps peu résolue* »[5].

Qu'en est-il de cette guerre psychologique ? De ses origines, de ses objectifs et de son impact sur la population et le nationalisme tunisiens? Le major Rudolph Rahn envoyé spécial d'Hitler à Tunis, avec le titre de ministre plénipotentiaire souligne en novembre 1942 que « *Tunis est comme un essaim d'abeilles en ébullition*, « (…) *Les Français*, ajoute-t-il, *entendent naturellement conserver leur situation vis-à-vis des Italiens et des Arabes. Les Italiens espèrent pouvoir réussir leur rêve de conquête de la Tunisie qu'ils considèrent comme une vieille terre de colonisation. Les Arabes voudraient bien être débarrassés des deux aujourd'hui plutôt que demain* »[6].Autrement, c'est la quadrature du cercle pour le diplomate allemand. Il est symptomatique de rappeler qu'une fois les Allemands ont perdu l'initiative stratégique durant l'automne 1942, la Tunisie est devenue pour eux, c'est-à-dire pour Rommel et l'Afrika Korps, une voie de repli essentielle. Elle devait de l'autre côté constituer pour les Américains une base idéale pour bombarder l'Italie. Dans cette perspective, s'installer en Tunisie sous prétexte d'aider le gouvernement de Vichy à défendre l'Afrique du Nord, permettrait aux forces de l'Axe d'éviter le dangerde l'intrusion américaine en Italie et surtout de se maintenir en Afrique. Plus précisément, l'occupation germano-italienne de la Tunisie

---

[4]- Ageron (Charles Robert) : Les populations du Maghreb face à la propagande allemande In **Revue d'histoire de la Deuxième Guerre mondiale**, n° 114, avril 1979, pp.3 - 4.

[5]*Idem.*, page 5.

[6] - Rahn (R.) : **Un diplomate dans la tourmente**. Paris, France-Empire, 1980, p. 248.

s'effectue dans un contexte marqué par la diffusion sur ondes courtes des émissions allemandes en langue arabe à destination du Moyen Orient et de l'Afrique du Nord, jour et nuit, sans interruption[7].

Bénéficiant de l'impact de la propagande italienne en langue arabe d'un côté[8] et de la prédisposition de soutien et de collaboration des populations et du nationalisme tunisiens vis-à-vis de l'Allemagne, alliée de la Turquie contre la France et l'Angleterre coloniales durant la Grande Guerre[9], la propagande allemande adapta vite durant la campagne de Tunisie « *ses thèmes visant des publics allemands et européens, aux traditions religieuses de l'islam ainsi qu'aux réalités politiques régionales et locales du Moyen Orient et de l'Afrique du Nord* »[10]. Cette adaptation, lit-on, « *fut le produit d'une collaboration politique et idéologique entre les responsables du régime nazi- et surtout du ministère des Affaires Etrangères, mais aussi du ministère de la propagande, de la SS et de l'Office Central de la sécurité du Reich- et des Arabes pronazis exilés à Berlin durant la guerre* »[11].

Toutefois, l'Allemagne s'était bornée à mener une guerre psychologique dont l'impact resta limité, par le biais des émissions de radio qui étaient animés par des speakers talentueux tels que l'irakien Younes El Bahri, le marocain Takin Eddine Al Hilali et le tunisien

---

[7]Herf (Jeffrey) : ***Hitler, la propagande et le monde arabe***. Paris, Calmann-Lévy, 2012.

[8]- Cf. Grange (Daniel) : Structure et technique d'une propagande : les émissions arabes de Radio- Bari In ***Relations Internationales***, n°2, 1974, pp. 165 – 185.

 - Grange (Daniel) : *La propagande arabe de Radio Bari,* ***Idem.***,n°5, 1976, pp. 65-103.

[9]Fendri (Mounir) : Le Maghreb et l'Islam dans la stratégie de l'Allemagne en 1914 In ***Hespéris Tamuda***, LIII (1)(2018), pp. 107 – 126. L'auteur notait que probablement grâce à la propagande allemande pendant la Première Guerre mondiale que l'idée de liberté s'était éveillée chez tous les peuples orientaux, page 123.

[10]Herf (Jeffrey) **: *Hitler, la propagande…, Op.Cit,***

[11]***Idem.***

Abderrahmane Yacine connu sous le nom du Dr Mourad[12]. Bien plus, le muphti d'Al Kods, Amine Al Husseini « *avait souhaité que le bey de Tunis obtienne une lettre secrète dans laquelle le gouvernement allemand envisagerait la liberté aux Tunisiens »,* souhait qui sera neutralisé par le refus de la direction politique allemande, Sa réponse le 12 janvier 1943 est on ne peut plus nette : « *L'Afrique du Nord et en particulier la Tunisie appartiennent…à la sphère d'intérêtsde notre alliée, l'Italie »*[13].

Il est un fait que la place détenue par la propagande allemande dans la stratégie nazie dirigée vers le monde arabe (Moyen Orient et Maghreb réunis) ait subi quelques arrangements et rectifications : « *Le' Jihad made in Germany' et l'appel aux arabes à se révolter contre le colonialisme britannique et français qui avaient été une composante principale au cours de la Grande Guerre »* n'est plus d'actualité. Même si certains vétérans au Moyen Orient, tel Otto Von Hentig devaient jouer un rôle dans les efforts autrement plus amples déployés au cours de la Seconde Guerre mondiale. Au Maghreb et plus précisément, les propagandistes nazis ne sont pas parvenus à faire passer « *l'antisémitisme radical et les théories du complot comme incitations au massacre des juifs »*[14].

C'est l'année1942 qui constitua un tournant important dans l'évolution générale de la guerre et de la propagande des belligérants. Pour le

---

[12] - El Mechat (Samia) : La Tunisie pendant la Deuxième Guerre mondiale (1939- 1944) In *Revue d'Histoire Maghrébine*, nos 33-34, Juin 1984, page 68.

- انظر شهادة الحبيب نويرة في موسى (ليلى): **عمل الحزب الحر الدستوري الجديد في خضم الدعاية الألمانية: إفريقيا الفتاة مثالا (1 جانفي – 6 ماي 1943).**رسالة ماجستير في التاريخ المعاصر. كلية العلوم الإنسانية و الاجتماعية بتونس، السنة الجامعية 2008 –2009، ص. 277:"و كان يونس البحري عند بداية البث يقرع الجرس و يقول عبارته الشهيرة " حي العرب هنا برلين". و ذات مرة ألقى يونس البحري جملة ظلت عالقة في ذهني إلى اليوم: " إذا زُلزلت لندن زلزالها وأرسلت برلين أثقالها و قال تشرشل مالها، و إذا تحدث أخبارها بأن هتلر أوحى لها- ثم دق الجرس- حي العرب. و هي تحريف لسورة من القرآن الكريم (سورة الزلزلة).

[13] - Ageron (Charles Robert) : *Les populations du Maghreb…, Op.cit.,* page 9.

[14]Herf (Jeffrey) : *Hitler, la propagande…, Op.Cit,*

Reich allemand la période des campagnes victorieuses était terminée. La campagne de Russie n'était pas seulement stoppée mais les soviétiques reprenaient l'initiative et passaient à l'offensive. Au début du mois de novembre de la même année, les Anglo-Américains débarquaient en Afrique du Nord. Désormais, l'attitude de l'Allemagne allait connaitre un fléchissement vis-à-vis des nationalistes tunisiens et la population musulmane des villes de Kairouan et de Tunis banlieue nord (La Marsa) allaient subirle contre coup de leur collaboration avec les Allemands[15].

_____

[15] *إفريقيا الفتاة* ، 17 مارس 1943. جناب قنصل ألمانيا في حضرة الملك / التفاصيل عن فاجعة المرسى . انظر العدد
في الملاحق

- « *Après le bombardement par les Alliés de la Marsa survenu le 10 mars 1943, qui fit plus de deux cents victimes parmi la population civile, le bey pressentit le Consul Général d'Allemagne Moelhausen sur l'opportunité d'une démarche à faire pardes personnalités musulmanes auprès du commandement des forces anglo-américaines à Alger, en vue de délimiter une zone de sécurité qui échapperait au danger aérien et où résideraient le souverain et sa cour. Le Consul refusa cette demande mais proposa le recours à l'opinion publique mondiale et pria son interlocuteur de faire part de sa suggestion au Bey. Dans la même journée, Moelhausen se présenta devant le Bey, lui renouvela sa proposition et lui déclara que les autorités allemandes mettraient à sa disposition tous les moyens techniques de diffusion et de publicité, s'il consentait à lancer personnellement une proclamation flétrissant les bombardements de civils musulmans par les forces alliées .Le consul allemand acheva en soulignant qu'une telle initiative donnerait une impulsion aux puissances de l'Axe pour la réalisation des opérations tunisiennes. **Le Bey, d'une façon polie mais ferme, marqua son refus au représentant allemand** » In Zmerli (Sadok) : **Espoirs et déceptions en Tunisie (1942 – 1943).**Tunis, MTE, 1977.*
- Rahn (R.) : **Un diplomate dans…, Op.cit.**, pp. 265-266 :
« *Le comportement de la population tunisienne fut toujours de la plus grande cordialité à notre égard malgré les nouvelles toujours plus mauvaises du front, Les tribus arabes étaient les seules qui avaient gardé une affection vraie et naturelle pour le peuple allemand à travers toutes les phases de l'histoire moderne….Après la chute de Kairouan , un modeste Arabe fit passer à travers les lignes quarante soldats allemands qu'il avait cachés et*

Lors de l'armistice du 25 juin 1940, les Allemands s'étaient engagés à respecter l'intégrité de l'Empire colonial français. Les néo-destouriens dont les principaux dirigeants étaient en prison avaient exprimé leur refus de se rallier aux Italiens. L'hostilité des nationalistes tunisiens à l'égard de l'Italie est un fait acquis surtout durant les premières années de la guerre. En revanche, leur attitude à l'égard des Allemands demeurait ambiguë. Si l'appui de l'Axe au mouvement national durant ces premières années fut effectif [16], il devint hypothétique avec le débarquement des anglo américains en Afrique du Nord, la nouvelle politique des forces allemandes consista à tendre la main aux maghrébins en vue de s'en servir comme agents de leur cause et serviteur de leur propagande quitte, en contrepartie de leurs services, à favoriser leurs activités et à leur faire des promesses pour la libération de leur pays. « *De leur côté, les destouriens, nationalistes avant tout, étaient déterminés en fonction de la question de l'émancipation de la Tunisie. La majorité des leaders, libérés de la prison civile de Tunis en décembre 1942, comprirent les données nouvelles de l'évolution de la guerre et les arrières pensées des puissances Axistes à leur égard* »[17].*Ifriqiya El Fatat,* organe officiel du Néo Destour durant la

---

qu'il n'avait pas dénoncés malgré les fortes récompenses promises par l'adversaire. Lorsque nous voulûmes le dédommager de la perte subie, il dit fièrement : « **Nous sommes des amis ; l'amitié ne se paie pas »**, *et il retourna à Kairouan… ».*
- Kraiem (Mustapha) **:** *La classe ouvrière tunisienne et la lutte de libération nationale (1939-1952).* Tunis, UGTT, 1980, page 77 (Le Néo Destour sous l'occupation allemande).
[16]- « *C'était à travers les ondes que la propagande se fit la plus active, Radio Bari, Berlin, Tripoli étaient très écoutés en 1939-1940, encourageant régulièrement les nationalistes, rendant compte ponctuellement des actions de sabotage, des arrestations ou des troubles, jamais mentionnés par la presse locale, la libération des emprisonnés destouriens y était sans cesse réclamée* » :
- El Mechat (Samia) : *La Tunisie pendant la Deuxième*…***Revue d'Histoire Maghrébine, …Op.cit.,***page70.
[17]Kraiem (Mustapha) : ***La classe ouvrière tunisienne…, Op.cit.***

campagne de Tunisie dirigé par Dr Habib Thameur et le récit-témoignage de Roger Casemajor, un des principaux responsables des Renseignements Généraux en Tunisie sous le protectorat ysuggèrent des éléments de réponse sur les divergences du Néo Destour vis-à-vis des forces belligérantes, principalement entre les leaders Habib Bourguiba et Dr Habib Thameur[18].

---

[8]*إفريقيا الفتاة*، 2 فيفري 1943. حديث اليوم: في رجوع الزعماء أيضا:

" أما الزعيم فهو بيننا يواصل الكفاح نأتمر بأمره و نسير على أثره وهو رئيس الحزب اليوم الحكيم الحبيب ثامر

" على أنا إذا طلبنا رجوع المجاهد الأكبر الحبيب بورقيبة و ألححنا في الطلب فما ذلك ألا لكونه رمز الحركة الوطنية الحي و الرجل الذي اختبر القضية التونسية و عالج معضلاتها و الشعب لا يرضى أن يقرر مصيره و لا أن يقف موقفه الحاسم في هذه الظروف الدقيقة دون أن يكون زعيمه مشرفا عليه".

-Casemajor (Roger) *: L'action nationaliste en Tunisie. Du pacte fondamental de M'Hamed Bey à la mort de Moncef Bey 1857- 1948.* Sud Editions, Tunis, 2009, pp. 160-163 (La propagande ; Les inévitables querelles de personnes ; le retour des exilés (26 février 1943) : « *Après de nombreuses discussions, le clan Habib Thameur, Taieb Slim et Farid Bourguiba adopta le point de vue de la Cour et tomba de ce fait, sous l'emprise du prince Hassine* (pro-Axiste)…*Par contre, Rachid Driss et Hassine Triki conservèrent leur position provoquant de la sorte une scission parmi les dirigeants du Néo-Destour, et, dans 'Ifriqiya el Fatat' lancèrent une campagne sournoise mais acerbe contre Moncef Bey, les ministres* (du gouvernement M'Hamed Chenik) *et leur politique…Le 11 janvier* (1943) *paraissait le premier numéro de la nouvelle série d'Ifriqiya El Fatat dont le directeur politique était le Dr Habib Thameur. C'est la disgrâce de Rachid Driss et Hassine Triki lesquels devaient même par la suite être officiellement exclus du Parti néo destourien* (voir communiqué paru à ce sujet dans d'Ifriqiya El Fatat en date du 28 février 1943).

« *Ces deux chefs se mirent alors aux ordres des Autorités Allemandes, et dans le journal de la jeunesse qu'ils créèrent, 'Ech Chabab', ils menèrent de violentes campagnes contre la France colonisatrice, et dans les derniers numéros, un réquisitoire sensationnel contre le Bey et les Ministres accusés publiquement d'avoir trahi les devoirs de leurs charges. Il parut sous forme d'hebdomadaire du 26 février au 3 mai 1943…Comme il se devait, quelques jours plus tard, Taieb Slim et Habib Thameur préférèrent gagner l'Allemagne*

Au fait, le militant Habib Thameur depuis sa rencontre avec L'Emir Chakib Arslan à Paris et en Suisse et son engagement nationaliste arabe dans les années 1934-1937, et en dépit de son adhésion au Néo-Destour 1936 et sa présidence de la cellule estudiantine du Parti à Paris, était perméable à la propagande allemande en Tunisie de 1939 au mois de mai 1943, fait bien attesté dans les Mémoires de Bahi Ladgham[19].

---

plutôt que de rendre des comptes devant la Cour Martiale de leur attitude, leurs paroles et leurs écrits à caractère on ne peut plus anti-français… ».
- Le témoignage de Rachid Driss sur les tractations entre les autorités allemandes et Habib Thameur qui ont précédé le lancement de *« Ifriqiya Al Fatat »* suggère un élément d'information qu'on doit prendre avec prudence ('*Un seul témoignage pas de témoignage*' lit-on dans le droit romain :

" و هكذا لم تمض بضعة أيام على الاحتلال المحوري حتى تمت الاتصالات بين قيادة المحور و خصوصا القيادة الألمانية و كل من يرغب في تقديم خدماته أو قضاء حاجاته. و لم أكن أرغب في الاتصال بسلط الاحتلال مراعيا توصيات الزعيم [أي تعليمات الحبيب بورقيبة التي وردت في الرسالة الموجهة للحبيب ثامر أوت 1942 قبل حلول الألمان و التي أوصلتها ماتيلد، زوجة الزعيم إلى **تحذرهمن** 'المناضل جلولي فارس الذي أوصلها عن طريق حارس خفية إلى الحبيب ثامر و التي و كنت '**التعاون مع الألمان و تطلب منه التحالف مع المقاومة الديغولية و البريطانيين و الأمريكيين** أنتظر إشارة من قيادة الحزب لتحديد سلوكي و موقفي...دعاني الشيخ محمد صالح النيفر رئيس جمعية الشبان المسلمين و معي حسين التريكي لمقابلته و وجدت الهادي المجدوب من أعضاء الجمعية الناشطين في ذلك الوقت و فهمت أنه كان الواسطة بين الشيخ و بين بعض الضباط الألمان ممن نزلوا بتونس منذ بضع أسابيع و كنا في شهر ديسمبر و عرض علينا ربط الصلة بيننا و بين الضباط الألماني.

" خيرنا التريث و في الأثناء عثرنا و نحن نقوم بزيارة لضاحية المرسى على الدكتور ثامر و هو يتحدث حديثا طويلا مع ضابط ألماني راقبنا المشهد في استغراب و لم يتفطن لنا أحدهما إذا كنا نمر في عند ذلك تبادر. سيارة في منعطف يؤدي إلى شاطئ سيدي عبد العزيز حيث يوجد الآن مطعم القولف إلى ذهننا أن الطريق أصبحت واضحة و أنه لا موجب للإعراض عن الاتصال بالألمانيين مادام المسؤول الأول عن الحزب لم يحجم عن الاتصال بهم...و استقر الرأي على أن أفضل موقف نتخذه هو الاستفادة من الواقع خدمة للقضية الوطنية و سعيا لعودة زعمائنا المعتقلين أو المبعدين في فرنسا و :. "الحصول خاصة على عودة الزعيم الحبيب بورقيبة الذي يستطيع أن يواجه الوضع الجديد

79 إدريس(الرشيد):*في طريق الجمهورية. مذكرات.* بيروت، دار الغرب الاسلامي، 2001، ص.

[19]*Al-Bahi Ladgham, Le leadership tranquille, souvenirs, témoignages et pensées, Mémoires d'Al-Bahi Ladgham*Tunis, Nirvana, 2019 (en arabe) Al-Habib Thameur et son affiliation au Parti national arabe irakien, p. 513 – 514

Plus précisément, l'option pro allemande du Dr Habib Thameur (président du Néo-Destour de 1939 au 26 avril 1943) et sa foi inébranlable dans la victoire des forces de l'Axe se sont maintenues même après la lettre du leader Habib Bourguiba qui emprisonné au fort Saint Nicolas (8 aout 1942) pressait Habib Thameur et le Parti de soutenir les Alliés[20]. Contrairement au leader Habib Bourguiba

---

الباهي الأدغم الزعامة الهادئة ذكريات وشهادات وخواطر مذكرات الباهي الأدغم ، تونس، نيرفانا، 2019

الحبيب ثامر و انتمائه إلى الحزب القومي العربي العراقي، ص. 513 – 514:

" الحزب القومي العربي الثوري : كان الحبيب ثامر صاحب الفكرة وهي فكرة يبدو أنها نشأت في برلين بين طلبة

عرب منهم الطلبة العراقيون على وجه الخصوص، و في بداية الثلاثينات كان لهؤلاء اتصال بالجيش و بالقائد الثائر محمد رشيد عالي الكيلاني (أصبح رئيس وزراء العراق سنوات 1933 و 1940 – 1941) و قد اتصل هؤلاء الجماعة بكل الحركات العربية التي برزت في تلك الفترة و كان عملهم محاطا بالسرية التامة و التكتم...و كان الحبيب ثامر الرئيس المسؤول عن القطر التونسي باعتباره جزءا من العالم العربي و يلقب في إطار هذه الحركة بالرئيس...و كان المنخرط في صلب هذه الحركة ملزما بأداء اليمين التالي: ' أقسم أن الوطن العربي بكليته وطني و أن الأمة العربية بكليتها أمتي و أن حزبي هذا (ويعني الحزب القومي) يمثل إرادتها، و تصح مصالح الأشخاص و الجماعات إن وافقتها و تفسد إن خالفتها. و أقسم بالله و بشرفي أن أنفذ هذا المبدأ القومي العربي و أوقف نفسي و مالي على إنجاح حركته' ..وكانت هذه الحركة متصلة بالحركة الفلسطينية...".

[20]- *Histoire du mouvement national*, lettre d'Habib Bourguiba au Dr. Habib Thameur en date du 8 aout 1942 : « *Notre soutien aux Alliés doit être inconditionnel…* ».

- Histoire du mouvement national, Discours de Rome, 6 avril 1943 (traduction de l'arabe) « *Soyez vigilants* » : « *Le 6 avril 1943 Bourguiba prononça son allocution. Le Chef du Néo-Destour y fait preuve d'une prudence et d'une grande habileté. Après avoir exprimé ses remerciements aux Puissances de l'Axe pour avoir libéré et accueilli avec hospitalité les détenus de France, le chef néo destourien s'abstint de toute parole hostile à la France ou aux Alliés. Il axa son discours pour exhorter les Tunisiens à s'unir derrière le Parti et le Bey. Il rappela que les bouleversements intervenus n'avaient nullement modifié sa position à l'égard de la cause nationale. Il appela ensuite le peuple tunisien à avoir confiance et à ne compter que sur lui-même…* » In Kraiem (Mustapha) : *La classe ouvrière tunisienne…, Op.cit.*
Page 84.

« *pragmatique et animal politique jusqu'au bout des ongles* »[21], nuançant ses propos durant les pourparlers avec les autorités fascistes italiennes à Rome (janvier – février 1943) et sensible dès les premières victoires allemandes à la possibilité de profiter de la défaite de la France pour obtenir la libération du pays, Dr Habib Thameur fidèle à son option germanophile devint après l'évacuation de Tunis en mai 1943 « *chef du service de propagande du Mufti Amine Al Husseini* » allié de Hitler[22].

En tout cas, les dirigeants néo destouriens - détenus par L'Italie : les membres du bureau politique (Habib Bourguiba, Salah Ben Youssef, Slimane Ben Slimane, Mongi Slim, Ali Belhouane, Hedi Nouira) et ceux du Conseil National restés à Trets au sud de la France occupée par l'Allemagne – une fois libérés ont tenu à présenter leurs remerciements aux autorités Allemandes à Tunis (1er mars 1943)[23].

---

[21]-Interview de Charles André Julien par Jean Lacouture In *Jeune Afrique.*

- « *La position de Bourguiba était délicate : il dut user de moyens détournés pour décourager les ambitions fascistes. Il posa comme préalable une condition qu'il savait inacceptable par l'Italie, la reconnaissance par l'Axe de l'indépendance de la Tunisie et, cherchant un échappatoire à toute pression, il ajoutait que les négociations ne pouvaient s'engager qu'avec S.A. le Bey conseillé par un Gouvernement tunisien qui serait constitué après l'Indépendance…* » InKraiem (Mustapha) : *La classe ouvrière tunisienne…, Op.cit.*

[22]Ageron (Charles Robert) : *Les populations du Maghreb…, Op.cit.,* pp. 24-25, note 15.

[23]*" فريقيا الفتاة* ، غرة مارس 1943, سلسلة جديدة، عدد 43. *اقتبال المستشار الألماني المسيومولهوزن للزعماء :"*

" في صبيحة اليوم على الساعة الحادية عشر و النصف اقتبل جناب المستشار الألماني السيد مولهوزن النائب عن جناب م. راهن الوزير المفوض المتغيب الآن الزعماءالأستاذ صالح بن يوسف و الأستاذ علي البلهوان و الأستاذ المنجي سليم بصحبة الحكيم ثامر. فقدم له الأستاذ صالح بن يوسف نيابة عن رفاقه تشكراته الخالصة لما بذلت الحكومة الألمانية و رجالها المسؤولون بتونس من المساعي في إرجاع الزعماء إلى الوطن و إطلاق سبيل من كان بالسجن من الأحرار الدستوريين و أعرب له عن امتنان الشعب و تقديره لما قامت به السلط الألمانية في هذا الشأن، فأجاب المستشار ببشاشته الغريزية و لطفه المعهود بعبارات ملؤها الصدق و الإخلاص ووعد بالتدخل في إرجاع بقية الأحرار المبعدين بمدينة ترانس بالتراب الفرنسي ، ثم تكلم عن رجوع المجاهد الأكبر الحبيب بورقيبة قائلا أنه سيكون هنا بعد أيام قلائل,

Parallèlement, la propagande allemande radiophonique en langue arabe et par voie de presse (*Ifriqiya Al Fatat*) s'intensifie avec celle des tracts : « *Entre le 4 janvier et le 13 février 1943, 22 tracts différents furent distribués dans les régions avoisinant Tunis et Tanger, soit un total de 350000 exemplaires en un mois et demi, si l'on en croit un rapport du ministre plénipotentiaire du Reich à Tunis, Rudolph Rahn* »[24].Les thèmes de ces diverses formes de propagande ne variaient guère : puissance invincible de l'Allemagne, dénonciation des Juifs et de leurs liens avec les Anglo-Saxons et les Bolcheviks, affinités prétendues de l'Islam et du national-socialisme, lutte nécessaire contre l'impérialisme capitaliste anglo-américain, désaccord chez les Alliés, dénonciation de la *« clique de Giraud »*, puis celle de de Gaulle[25].

Leur impact sur la population civile et les milieux nationalistes tunisiens est différemment perçu avant, durant et après la campagne de Tunisie. De 1939 à 1942, nos sources écrites et orales interrogées font état d'une germanophilie certaine et l'option antisémite raciale de la propagande allemande demeure circonscrite et elle est le fait de la conjoncture économique de crise et de disette qui a touché certaines localités et villes de la régence[26]. C'est durant les péripéties des six

---

[24]Cité In Ageron (Charles Robert) : ***Les populations du Maghreb…, Op.cit.,*** page 30.

[25]***Idem,*** page 31.

[26]« *La xénophobie antijuive des années 1940-1941 en Tunisie est le produit de l'enchevêtrement de facteurs locaux (misère et dénuement des populations aggravés par la sécheresse), métropolitaine (l'antisémitisme de l'extrême droite française) et islamo-méditerranéens (question palestinienne, panarabisme et panislamisme, la guerre des ondes entre les Forces de l'Axe et les Alliés)…Le dépouillement de la presse révèle un nombre important de spéculateurs juifs traduits devant les tribunaux. Le recensement des juifs et de leurs biens est décrété le 26 juin 1941. Pour détourner les lois de spoliation et sauvegarder une partie de leur avoir les juifs possédants commencent à transférer leurs biens en les vendant fictivement ou non selon les cas à des musulmans ou à des chrétiens. Appelé antijuif, le mouvement des années 1940-1941 culmine avec l'affrontement sanglant de Gabès.*

mois de l'occupation et des batailles entre les belligérants que l'impact de la propagande allemande connaitra à la fois ses moments forts et ses limites. La parution du journal néo-destourien « *Ifriqiya Al Fatat* » (janvier – 3 mai 1943) consolide l'image positive de la présence allemande dans la régence et dont l'impact sur la population civile se fait sentir par le lâchage des tracts en langue arabe parlée d'un côté et le recrutement de deux futurs speakers tunisiens Mohammed Torki et Chedly Senoussi, enseignant à l'Université de la Zitounapour Radios Tunis et Berlin (avril 1943)[27] : « *Pour alimenter la propagande de Radio Berlin concernant le comportement des soldats allemands vis-à-vis des Tunisiens, les autorités allemandes disposaient à Tunis et précisément au Belvédère, d'un studio d'enregistrement où* **Torki**

Selon certaines sources, il semble que cet affrontement qui s'est produit dans la soirée du 19 mai 1941 (7 israélites tués et 18 blessés dont un adjudant de gendarmerie gravement atteint) a été « prémédité » et ayant eu pour mobile la vengeance » . Le travail d'A. Allagui corrobore cette thèse : il fait état d'un rassemblement de 200 à 300 personnes notamment des pêcheurs, des artisans et de chômeurs armés de fusils, de bâtons et de pierres devant la synagogue du quartier de Jara… » :

- Chaibi (Mohamed Lotfi) : Eléments pour l'étude de quelques comportements interethniques en Tunisie durant l'occupation germano – italienne (7 novembre 1942 – 13 mai 1943) In *Mélanges Charles Robert Ageron*, Tome 1er, Zaghouan, FTERSI, 1996,   pp. 133- 172.

[27]Cf. Dhouib (Mohamed Noureddine) : ***Un tunisien au cœur du Reich***. Tunis, 2017, pp.30- 31 : « *A la fin de l'année 1942, grâce à la complicité du gouvernement de Vichy, Tunis est occupée par les Allemands. Les occupants mettent un redoutable dispositif de propagande pour charmer la population tunisienne. Mohamed Torki, un jeune homme tunisien, fut parmi les premières victimes à tomber dans la nasse de la propagande nazie. Voilà un homme sans aucune formation politique voulant dénouer un différend entre un officier allemand et un groupe d'étudiants se trouva happé par la formidable machine de guerre que fut la propagande nazie. Il est vrai qu'après quelques hésitations, la situation finit par lui plaire. Il s'attela avec acharnement à sa besogne mais sans aucune apologie pour la doctrine nazie dont il ne connaissait rien. Il crut cependant à la chimère de la libération de son pays par les Allemands… »*

amenaient des Tunisiens faire des déclarations du genre : ' Les enfants Tunisiens montaient et jouaient au-dessus des chars allemands' ou 'les soldats allemands offraient des bonbons aux enfants tunisiens' etc. et chacun recevait une prime de 500 francs, somme importante à cette époque au regard du prix du Kilo de pain à 5,2 francs. Il est à noter que les Allemands avaient introduit dans le pays, une masse importante de billets de la Banque de France et ne lésinaient pas sur les dépenses en créant la pénurie des denrées essentielles et en faisant galoper l'inflation.

Par ailleurs, Chedly Senoussi « *fut amené à enregistrer ses allocutions dans ce studio et celle relative au bombardement de la Marsa survenu le 10 mars 1943, fut des plus virulentes. Il s'était même permis d'insulter Roosevelt et Churchill. Il outrepassa ainsi l'autorité de son souverain Moncef Bey qui refusait tout commentaire sur le sujet. .. »*[28].

Dans cette perspective,doit-on relativiser la véracité du témoignage du général Juin,- commandant en chef des forces françaises terrestres rejoignant Tunis après sa *« libération »* le 7 mai 1943 en tant que résident général intérimaire– qui notait en termes nets : « *en territoire occupé derrière le front germano italien, si la bourgeoisie tunisienne s'était tenue coite, et sans se compromettre le mieux du monde, attendant la fin de ce terrible conflit, on avait à déplorer que*, *dans le peuple des villes et campagnes , des isolés, par esprit de lucre, se fussent mis aux ordres des occupants et que d'autres, pour de semblables raisons, eussent cherché à profiter de l'absence ou du relâchement de l'autorité dans le bled pour piller de malheureux colons français »*[29]. Force est de retenir cette appréciation soulignée par Rudolf Rahn : « *Certes il y a à côté des amis (arabes), des voleurs et des filous. Mais la majorité de la population était amicale et avait bon cœur, voyant les Allemands avec sympathie…Pendant les six mois de notre présence, la cour de*

---

[28]*Idem.*

[29]- Juin (le Maréchal) : Les Allemands abandonnent la Tunisie In *Historia*, n° 258, mai 1968, page 102.

Hammam Lif ainsi que toute la population tunisienne demeurèrent amicales et obligeantes à notre égard dans leur ensemble et ne nous causèrent que très peu de soucis »[30]. Il s'agit bien de germanophilie et *« l'antisémitisme demeure plutôt le fait des « colons français et le plus souvent néo-français » que celui d'un prétendu sentiment naturel des masses arabes »*[31].

Certaines études avancent que les mesures antisémites prises par Vichy, la propagande menée ouvertement par la *Dépêche Tunisienne* et les journaux de collaboration, les films de propagande diffusés dans le pays excitent les ressentiments d'un peuple en proie à la famine, au marché noir, aux trafics de toute sorte qui sont imputés au bouc émissaire : les juifs. Cette présentation des faits nous semble incomplète. Elle n'évoque pas la manipulation des déshérités dans les campagnes antijuives au sein des populations musulmanes, les progrès de la propagande sioniste et le comportement de certains spéculateurs juifs tunisiens. En effet, pour les nationalistes modérés tels que Dr Mahmoud Materi, l'action antijuive se réduit aux *« incidents occasionnés par les basses classes »*, tout en rappelant *« qu'avant le protectorat français, la Tunisie était un pays où les juifs étaient traités avec le plus d'égard, aussi bien par les souverains que par la population, « ils reprochent « aux juifs évolués » c'est-à-dire francisés deux comportements : le fait « d'oublier leur nationalité et de faire fréquemment cause commune avec ceux qui cherchent à accabler leurs compatriotes musulmans » et celui « de faire montre d'un sionisme tapageur et puéril »*[32] Tout laisse penser que l'impact de la propagande allemande sur la population civile et les milieux nationalistes tunisiens a bénéficié de la prédisposition germanophile acquise depuis la Grande Guerre et renforcée durant

---

[30] Rahn (R.) : *Un diplomate dans…, Op.cit.,* pp. 266-267.

[31] - Cf. le témoignage d'Emile Touati In *Evidences*, septembre-octobre 1954, p. 11. Voir aussi l'antisémitisme en Tunisie à la fin du XIXe siècle In Soumille (P.) : *Européens de Tunisie et questions religieuses. Etude d'une opinion publique (1892-1901).* Paris, C.N.R.S., 1975, pp. 188-216.

[32]*La Voix du Tunisien*, 15 mai 1931. *Les Juifs et nous*, Dr. Mahmoud El Materi.

l'entre deux guerres par l'action pan arabe de l'Emir Chakib Arslan à Genève à travers la revue *La Nation Arabe* (1930 -1938) et s'est poursuivie durant la campagne de Tunisie.
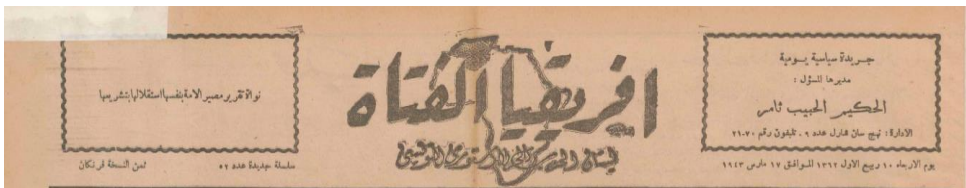
Sources et bibliographie :

- Rahn (Rudolph) :*Un diplomate dans la tourmente.*Traduit de l'allemand par Georges Levy. Paris, Editions France Empire, pp. 248, 254, 256- 257, 261, 265-266.

- Juin (le Maréchal) : Les Allemands abandonnent la Tunisie In *Historia,* n° 258, mai 1968, pp. 99 – 105.

-*" إفريقيا الفتاة"* ، 11 جانفي 1943. عدد 1، سلسلة جديدة، (لنا وطن و لنا ملك / حديث اليوم...)

-*" إفريقيا الفتاة"* ، 12 جانفي 1943. عدد 2، سلسلة جديدة، (حديث اليوم...)

-*" إفريقيا الفتاة"* ، 19 جانفي 1943، عدد 8، سلسلة جديدة،

-*" إفريقيا الفتاة"* ، 3-4 جانفي 1943، عدد 2 (يوميات)

-*" إفريقيا الفتاة"* ، غرة مارس 1943، عدد 43 (حديث اليوم)

-*" إفريقيا الفتاة"* ،20 جانفي 1943، عدد 9، (حديث اليوم: النفوذ و المسؤولية)...

-*" إفريقيا الفتاة"* ، 21 جانفي 1943، عدد 10 (التونسي و الساعة الحاضرة)...

-*" إفريقيا الفتاة"* ، 17 مارس 1943، عدد 52 (حول المحاكم الشرعية...).

- موسى (ليلى): *عمل الحزب الحر الدستوري الجديد في خضم الدعاية الألمانية: إفريقيا الفتاة مثالا (1 جانفي – 6 ماي 1943).* رسالة ماجستير في التاريخ المعاصر. كلية العلوم الإنسانية و الاجتماعية بتونس، السنة الجامعية 2008 – 2009.

-*الباهي الأدغم الزعامة الهادئة ذكريات وشهادات وخواطر مذكرات الباهي الأدغم* ، تونس، نيرفانا، 2019

- Casemajor (Roger) : *L'action nationaliste en Tunisie. Du pacte fondamental*

de M'Hamed Bey à la mort de Moncef Bey 1857- 1948. Sud Editions, Tunis, 2009, pp. 160-163 (La propagande ; Les inévitables querelles de personnes ; le retour des exilés (26 février 1943).

- Dhouib (Mohamed Noureddine) : *Un tunisien au cœur du Reich.*Tunis, 2017.

- Ageron (Charles Robert) : Les populations du Maghreb face à la propagande allemande In *Revue d'histoire de la Deuxième Guerre mondiale,*n° 114, avril 1979, pp. 36 à 39.

- Chaibi (Mohamed Lotfi) : Propagande fasciste italienne et nationalistes tunisiens (1934 – 1939). Histoire d'une méprise In *Les relations tuniso italiennes dans le contexte du protectorat*. Tunis, ISHMN, 1999, pp. 213-231.
- Chaibi (Mohamed Lotfi) : Eléments pour l'étude de quelques comportements interethniques en Tunisie durant l'occupation germano – italienne (7 novembre 1942 – 13 mai 1943) In*Mélanges Charles Robert Ageron*, Tome 1er, Zaghouan, FTERSI, 1996, pp. 133- 172.
- Jürgen (Muller) : Stratégie et logistique allemandes en Afrique du Nord In *Revue Historique des armées*, n°1, 1983, pp.21 à 29.
- Burgelin (Henri) : Les succès de la propagande nazie In *L'histoire*, n°104, octobre 1987, pp.18 – 29.
- Herf (Jeffrey) : *Hitler, la propagande et le monde arabe.*Paris, Calmann-Lévy, 2012.
- Herf (Jeffrey): *Nazi propaganda for the Arab world.*Yale University, 2010.
- Hamli (Mohsen): *Anti-Semitism in Tunisia1881 – 1961.*Tunis, 2010.
- El Mechat (Samia) : La Tunisie pendant la Deuxième Guerre mondiale (1939- 1944) In *Revue d'Histoire Maghrébine,* nos 33-34, Juin 1984, pp. 64 -84.
- Cherif (Fayçal) : *La Tunisie dans la tourmente de la seconde guerre mondiale 1938-1943.* Tunis, CPU, 2014.
- Cherif (Fayçal) : *La Tunisie dans la seconde guerre mondiale : impacts et attitudes (avril 1938-mai 1943).*
- Cherif (Fayçal) : La propagande arabe anglaise vers le Maghreb pendant la Seconde Guerre mondiale (1939-1943) In *Revue Lisa E. journal*, vol. IV, n°3, 2006.
- Cherif (Fayçal) : Fondements du discours propagandiste arabe de la Grande Bretagne au Maghreb pendant la Seconde Guerre mondiale (1939-1943) In *Revue Lisa E. journal*, vol. VI, n°1, 2008.

الملاحق:

إفريقياالفتاة، 17 مارس 1943.

The Effect of Liberalization Policy on manufacturing Sector in Nigeria for the Period (1986-2018)

- **Dr. Ali Elhassan Mohammed Nour Zaroog**,

associate professor of economies, faculty of economic and administrative sciences, university of Bakhat Alruda, (Sudan)

- **Mr. Ibrahim Hussaini Ibrahim**,

Researcher of doctoral, (Nigeria)

Abstract:

The study aims to examine the impact of trade liberalization on manufacturing output in Nigeria. The objectives of the study are: to examine the impact of exchange rate, gross fixed capital and economic growth on manufacturing output. The study depends on following hypotheses: Exchange rate, Fixed Capital Formation and Economic growth dynamics has a significant impact on manufacturing output in Nigeria. The study used a Vector Auto Regression (VAR) model for the time series data during the period (1986-2018). The result also shows that, exchange rate, has significant and negative impact on manufacturing output; even though it was positive in the long run. Furthermore, Gross Fixed Capital Formation and Economic have significant impact on manufacturing output in Nigeria. The study recommended that, the focus of government industrial policy should be to encourage trade openness. The exchange rate should be strengthened and made more stable the growth induced policies should be emanated, as that will go a long way to improve and increase the output of the manufacturing sector in Nigeria.

Key words: Liberalization, Manufacturing, Capital, Exchange rate, Trade, Growth Rate.

1. Introduction:

Trade encourages nations to import products that are not readily accessible in their individual nation. Trade liberalization includes expelling hindrances to trade between various nations and empowering organized commerce. These obstructions to trade which trade liberalization expects to evacuate include: reducing tariff, reducing/eliminating quotas, reducing non-tariff barriers and so forth. Nigeria has historically tried to execute two particular trade systems (Kareem, 2010). The Nigerian government has made strong strides in promoting the manufacturing segment through a few strategies and incentives throughout the years. For instance, the Manufactures-in-Bond Scheme (MBS) intended to import duty free crude material inputs and other intermediate items for export. Another scheme is the Export Expansion Grant Scheme (EEG) which is an imperative incentive required for the incitement of export oriented exercises that will prompt critical development of the non-oil export segment of the economy. Trade liberalization got articulated through the appropriation of the IMF Structural Adjustment Program (SAP) in 1986 which its essential point was to rebuild and enhance the productive base of the Nigerian economy. For instance, the Manufactures-in-Bond Scheme (MBS) intended to import duty free crude material inputs and other intermediate items for trade. Additionally, the Export Expansion Grant Scheme (EEG) focused on the incitement of export oriented exercises equipped for leading to huge development of the non-oil trade division. Notwithstanding the introduction of these liberalization arrangements, the manufacturing division has not contributed altogether to GDP, particularly when contrasted and their exhibition in the late 80s which is under 10% of total GDP (CBN, 2016).

2. Problem Statement:

The Nigerian economy has been affected worsely since the application of Trade Liberalization policy. Trade Openness, Exchange Rate, Gross

Domestic Product, and Gross Fixed Capital Formation, has been fluctuating. Its dynamics have been a major worry to manufacturing output in the country.

Important of the study:

The significant point of this research is to examine the effect of trade liberalization on the manufacturing sector in Nigeria.

3. Objectives of the study:

The specific objectives of the study are:

1. Determine the impact of exchange rate dynamics on manufacturing output in Nigeria.
2. Investigate the impact of gross fixed capital on manufacturing output in Nigeria.
3. Examine the impact of economic growth dynamics on manufacturing output in Nigeria.

4. The Hypotheses:

1) Exchange rate dynamics has a significant impact on manufacturing output in Nigeria.

2) Fixed Capital Formation dynamics has a significant impact on manufacturing output in Nigeria.

3) Economic growth dynamics has a significant impact on manufacturing output in Nigeria.

5. The Methodology:

Study seeks to examine dynamics of trade liberalization on manufacturing output in Nigeria for the period (1986-2018). The analysis made use Vector Auto Regression (VAR) model in analyzing data gotten from CBN statistical bulletin and World Bank Development Index (2018). The variables used in the analysis are Manufacturing

Output (MANOT), used as the Dependent Variable while Trade Openness (TO), Gross Domestic Product (GDP), Gross Fixed Capital Formation (GCFC), and Exchange Rate (EXR) form the Independent Variable.

Limitation of the study: Nigeria for the Period (1986-2018)

3.5 Source of Data:

The study employed secondary data. Ultimately the following sources of data will be utilized; the Central Bank of Nigeria Statistical Bulletin (2019) and World Bank Development Indicator (WDI) as updated in 2019.

6. Literature Reviews:

International trade has existed through much of history and the motivation is hinged to the fact that the distribution of natural, human, and capital resources varies across economies. Different technologies or allocations of resources are required for the efficient production of various kinds of traded goods services. Moreover, preferences for traded goods and services also differ between countries. As a result, international trade has provided the means through which countries have expanded their range of available goods and services and made up for those goods and services in which they are not better off producing. This has resulted in an increasing web of linkages in markets providing new possibilities for upgrading economic activities. It has allowed for worldwide sourcing strategies, which offers new scope for firms to participate in the global market, and also supplying many goods and services on a competitive basis. This interaction of countries in the world economy has been suggested to be an important avenue for countries to promote economic growth and development (Rondinelli, 2003).

Foremost in the drive for and shaping of the world trading system is the spread of industrialization from Europe, to the Americas, Asia and

Africa; and the enormous technological advances in transportation and communications which have steadily led to reduction in the cost of moving goods, technology, capital, and people around the world (Cairn cross, 1997). Developments such as the invention of steamships, construction of railroads and innovation of telegraphs, automobiles, airplanes and the internet have all contributed immensely to making the world a "global village". These have expanded the horizon of international trade. While the early development of international trade specifically, from the 16th up to the 20th centuries were barely influenced by trade liberalization, by the second half of the 20th century trade liberalization took the center stage in international trade (WTO, 2013).

After the Second World War, political and economic cooperation that sought reductions of trade barriers across countries led to the creation of the General Agreement on Tariffs and Trade (GATT) in 1947. GATT was to be the formal institution to preside over trade among countries and lend a hand to iron out the potential difficulties that might arise. The establishment of GATT gave increased impetus to the considerable liberalization of world trade and aided the continuous growth of international trade (WTO, 2013).

GATT was a set of multilateral trade agreements directed at reducing trade barriers by lessening tariff duties and eliminating quotas among contracting countries. It sought to ensure that trade among member nations were conducted without discrimination. Member nations were to open their markets equally to every other member. Under GATT, an agreement between any two member countries of GATT to reduce a tariff would automatically be extended to every other member. This was referred to in the Most Favored Nation (MFN) clauses (GATT, 1994). Furthermore, GATT contained a long list of precise tariff concessions for each contracting nation, representing tariff rates that each country had agreed to extend to others. It also preferred the use of tariffs to import quotas or other quantitative trade restrictions for

protection; it consistently pursued the elimination of the latter. GATT included other general rules such as the uniformity in customs regulations and the requirement of each member nation to negotiate reductions in tariffs on request by another. Even so, whenever trade concessions lead to excessive losses to domestic producers, GATT made provision for an escape clause allowing contracting nations to alter agreements through tariff adjustment (GATT, 1994; WTO, 2013).

7. Nigerian Economy and Trade Liberalization:

Since the introduction of trade liberalization, the performance of the manufacturing sector with regards to its contribution to the Gross Domestic product (GDP) has been fluctuating (CBN, 2003). This has been the major concern of different economic policy makers within and outside the country. In view of these, and in order to achieve an accelerated pace of industrialization capable of producing and sustaining the nation's manufacturing needs, several industrial policies has been implemented, few of which includes: The industrial policy of 1988. In 2000, the Nigerian Industrial Development Bank (NBCI), Nigerian Bank for Commerce and Industry (NBCI) and the National Economic Reconstruction Fund (NERFUND) was merged to form the new Bank of Industry (BOI), to facilitate adequate supply of funds to the manufacturing sector (Olorunshola, 2002). The performance of the manufacturing sector in Nigeria cannot be over-emphasized, some of the roles performed by the manufacturing sector include: the provision of employment opportunities, reduction in importation and savings in foreign exchange, the diversification of the economy, an enlarged market for agricultural products, increase export earning, increase government revenue, a higher standard of living, and training of indigenous manpower.

Trade liberalization deals with the increasing breakdown of barriers and the increasing integration of the World market (Fafowora, 2000). In the works of Derossa, (2000), trade liberalization was referred to as the increasing international integration of international market for goods,

tradable service and financial assets. In the real sense, it is also referred to the increasing integration of markets for major inputs to production, not only mobile physical capital but also labor in its various forms: basic labor, skilled labor and other professional services. Trade liberalization offers countries access to the global market which affords people greater opportunity to tap more and larger market around the World, giving them access to more capital flow, technology, cheaper import and larger export markets. It equally exposes countries to new ideas, products, and economies of scale in production and makes them gain efficiency in utilization of production resources (Adenikinju and Chute, 2003). However, a more integrated World economy is prone to some adverse consequences equally as it relates to financial management, environmental degradation and pace of development. Also, trade liberalization opens an economy to some financial crisis (UNEP, 2001). (Amos, 2000) viewed adverse effect of trade liberalization on the rate of inflation, when he said that lowering tariffs and relaxation of quantitative restriction can lead to expansionary fiscal and monetary policies knowing the goals of expansionary fiscal reform is to reduce budget deficit, the concomitant effect which is the rapid growth of money supply which will inevitably boost price inflation in an economy. Jerome and (Adenikinju, 1995), opined that Nigeria's non-oil export go mainly to West European Economic Community Countries, and more so, new markets are merging in Asia and other parts of the World especially in Sub-Sahara Africa. Also, in their comparative analysis of the performance of manufactured export between Nigeria and selected countries in Asia and Africa, they analyzed that manufactured export in Korea and Hong Kong accounted for 94% and 96% respectively, while that of Nigeria was 1% of the total GDP as at 1990. According to World Bank (2000), the Egyptian government responded to trade liberalization with impressive economic reform program that include, fiscal tightening that reduced the marginal tax rate and government budget deficit. Monetary reform adopted in

Egypt also included re-controlling of interest rate, devaluation and unification of exchange rate, reducing growth of money supply and liberalizing capital account. Privatization was also introduced and thus foreign investors reacted quickly to this opportunity. In 1995, the total foreign Direct Investment (FDI) was $400 million USD followed by $800 million USD in 1996 and around $1.2 billion USD in 1997. In the case of Nigeria, the net foreign Direct Investment was $588 million USD in 1990 and $897 million USD in 1992, then to $1.96 billion USD in 1995 and $1.53 billion USD in 1997, (Global Development Finance, 1999).

Krueger (1978) maintained that the term trade liberalization is the process of moving away from the use of quota restrictions to a possible disequilibrium exchange rate. It involves more significant reliance on market forces for channeling investment into productive activities implying that it is the process of removing all forms of government interference to allow for the free flow of International trade stimulated by the forces of interaction between demand and supply.

8. Trade Policies in Nigeria

Prior to 1980 only a few countries embraced free trade policies, amongst which were Japan, Hong Kong, Singapore, South Korea, and Taiwan (Hammouda, 2004). By 1990 a greater number of countries including; Chile, Ghana, Uganda, Kenya and Nigeria had begun liberalizing trade (Mwaba, 2000). The lessening or removal of barriers to the free exchange of goods among nations that ensues from the liberalization of trade widened possible opportunities available to countries for the upgrading of their economic activities, including the development of manufacturing.

Since 1960 Nigeria's trade policy, as observed by Adenikinju (2005), has gone through periods of high protectionism to its current more liberal stance. From 1960 up to the mid-1980s measures such as high import duties and quantitative restrictions were used to support trade

policy which was intended to protect local manufacturing industries. This direction of policy was informed by the Import Substitution Industrialization (ISI) and indigenization policy of government towards developing the industrial sector. The design of trade policy in this era was to support domestic production by the discrimination in favor of capital goods against consumer goods.

Between 1985 and 2000, Nigeria's trade policy shifted significantly towards greater liberalization of trade and the pricing system. This was intended at diversifying the export base of the country as well as adding value to the export of agricultural produce (Adenikinju, 2005). The adoption of the International Monetary Fund/World Bank's Structural Adjustment Programmer (SAP) in 1986 remarkably influenced the freer posture of international trade in this era.

The introduction of SAP in Nigeria was in response to the economic problems brought about by the collapse of oil prices in the international market in the early 1980s, and the subsequent lowering of the country's Organization of Petroleum Exporting Countries (OPEC) output quota. Plummeting crude oil export revenues led to a sharp decline of Nigeria's public finances and balance of payments. As a result, the economy went into recession with a GDP growth of - 5.37 per cent in 1983, and - 5.18 per cent in 1984 (National Centre for Economic Management and Administration, 2004).

The implementation of SAP led to the removal or abolition of the import and export licensing system, bureaucratic controls on trade, as well as foreign exchange control on all current transactions. In addition, to enhance access to foreign raw materials and intermediate goods for use by exporting firms in the manufacturing sector the duty drawback/suspension scheme was introduced (Omoke, 2007). Also put in place was the Second-tier Foreign Exchange Market (SFEM) allowing market forces determine the exchange rate of the naira? This price determination mechanism ended the use of administrative discretion in the allocation of foreign exchange to end-users

(Analogbei, 2000). SAP in Nigeria which was initially intended for the period 1986 - 1988, spanned up to the 2000s, and it has continued to influence policy in recent time.

From 2001 to 2012, international trade was progressively liberalized with emphasis placed on private enterprise-led development and diversification of the export base, in a bid to enhance non-oil foreign exchange earnings. Accordingly, the major thrust of Nigeria's trade policy was the support of production and distribution of goods and services for both the domestic and international markets with the intention of achieving enhanced economic growth and development.

9. An Overview of Manufacturing Policies in Nigeria

Nyor and Chinge (2014) articulated that the major objectives of adopting import-substitution industrialization (ISI) policy was mainly because of the nature of the agrarian economy that targeted at reducing the excessive burden on exchange rate and enabling Nigerian to have the prototype of foreign made goods locally.

Ukaegbu (1991) asserted that the established industries based on ISI policy was characterized by inability to revolutionized production, lack of backward linkage in the economy, prevalence of highly-packaged technology, minor operation performance, lack of auxiliary industries, and little or non-existence of research and development activities amongst others. Disgustingly, most of the input of production and quality manpower were imported and plants and machinery were not used to its full capacity coupled with delay in repairs due to waiting for spare-parts to be imported (Chute et al (2015). Besides, the policy was adversely affected by the crisis of civil war in 1966. The civil war disrupted activities and so in 1970, the drive for industrial revival was contained in the Second National Development Plan of 1970-75 which includes: diversification of the economy, balanced development, indigenization of economic activity amongst others (Osuka, 2016). The National Development Plan was aimed at amending the Import

Substitution Strategy and improving domestic production of intermediate goods and capital goods required by emerging industries. It was at this period the industrial structure was linked to agriculture which has been the main stay of Nigeria economy before the discovery of oil. The acquired wealth from oil was very helpful to the country in the acquisition of expensive industrial projects such as iron and steel, cement, salt, sugar, fertilizer, pulp, paper among others. The intention of the government was to empower the people but was seriously constrained due to lack of indigenous technology (Chute, et al, 2015).

In the countries quest for developing its industrial base, she inculcated relevant policies in the second National Development Plan of 1970-1975 which focused on public sector-led industrialization among other intentions. This gave rise to direct government investment considering the fact that majority of the populace lack the required resources to embark on enterprises. The country's economy skewed more to public sector dominance in economic activities. However, the country was still recovering from the shocks and devastation of civil war. Besides, insufficient manpower retarded the possibility or aspiration to organize productive ventures. The major and minor economic activities were in the hands of foreign expatriates. In the quest to enable more Nigerians to be part and parcel of economic activities led to the promulgation of the 1972 Indigenization Act. This policy was later amended and replaced with the Nigerian Enterprises Promotion Act of 1977 which brought about Nigerian citizens wholly or partly ownership and control of foreign businesses; give opportunities for Nigerian domestic entrepreneurs amongst others. However, it can be stated that this policy was not completely favorable to Nigerians with regard to manufacturing sub-sector development because the required skills that was supposed to be acquired from the foreign controllers of large scale investment projects were missed. In order words, the technology of

foreign operators in Nigeria has not been fully imparted to Nigeria before the emergence of indigenization policy.

10. Model Specification, Analysis, and the Results:

10.1. Model Specification

In order to examine the relationship dynamics of trade liberalization on manufacturing output in Nigeria, the study depends on a linear model: MANOT = F (X$_i$)……… (3.1), Where; MANOT = Manufacturing Output, X$_i$ = set of chosen explanatory variables. The chosen variables are reflected in the model as: MANOT = F (TOP, EXR, GFCF, and GDP)…… (3.2), Where: TOP = Trade openness. EXR = Exchange Rate. GFCF = Gross Fixed capital Formation. GDP = Gross Domestic Product.

10.2. VAR Form:

$$MANOT_t = \alpha_0 + \alpha_1 \sum_{J=1}^{K} MANOT_{t-1} + \alpha_2 \sum_{J=1}^{K} TOP_{t-1} + \alpha_3 \sum_{J=1}^{K} EXR_{t-1} + \alpha_4 \sum_{J=1}^{K} GFCF_{t-1} + \alpha_5 \sum_{J=1}^{K} GDP_{t-1} + \varepsilon_{1t} \,(3.3)$$

$$TOP_t = \alpha_0 + \alpha_1 \sum_{J=1}^{K} TOP_{t-1} + \alpha_2 \sum_{J=1}^{K} MANOT_{t-1} + \alpha_3 \sum_{J=1}^{K} EXR_{t-1} + \alpha_4 \sum_{J=1}^{K} GFCF_{t-1} + \alpha_5 \sum_{J=1}^{K} GDP_{t-1} + \varepsilon_{2t} \,(3.4)$$

$$EXR_t = \alpha_0 + \alpha_1 \sum_{J=1}^{K} EXR_{t-1} + \alpha_2 \sum_{J=1}^{K} MANOT_{t-1} + \alpha_3 \sum_{J=1}^{K} TOP_{t-1} + \alpha_4 \sum_{J=1}^{K} GFCF_{t-1} + \alpha_5 \sum_{J=1}^{K} GDP_{t-1} + \varepsilon_{3t} \,(3.5)$$

$$GFCF_t = \alpha_0 + \alpha_1 \sum_{J=1}^{K} GFCF_{t-1} + \alpha_2 \sum_{J=1}^{K} MANOT_{t-1} + \alpha_3 \sum_{J=1}^{K} TOP_{t-1} + \alpha_4 \sum_{J=1}^{K} EXR_{t-1} + \alpha_5 \sum_{J=1}^{K} GDP_{t-1} + \varepsilon_{4t} \,(3.6)$$

$$GDP_t = \alpha_0 + \alpha_1 \sum_{J=1}^{K} GDP_{t-1} + \alpha_2 \sum_{J=1}^{K} MANOT_{t-1} + \alpha_3 \sum_{J=1}^{K} TOP_{t-1} + \alpha_4 \sum_{J=1}^{K} EXR_{t-1} + \alpha_5 \sum_{J=1}^{K} GFCF_{t-1} + \varepsilon_{5t} \,(3.7)$$

Where: j is the lag length; K is the maximum distributed lag length α_0 is the constant terms ε_t is independent and identically distributed error term. In matrix form, the above can be compactly specified as in equation (3.8):

$$\begin{bmatrix} MANOT_t \\ TOP_t \\ EXR_t \\ GFCF_t \\ GDP_t \end{bmatrix} = a_0 + \sum_{J-1}^{K} \begin{bmatrix} MANOT_{t-1} & TOP_{t-1} & EXR_{t-1} & GFCF_{t-1} & GDP_{t-1} \\ TOP_{t-1} & MANOT_{t-1} & EXR_{t-1} & GFCF_{t-1} & GDP_{t-1} \\ EXR_{t-1} & MANOT_{t-1} & TOP_{t-1} & GFCF_{t-1} & GDP_{t-1} \\ GFCF_{t-1} & MANOT_{t-1} & TOP_{t-1} & EXR_{t-1} & GDP_{t-1} \\ GDP_{t-1} & MANOT_{t-1} & TOP_{t-1} & GFCF_{t-1} & EXR_{t-1} \end{bmatrix} \begin{bmatrix} \alpha_1 \\ \alpha_2 \\ \alpha_3 \\ \alpha_4 \\ \alpha_5 \end{bmatrix} + \begin{bmatrix} \varepsilon_{1t} \\ \varepsilon_{2t} \\ \varepsilon_{3t} \\ \varepsilon_{4t} \\ \varepsilon_{5t} \end{bmatrix} \dots \quad (3.8)$$

10.3. Unit Roots Test:

Unit roots test (ADF) conducted to ascertain whether the variables in the model are stationary. This is necessary as it helps to avoid spurious regression results. The summary of Unit Root Tests (ADF) results using E-views software is detailed in the table below:

Table 1: Summary of ADF test results at 1%, 5% and 10% critical value

Variable	Order of Integration	ADF Test Statistics	ADF Critical Value			Lag Length	Decision
			1%	5%	10%		
MANOT	I ~ (2)	-3.543292	-3.711457	-2.981038	-2.629906	4	Reject H$_0$
TOP	I~ (1)	-7.215750	-3.661661	-2.960411	-2.619160	0	Reject H$_0$
EXR	I ~ (1)	-4.098164	-3.670170	-2.963972	-2.621007	1	Reject H$_0$
GFCF	I ~ (1)	-4.754055	-3.661661	-2.960411	-2.619160	0	Reject H$_0$
GDP	I ~ (1)	-4.579122	-3.661661	-2.960411	-2.61916	0	Reject H$_0$

Source: research output 2022

From table 1 above, observe that the variables are not stationary at level form but became stationary after first difference and second differencing which implies that the variables (TOP, EXR, GFCF and

GDP) are integrated of order one (I ~ (1)) whereas MANOT was integrated of order two (I ~ (2)) stationary at second differencing.

10.4. Co integration Test for VAR Model:

The test is summarized below:

Table 2: Summary of the Max- Eigen Statistics for Co integration

Unrestricted Co integration Rank Test (Trace)				
Hypothesized No. of CE(s)	Eigen value	Max- Eigen Statistic	0.05 Critical Value	Prob.**
None *	0.786667	113.3712	69.81889	0.0000
At most 1 *	0.643109	65.47928	47.85613	0.0005
At most 2 *	0.460853	33.53917	29.79707	0.0177
At most 3	0.322040	14.38842	15.49471	0.0729
At most 4	0.072697	2.339724	3.841466	0.1261
Trace test indicates 3 co integrating eqn (s) at the 0.05 level				

Source: research output 2022

The Table 4.3 above summarizes the max-Eigen statistics which was used to determine the co integrating vectors in the model. The test indicates 3 co integrating equations at 5% level thus satisfying the condition for the existence of long run relationship amongst the variables. This condition states that there must be at least one co integrating equation for there to be a long run relationship in a model. The test shows that we reject the null hypothesis of r = 3 and accept the alternate of r > 3 which denotes the existence of 3 co integrating equations in the model. Thus, we conclude that trade openness; exchange rate, gross fixed capital formation and gross domestic output have long run implications on manufacturing output in Nigeria.

10.5. Short-Run Estimate:

The Vector Error Correction Mechanism (ECM) was used to obtain the short-run estimate at 5% level of significance. The result from the ECM is presented in table 4.5 below.

Table 3: Correction Mechanisms

Variable	Coefficient
ECM (-1)	-1.14E+10

Source: Author's Analysis, 2022.

From the result in TABLE 4.3 since the coefficient of the ECM (-1) which is negative we say that there is convergence.

10.6. Granger Causality Test:

It is summarized below:

Table 4: Summary of Granger Causality Test

Pairwise Granger Causality Tests

Date: 09/02/20   Time: 15:37

Sample: 1986 2018

Lags: 2

Null Hypothesis:	Obs	F-Statistic	Prob.
TOP does not Granger Cause MANOT	31	1.13368	0.3372
MANOT does not Granger Cause TOP		2.97112	0.0689
EXR does not Granger Cause MANOT	31	1.66049	0.2096
MANOT does not Granger Cause EXR		8.80437	0.0012

GFCF does not Granger Cause MANOT	31	2.24863	0.1257
MANOT does not Granger Cause GFCF		1.67147	0.2075
GDP does not Granger Cause MANOT	31	3.44066	0.0472
MANOT does not Granger Cause GDP		1.58319	0.2245
EXR does not Granger Cause TOP	31	1.03472	0.3695
TOP does not Granger Cause EXR		1.37661	0.2702
GFCF does not Granger Cause TOP	31	2.95389	0.0698
TOP does not Granger Cause GFCF		1.07058	0.3574
GDP does not Granger Cause TOP	31	0.93749	0.4044
TOP does not Granger Cause GDP		0.49418	0.6157
GFCF does not Granger Cause EXR	31	4.33955	0.0236
EXR does not Granger Cause GFCF		0.93892	0.4039
GDP does not Granger Cause EXR	31	6.20811	0.0063
EXR does not Granger Cause GDP		3.66449	0.0396
GDP does not Granger Cause GFCF	31	5.26392	0.0120
GFCF does not Granger Cause GDP		3.34474	0.0510

Source: research output 2022

The Granger causality test shown above in Table 4.3 reveals that there is Uni-directional causality between most of the variables. This is evident in the causal relationship between Manufacturing Output (MANOT) and Exchange rate (EXR), Manufacturing Output

(MANOT) and Gross Domestic Product (GDP), Gross Fixed Capital Formation (GFCF) and Exchange rate (EXR), Gross Fixed Capital Formation (GFCF) and Gross Domestic Product (GDP) etc. However, bi-directional causality exists between Gross Domestic Product (GDP) and exchange rate (EXR). The implications of these causal relationships is that the variables that granger causes the other can be used to predict the future outcome of the other. In other words, the bidirectional causality implies that the current trend or movement in one variable can be used to predict future growth of another variable and vice versa. The unidirectional causality between the variables implies that the current rate of one variable can be used to predict future growth in manufacturing output; all things being equal.

10.7. Selection of Optimal Lag

In order to carry out vector auto regression estimation, the choice of lag length is vital. There is various lag length criteria, among them are; Sequential modified LR test statistic with each test at 5%, the Final prediction error (FPE), Akaike information criterion (AIC), Schwarz information criterion (SC) and the Hannan-Quinn information criterion (HQ). However each of these has different penalty factors. For the purpose of this study, we therefore limit the selection to Akaike information criterion (AIC) and Schwarz information criterion (SC). From the result, the two criteria revealed 3 optimal number of lag to be used for the VAR analysis. The result is presented below in table 4.5 below

Table 5: Lag Length Criteria

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-2638.088	NA	2.31e+70	176.2059	176.4394	176.2806
1	-2481.706	250.2109	3.72e+66	167.4471	168.8483	167.8953

2	-2442.932	49.11434	1.73e+66	166.5288	169.0976	167.3506
3	-2395.011	44.72612*	5.80e+65*	165.0007*	168.7372*	166.1961*
* indicates lag order selected by the criterion						
LR: sequential modified LR test statistic (each test at 5% level)						
FPE: Final prediction error						
AIC: Akaike information criterion						
SC: Schwarz information criterion						
HQ: Hannan-Quinn information criterion						

Source: Author's Analysis 2022

11. VAR Test Estimates:

11.1. Manufacturing Output Equations:

From the result below in table 4.6 below, it was revealed that manufacturing output to itself in the 1st period was positive while in the second period was negative this implies that changes in manufacturing output affects its own movement positively in the first period at about 0.987625 and negatively at about -0.551032. Trade openness to manufacturing output in the first period was negative while at the second period was also negative this implies that changes in trade openness affects manufacturing output movement negatively in the first and second period at about -1.64E-09 and -1.15E-10. Exchange rate to manufacturing output in the first period is negative while at the second period was positive, this implies that changes in Exchange rate affects manufacturing output movement negatively in the first period at about -2.97E-09 and positively at about 3.50E-09. Gross Fixed Capital

Formation to manufacturing output in the first period was positive while at the second period is negative, this implies that changes in Gross Fixed Capital Formation affects manufacturing output movement positively in the first period at about 1.777538 and negatively at about -3.672427

Gross Domestic Product to manufacturing output in the first period was positive while at the second period was also positive. This implies that changes in Gross Domestic Product affects manufacturing output movement positively in the first and second period at about 117.7638 and negatively at about 63.71830.

11.2. Trade Openness Equations:

From the result below in table 4.6 below, it was revealed that trade openness to itself in the 1st period was negative while in the second period was positive this implies that changes in trade openness affects its own movement negatively in the first period at about - 0.117178 and positively at about 0.013051. manufacturing output to trade openness in the first period was negative while at the second period was also negative this implies that changes in manufacturing output affects trade openness movement negatively in the first and second period at about - 47748643 and - 48052947. Exchange rate to trade openness in the first and second period was positive, this implies that changes in Exchange rate affects trade openness positively in the first and second period at about 0.071020 and 0.041917. Gross Fixed Capital Formation to trade openness in the first and second period was negative; this implies that changes in Gross Fixed Capital Formation affects Trade openness movement negatively in the first and second period at about - 2.10E+08 and - 2.76E+08. Gross Domestic Product to trade openness in the first period was positive while at the second period was also negative. This implies that changes in Gross Domestic Product affects

trade openness movement positively in the first period and negatively in the second period at about 4.84E+10 and -2.47E+10 respectively.

11.3. Exchange Rate Equations:

From the result below Exchange rate to itself in the 1st period was positive while in the second period was negative this implies that changes in Exchange rate affects its own movement positively in the first period and negatively in the second period at about, 4.32E+08 and -5.24E+08 respectively. Manufacturing output to exchange rate in the first period was positive while at the second period was negative this implies that changes in manufacturing output affects exchange rate movement positively in the first and natively in the second period at about 28470587 and - 17467775. Trade openness to Exchange rate in the first and second period was positive and negatively respectively, this implies that changes in trade openness affects exchange rate positively and negatively in the first and second period at about 0.730893 and - 0.003849. Gross Fixed Capital Formation to Exchange rate in the first and second period was positive and negative respectively; this implies that changes in Gross Fixed Capital Formation affects Exchange rate movement positive and negative in the first and second period at about 4.32E+08 and - 5.24E+08 respectively. Gross Domestic Product to Exchange rate in the first period was negative while at the second period was positive. This implies that changes in Gross Domestic Product affects Exchange rate movement negatively in the first period and positively in the second period at about -2.27E+10 and 6.95E+10 respectively.

11.4. Gross Fixed Capital Formation Equations:

From the result below Gross Fixed Capital Formation to itself in the 1st period was positive while in the second period was negative this implies that changes in Gross Fixed Capital Formation affects its own movement positively in the first period and negatively in the second

period at about, 0.930895 and - 0.188654 respectively. Manufacturing output to Gross Fixed Capital Formation in the first period and second period was positive this implies that changes in manufacturing output affects Gross Fixed Capital Formation movement positively and second period at about 0.107043 and 0.014292 respectively. Trade openness to Gross Fixed Capital Formation in the first and second period was negatively, this implies that changes in trade openness affects Gross Fixed Capital Formation negatively in the first and second period at about -2.57E-12 and -1.88E-10. Exchange rate to Gross Fixed Capital Formation in the first and second period was positive and negative respectively; this implies that changes in Exchange rate affects Gross Fixed Capital Formation movement positive and negative in the first and second period at about -8.80E-10 and 7.38E-10 respectively. Gross Domestic Product to Gross Fixed Capital Formation in the first period was positive while at the second period was negative. This implies that changes in Gross Domestic Product affect Gross Fixed Capital Formation movement positively in the first period and negatively in the second period at about 162.1407 and -133.2813 respectively.

11.5. Gross Domestic Product Equations

From the result below Gross Domestic Product to itself in the 1st period was positive while in the second period was negative this implies that changes in Gross Domestic Product affects its own movement positively in the first period and negatively in the second period at about, 1.230404 and -0.482827 respectively. Manufacturing output to Gross Domestic Product in the first period and second period was positive this implies that changes in manufacturing output affects Gross Fixed Capital Formation movement positively and second period at about 0.000155 and -3.46E-05 respectively. Trade openness to Gross Domestic Product in the first and second period was positive; this implies that changes in trade openness affects Gross Domestic Product

positively in the first and second period at about 4.81E-13 and 6.84E-13. Exchange rate to Gross Domestic Product in the first and second period was negative and positive respectively; this implies that changes in Exchange rate affects Gross Domestic Product movement negative and positive in the first and second period at about -1.86E-12 and 3.08E-12 respectively. Gross Fixed Capital Formation to Gross Domestic Product in the first and second period was positive. This implies that changes in Gross Fixed Capital Formation affect Gross Domestic Product movement positively in the first and second period at about 0.001001 and 0.000313 respectively.

Table 6: Summary of the VAR Estimates

	MANOT	TOP	EXR	GFCF	GDP
MANOT(-1)	0.987625	-1.64E-09	-2.97E-09	1.777538	117.7638
	(0.26538)	(1.4E-09)	(2.4E-09)	(1.26745)	(505.940)
	[3.72160]	[-1.19471]	[-1.23285]	[1.40246]	[0.23276]
MANOT(-2)	-0.551032	-1.15E-10	3.50E-09	-3.672427	63.71830
	(0.24690)	(1.3E-09)	(2.2E-09)	(1.17919)	(470.711)
	[-2.23182]	[-0.08969]	[1.56049]	[-3.11436]	[0.13537]
TOP(-1)	-47748643	-0.117178	0.071020	-2.10E+08	4.84E+10
	(4.3E+07)	(0.22047)	(0.38640)	(2.0E+08)	(8.1E+10)
	[-1.12245]	[-0.53149]	[0.18380]	[-1.03430]	[0.59721]
TOP(-2)	-48052947	0.013051	0.041917	-2.76E+08	-2.47E+10
	(3.5E+07)	(0.18093)	(0.31710)	(1.7E+08)	(6.7E+10)
	[-1.37646]	[0.07213]	[0.13219]	[-1.65669]	[-0.37170]
EXR(-1)	28470587	0.181409	0.730893	4.32E+08	-2.27E+10
	(2.7E+07)	(0.13970)	(0.24484)	(1.3E+08)	(5.1E+10)
	[1.05622]	[1.29855]	[2.98518]	[3.35212]	[-0.44198]

EXR(-2)	-17467775	-0.252587	-0.003849	-5.24E+08	6.95E+10
	(2.9E+07)	(0.14919)	(0.26148)	(1.4E+08)	(5.5E+10)
	[-0.60680]	[-1.69302]	[-0.01472]	[-3.80900]	[1.26716]
GFCF(-1)	0.107043	-2.57E-12	-8.80E-10	0.930895	162.1407
	(0.04570)	(2.4E-10)	(4.2E-10)	(0.21826)	(87.1253)
	[2.34234]	[-0.01084]	[-2.11989]	[4.26507]	[1.86101]
GFCF(-2)	0.014292	-1.88E-10	7.38E-10	-0.188654	-133.2813
	(0.04409)	(2.3E-10)	(4.0E-10)	(0.21059)	(84.0628)
	[0.32415]	[-0.82411]	[1.84256]	[-0.89584]	[-1.58550]
GDP(-1)	0.000155	4.81E-13	-1.86E-12	0.001001	1.230404
	(0.00012)	(6.2E-13)	(1.1E-12)	(0.00058)	(0.22983)
	[1.28456]	[0.77033]	[-1.70089]	[1.73795]	[5.35356]
GDP(-2)	-3.46E-05	6.84E-13	3.08E-12	0.000313	-0.482827
	(0.00015)	(7.6E-13)	(1.3E-12)	(0.00070)	(0.27882)
	[-0.23687]	[0.90188]	[2.32142]	[0.44772]	[-1.73170]
C	5.33E+09	33.12870	-13.14814	5.05E+09	2.65E+12
	(2.2E+09)	(11.4012)	(19.9819)	(1.1E+10)	(4.2E+12)
	[2.42323]	[2.90571]	[-0.65800]	[0.48045]	[0.63213]
R-squared	0.993210	0.689387	0.986066	0.971116	0.991889
Adj. R-squared	0.989815	0.534081	0.979099	0.956674	0.987834
Sum sq. resids	3.13E+19	840.4282	2581.492	7.14E+20	1.14E+26
S.E. equation	1.25E+09	6.482392	11.36110	5.97E+09	2.38E+12
F-statistic	292.5630	4.438884	141.5329	67.24241	244.5904

Source: Author's Analysis 2022

Note, the lag selection criterion was based on the Schwarz information criterion (SIC) and it gave 2 lag periods for each of the equations. This

shows that there are two maximum years prior to the current year and the forecast for the current stems from the past two years' coefficients of the variables.

12. Determination of Model Fitness:

The adjusted R-squared is more appropriately used to determine the robustness of each of the VAR models. This is summarized below:

Table 7: Summary of R-squared Adjusted

Equations	Adjusted R-squared		Conclusion
MANOT	0.993210	99%	High explanatory coefficient
TOP	0.689387	70%	Moderate explanatory coefficient
EXR	0.986066	99%	High explanatory coefficient
GFCF	0.971116	97%	High explanatory coefficient
GDP	0.991889	99%	High explanatory coefficient

Source: Authors Analysis 2022

The R-squared adjusted summarized in the table above shows that the explanatory variables in the manufacturing output, Exchange rate, Gross Fixed Capital Formation and GDP equations have high explanatory coefficients thus meaning that they account for very high changes in the economy. On the other hand, trade openness has moderate adjusted R-squared meaning that their explanatory variables accounted for moderate changes in the variable.

13. Variance Decomposition Test:

Table 8: Variance Decomposition of Manufacturing Output

Period	S.E.	MANOT	TOP	EXR	GFCF	GDP
1	1.25E+09	100.0000	0.000000	0.000000	0.000000	0.000000

2	2.06E+09	92.99752	2.331061	0.038644	2.237552	2.395228
3	2.75E+09	78.38167	7.122821	0.389478	6.260587	7.845448
4	3.33E+09	63.38660	10.71941	1.130798	8.146148	16.61705
5	3.91E+09	49.88450	12.37302	1.548615	7.509819	28.68404
6	4.54E+09	38.96468	11.75669	1.648362	5.841018	41.78925
7	5.22E+09	30.96173	10.11937	1.883584	4.424771	52.61054
8	5.86E+09	25.38781	8.595490	2.576685	3.662420	59.77759
9	6.39E+09	21.55655	7.468655	3.725143	3.505575	63.74408
10	6.79E+09	19.10111	6.663101	5.185349	3.792032	65.25841

Source: Author's Analysis 2022

Table 9: Variance Decomposition of Trade Openness

Period	S.E.	MANOT	TOP	EXR	GFCF	GDP
1	6.482392	5.506840	94.49316	0.000000	0.000000	0.000000
2	7.380756	16.49717	73.18267	8.184966	0.330292	1.804906
3	8.331608	23.37042	57.93435	6.449035	8.445126	3.801061
4	8.862987	20.76631	52.60606	8.484508	11.74849	6.394629
5	9.175454	20.96980	52.54470	7.985821	12.09160	6.408078
6	9.429989	19.87770	50.34020	10.58895	11.82838	7.364774
7	9.947154	21.32322	45.26836	10.45251	10.96043	11.99548
8	10.52529	22.28720	40.84837	9.359871	9.888613	17.61595
9	11.02148	21.14975	38.44331	8.592637	9.021011	22.79329
10	11.41483	19.87482	36.50695	8.010849	8.470773	27.13660

Source: Author's Analysis 2022

Table 10: Variance Decomposition of Exchange Rate

Period	S.E.	MANOT	TOP	EXR	GFCF	GDP
1	11.36110	20.85133	3.885698	75.26297	0.000000	0.000000
2	18.86268	42.05746	3.622828	49.02505	1.156354	4.138301
3	22.83009	49.09086	4.519943	36.94161	3.757597	5.689989
4	24.28255	46.13268	9.092998	33.07121	5.570771	6.132346
5	25.12450	43.43974	12.32450	32.28991	5.796265	6.149576
6	25.78647	42.53034	12.34589	33.56755	5.548853	6.007367
7	26.20083	42.32761	11.98894	34.44527	5.403941	5.834239
8	26.78255	42.27475	11.72604	33.92903	5.423997	6.646183
9	28.03496	41.37165	11.09783	32.05918	5.387349	10.08399
10	30.10063	38.65855	10.36297	29.30482	4.968181	16.70547

Source: Author's Analysis 2022

Table 11: Variance Decomposition of GFCF

Period	S.E.	MANOT	TOP	EXR	GFCF	GDP
1	5.97E+09	23.05248	0.756818	28.53263	47.65807	0.000000
2	8.10E+09	30.96320	1.885553	21.24074	39.43479	6.475707
3	9.64E+09	23.39359	11.31660	15.96058	29.17683	20.15240
4	1.22E+10	16.95046	12.69249	11.58124	18.24494	40.53087
5	1.52E+10	17.48930	8.947910	7.730045	11.70841	54.12434
6	1.77E+10	16.81905	7.267499	6.684258	8.705812	60.52338
7	1.93E+10	14.32254	7.071395	7.458862	7.553622	63.59358
8	2.03E+10	13.18127	6.713787	7.675814	7.495283	64.93384

| 9 | 2.10E+10 | 12.95786 | 6.328421 | 8.059837 | 7.923507 | 64.73038 |
| 10 | 2.15E+10 | 13.26307 | 6.435613 | 9.209737 | 8.510004 | 62.58157 |

Source: Author's Analysis 2022

Table 12: Variance Decomposition of GDP

Period	S.E.	MANOT	TOP	EXR	GFCF	GDP
1	2.38E+12	4.456485	0.354667	7.552035	12.98744	74.64937
2	3.73E+12	13.53856	0.145291	3.120851	6.401962	76.79334
3	4.95E+12	17.76689	0.171232	6.667475	3.646509	71.74789
4	5.79E+12	14.50230	0.814593	13.39249	2.764821	68.52580
5	6.37E+12	12.01232	1.508159	15.98547	2.687823	67.80623
6	6.81E+12	10.55974	1.363410	16.76213	2.913528	68.40119
7	7.22E+12	9.386713	1.296196	18.39003	3.147084	67.77998
8	7.61E+12	8.466005	1.264230	21.01656	3.479072	65.77413
9	7.93E+12	7.860387	1.219377	23.19777	3.913602	63.80887
10	8.20E+12	7.388919	1.238536	24.78463	4.248640	62.33927

Source: Author's Analysis 2022

It was revealed that the variations in the Manufacturing Output to itself is 100% in the 1st quarter, but reduces in the 5th and 10th period to 49% and 19% respectively. Trade Openness was in the 1st period captures about 95% changes to Manufacturing Output; 53% in the 5th period and 37% in the 10th period. Exchange Rate in the 1st period accounts for 75% changes in the Manufacturing Output of the country, in the 5th and 10th period, an increase in variations captured by the variable is 32% and 29% respectively. In the 1st period of the variations in the Manufacturing Output through GFCF, 48% was accounted for, while in the 5th and 10th period the percentage of variations falls

heavily to 12% and 9% respectively. The contribution of the GDP to Manufacturing Output in the country was observed to be moderate. In the 1st period, 75% of the variations in the GDP was captured, while in the 5th and 10th period, 68% and 62% was captured

14. Restatement of Research Hypotheses
Table 13: Summary of the Hypotheses Test

Variables	F-statistic	F-table	Decision Rule
TOP	4.438884	2.69	Significant
EXR	141.5329	2.69	Significant
GFCF	67.24241	2.69	Significant
GDP	244.5904	2.69	Significant
F-table = $F_{0.05,4,31}$ = 2.69			

Source: Author's Analysis 2022

The F-statistic values for TOP, EXR, GFCF and GDP are greater than the theoretical F-table value at 5% level of significance. Thus, we reject their null hypotheses. Consequently, we conclude as follows: Trade liberalization dynamics has a significant impact on manufacturing output in Nigeria. Exchange rate dynamics has a significant impact on manufacturing output in Nigeria. Gross Fixed Capital Formation dynamics has a significant impact on manufacturing output in Nigeria. From the final hypothesis, we conclude that Economic growth dynamics has a significant impact on manufacturing output in Nigeria.

15. Discussion of Findings:

This study seeks to examine dynamics of trade liberalization on manufacturing output in Nigeria for a 33 year period, via; (1986-2018), the findings from this research are as follows;

Using the VAR model, to conduct the dynamics of the data, it was deduced that Trade liberalization dynamics has a significant impact on manufacturing output in Nigeria using F-stat, however, this dynamics of Trade openness to manufacturing output in the first period was negative while at the second period was also negative this implies that changes in trade openness affects manufacturing output movement negatively in the first and second period at about -1.64E-09 and -1.15E-10. This in reality shows that, trade openness affects the manufacturing sector negatively, that is when more of goods that can be produced locally are being imported into the country, it affects the industries in the home country. Furthermore, Exchange rate dynamics has a significant impact on manufacturing output in Nigeria. Exchange rate to manufacturing output in the first period is negative while at the second period was positive, this implies that changes in Exchange rate affects manufacturing output movement negatively in the first period at about -2.97E-09 and positively at about 3.50E-09. The above result may be link to late 80's and 90's when Nigeria exchange rate was moderately adequate in respect to manufacturing output and its negativity is the dwindling of the currency to dollar. The third findings show that, Gross Fixed Capital Formation dynamics has a significant impact on manufacturing output in Nigeria. Gross Fixed Capital Formation to manufacturing output in the first period was positive while at the second period is negative, this implies that changes in Gross Fixed Capital Formation affects manufacturing output movement positively in the first period at about 1.777538 and negatively at about -3.672427. This also buttress the availability of capital in the late 80's and 90's, and this period , the investment climate of the country was favorable compared to early 2000's, 2015, 2016, 2017, 2018, when access to capital and foreign direct investment continues to fall. In conclusion, the result demonstrated that, Economic growth dynamics has a significant impact on manufacturing output in Nigeria. Gross Domestic Product to manufacturing output in the first period was

positive while at the second period was also positive. This implies that changes in Gross Domestic Product affects manufacturing output movement positively in the first and second period at about 117.7638 and negatively at about 63.71830. This result conforms to Nigeria economic growth being the first in Africa during President Good luck Jonathan Regime, between, 2013, 2014, 2015. However, all the findings conform to apriority, expectations.

16. CONCLUSION:

The study examined the dynamics of trade liberalization on manufacturing output in Nigeria, from (1986-2018). Time series data from CBN statistical bulletin (2018) and World Bank Development Indicator was employed. Manufacturing output was used as the dependent variable while trade openness, GDP, GFCF, and exchange rate form the independent variable. However, the result revealed that Trade openness (TOP) possesses a negative and significant relationship with manufacturing output (MANOUT) in Nigeria. The result also shows that, exchange rate, has significant and negative impact on manufacturing output; even though it was positive in the long run. Furthermore, Gross Fixed Capital Formation and Economic have significant impact on manufacturing output in Nigeria.

17. Recommendations:

1. The focus of government industrial policy should be to encourage trade openness.
2. The exchange rate of the economy should be strengthened and made more stable.

3. The growth induced policies should be emanated, as that will go a long way to improve and increase the output of the manufacturing sector in Nigeria.

18. Reference:

Adeleke K.M., Olowe S.O. & Fasesin O.O. (2014): Impact of Foreign Direct Investment on Nigeria economic growth; *International Journal of Academic Research and Social Science: 4(6)*

Adenikinju, A. F. (2005). African Imperatives in the New World Trade Order:

Country Case Study of the Manufacturing Sector in Nigeria, in O. E. Ogunkola and A. Bankole (Eds) *Nigeria's imperative in the New World Order.* Nairobi: Africa Economic Research Consortium pp. 101 - 158.

Adenikinju, A. F., and Chete, L. N.(2002). Productivity, market structure and

trade liberalization in Nigeria. *African Economic Research Consortium Research Paper No. 126,*Nairobi: Africa Economic Research Consortium.

…………. (2003). "Nigerians imperative in the new world trade

order", Economic Workshop Report Nairobi, Kenya: African economic

research consortium.

Analogbei, F. C. O. (2000). "Trade Reforms and Productivity in Nigeria". A paper presented at the Ninth Conference of the Zonal Research Units of the CBN entitled *Productivity and Capacity Building in Nigeria*, pp. 159 – 85.

Cairncross, F. (1997). *The Death of Distance: How the Communications*

Revolution Will Change Our Lives. Boston: Harvard Business School Press.

Central Bank of Nigeria (CBN). Variants issues Statistical Bulletin. Abuja: CBN

Chete, L.N, Adeoti, J.O, Adeyinka, F.M and Ogundele, O (2015). Industrial

Development and Growth in Nigeria: Lessons and Challenges. Brookings: African Growth Initiatives, Learning to compete work paper 8

Dagogo, Daibi W (2014). "Nigerian Industrial Development between 1943 and

2013: Challenges and Opportunities", *International Review of Research in Emerging Markets and the Global Economy, 1(3), 132-148*

Derossa, Dean A. (2000). "Regional Integration Arrangements: Static Economic

Theory, Quantitative Findings, and Policy Guidelines," background paper for a World Bank Policy Research Report, Regionalism and Development

Fafowora, O.O. (2000). "Management Imperatives of Globalization",

Management in Nigeria. Journal of Nigerian Institute of Management, Vol. 34, Nos. 2-4 April -December, pp. 5-9

Federal Government of Nigeria (variant issues). Structural Adjustment Programme for

Nigeria: July 1986 – June 1988, Lagos: Federal Ministry of Budget and Planning.

General Agreement on Tariffs and Trade (1994). Trade Policy Review Mechanism Hong Kong. Retrieved 18th August, 2020 from https://www.wto.org/gatt_docs/English/SULPDF/91800278.pdf

Hammouda, H. B. (2004). Trade Liberalization and Development: Lessons for

Africa. Report of the Economic Commission for Africa. *African Trade Policy Centre paper No. 6.*

Howe, A. C. (1997). *Free Trade and Liberal England, 1846-1946.* Oxford: Clarendon Press.

……….. (1998). 'Free Trade and the Victorians' in A. Marrison (Ed.), *Free*

Trade and its Reception, 1815-1960. London: Routledge.

Iwuagwu, O., (2011), "The Cluster Concept: Will Nigeria's New Industrial

Development Strategy Jumpstart the Country's Industrial Takeoff?"Afro Asian Journal of Social Sciences, 2 (2).

Kareem F.O (2010), "Trade flows and employment outcomes in Nigeria"

working paper, University of Ibadan

Krueger, A.O. (1978) Liberalization attempts and consequences; Cambridge, Massachusetts: Ballinger.

Mwaba, A. (2000). Trade Liberalization and Growth: Policy Options for African Countries in a Global Economy. *Africa Development Bank Economic Research Papers No.* 60.

National Centre for Economic Management and Administration (2004). "Understanding Structural Adjustment Programme in Nigeria", Paper Presented at the Workshop on Understanding Reform. Organized by the Global Development Network, New Delhi, India:

Nyor, Gabriel A and Chinge, A Dodo (2014). "The Impacts of Industrial Policies on the Manufacturing Sector in Nigeria: An Assessment", *Research on Humanities and Social Sciences, 4(21), 111-120*

Olorunshola, K (2002), Global Perspective perception of SME growth constraint in Nigeria. Journal of small business management 40 (1) pp58-65

Omoke, P.C.(2007): Trade policy reforms and rural poverty in Nigeria. Department of Economics, Ebonyi State University, Ebonyi, Nigeria.

Osuka, B.O (2016). "An Overview of the Development Planning Experience in Nigeria", in Planning for Economic Development, eds Onwumere, J.U.J & Ozoh, F.O, Lagos: Don-Vinton Ltd

Rondinelli, D. A. (2003).Promoting competitiveness in a globalizing economy: The state's changing roles in Rondinelli, D. A. and G. S. Cheema (Eds) *Reinventing Government for the Twenty-First Century: State in a globalizing society,* Bloomfield: Kumarian Press.

United Nations Economic Commission for Africa (1995). Report on Regional Strategy for Rational Location of Industries in the Context of the Abuja Treaty.

World Bank (variant issues).

World Trade Organization (variant issues).

EDUCATIONAL ASPIRATIONS AND THE EFFECT OF POVERTY AMONG YOUTHS IN NIGERIA

AHMAD GARBA[33]

Federal University of Kashere, Gombe State Nigeria
Department of Arts and Social Science Education
Ahmadgarba315@gmail.com

ABSTRACT

Quality education can be way out of poverty and an important factor in achieving quality in society, but at the same time, poverty can create significant barriers to quality and access to education. Poverty isn't only related to lack of income or resources, but also includes other manifestations such as hunger, malnutrition, pure access to education and basic services, in addition to social discrimination and lack of opportunities to participate in decision-making. Poverty and education have a reciprocal effect, access to high quality education is the best way out of poverty, and it helps achieve economic growth. Poverty deprives millions of people around the world of the opportunity to live a decent life and play an effective role in serving and advancing their communities. Lack of access to quality education is the main reason for the persistence of poverty in any society and its transmission from one generation to the next. Therefore, education remains one of the best ways to develop societies in a sustainable manner. But how can education as a dream and aspiration contribute to breaking this cycle that poor and developing societies suffer from, on this regards, this paper tends to highlight on the importance of education as an aspiration to poor youths to alleviate the severe effects of poverty among themselves in Nigeria.

Keywords: education, poverty, anxiety, skills, violence.

[33] Phone +234 07030215179
ORCID:0000-0001-8757-8056

INTRODUCTION

Education is the basic element for lifting individuals and societies out of poverty, because the knowledge gained from science gives children the confidence necessary to complete the educational process and thus achieve dreams in a better way and help future generations. It also helps in creating major and different changes in adults, especially in their daily lives, from nutrition, education, and health care, which makes them a good role model for their children and encourages them to learn. (Odinkau, F. 2014: pp 67). Poverty is a phenomenon that has a negative impact on most socially vulnerable groups. The impact of poverty extends to the individual and society, forming a real burden on available resources and opportunities, and is reflected in the overall economic and social life of individuals and societies.

Poverty essentially means the inability of an individual to meet his basic needs of food and clothing with little or no resources, and poverty can extend to destitution when an individual cannot secure his basic daily sustenance. The United Nations has defined the poor in practice as a person living below the extreme poverty line of $1.9 per day, and according to the United Nations, the number of poor people around the world below this line reached about 676.5 million people (about 8.4% of the world's population) at the end of 2022. Poverty is defined as a state in which people lack material possessions, such as money, and the necessary means to meet their basic needs. It is associated with several characteristics, such as poor health, low levels of skills and education, and inability to work, as well as negative, undisciplined behaviors such as vandalism, extravagance, and others. It also has negative effects on the individual and society alike. (B. Milanovic, 2013: pp 90)

Despite the difference in the concept of poverty from one country to another, there is what is called a quasi-agreement on the broad outlines that explain this dangerous scourge; as it is known as: the material deprivation that results in a decline at all levels, especially the educational level, health level and housing level. The level of education

in any country in the world is one of the approved indicators to measure the extent of poverty in it. Increasing youths access to education increases the opportunity for equal opportunities and improves material, cognitive and health living conditions. But the problem lies in the fact that about 244 million children and young people are not enrolled in schools in the world. (UNESCO, 2019).

The African continent, for example, includes more than half of the number of fragile states in the world. There are also more than 50 million children and young individuals aged 6-21 out of school and a third of children aged 12-14 out of school in these countries, which together make up half of the world's out-of-school children. Children do not go to school for a variety of reasons, all of which are a result of poverty. More than 70% of schools in many of the countries where we work in Africa do not have access to clean water or sanitation. The malnutrition rate is 50% higher than in the rest of the world. The primary school completion rate is 18% lower. Families living in poverty often have to choose between sending their children to school or providing other basic needs so they do not have to pay for school fees, such as uniforms, books and exam fees. Some youths are forced to stay home to do household chores or are pushed into the labor market at an early age. (OCHA. 2017 and UNICEF(Nigeria) 2018 Report)

NEGATIVE EFFECTS OF POVERTY IN THE SOCIETY

If we look closely at all countries of the world, we will find that the number of poor people has reached nearly a third of the world's population, which is 6 billion citizens around the world. Because poverty is closely linked to education, we find that half of this percentage of poor people around the world are illiterate and cannot read and write, which shows us the extent of the danger of this scourge known as poverty, and the extent of its impact on education, which in turn affects all other aspects from economic, social, psychological and other aspects. In this regard, researches show that; Poverty has

countless negative effects on societies, but the greatest danger of poverty, lies on education.

According to National Population Commission (Nigeria) and RTI International. (2016) Going by this indication, we find that the poor citizen does not look at things with the eyes of a normal person, nor does he see them from their correct perspective. He focuses most of his priorities on meeting his basic needs of food, drink, clothing, and medicine, which does not make him view education as a necessity for life, but rather views it as a secondary matter due to his inability to obtain it. poor parents who are responsible for children and families not keen for their children to enroll in schools for the sake of learning, but rather see that it is better for them to leave their schools in order to help them with living matters.

The writer believe that Poverty also has a great impact on the creativity process in society. The poorer the society, the less creativity and innovations that help in the progress and development of society. This may be due to the lack of capabilities of the poor person in terms of keeping up with modern developments. Even if he resists poverty in terms of joining the educational process, he will find many difficulties in terms of keeping up with modern technology, which in turn requires a lot of money in most cases. Equally, illiteracy which is a result of poverty by nature, results in a great degree of correlation between poverty and disease, which may spread widely in societies suffering from poverty.

Different societies in Nigeria are among the largest societies suffering from this scourge, as most youths in the societies live in a state of poverty, which in turn increases the gap in income and wealth inequality. Though Education is one of the greatest means by which poverty can be confronted; considering that education is the same weapon with which poverty in societies is fought, but unfortunately some developing and under-developed countries don't spend much on education, which leads to the misplacement of priority during annual

budget and funds allocation for nation building. but if education is given a priority in those Nations (Word Bank. 2019, pp 6). we can simply say through education, the poor can coexist with society to a great extent, and it makes them help in the progress of their society, which in turn leads to a decrease in the unemployment rate in this society.

Poverty has serious social effects on society, the most dangerous is the spread of diseases, which is a result of poor nutrition and the inability to provide the appropriate medicine for each disease, which is widespread in developing countries, like Nigeria and other African states. Studies have shown that the percentage of those who suffer from malnutrition in developing countries has reached approximately 70%. There is no doubt that the first step and the primary cause of poverty is malnutrition, indicating that this is also a cause of one of the negative effects of poverty, which is the high death rate in these countries that suffer from poverty. This is nothing but a result of the lack of health services and their lack of development, as well as the lack of basic services such as potable water and suitable housing. These are all effects resulting from poverty that must be fought, and perhaps the only weapon capable of confronting it is education. (Mobolaji, J. W, et. Al, 2020: pp 90).

POVERTY AND EDUCATION IN NIGERIA

As stated earlier, Despite the importance of the role of education in improving the lives of the poor around the world, researchers have confirmed the impact of poverty on learning and education of a child as well as a youth. In Nigeria there are studies that have confirmed the existence of a direct link between low income and chronic health problems, psychological disorders, social and academic functions, and additional research has also provided evidence that poverty reduces a child's readiness for school through several factors, including; the prevalence and depth of poverty, its duration, its concentration, crime in

the student's community and the impact of poverty on social networks. While according to USAID (2017) Poverty creates major challenges that hinder youths' lives, especially in the field of education, as governments in Nigeria spends small portions of its GDP on education, making it unavailable to poor families and of lower quality, due to crowded classrooms, broken computers, and unqualified teaching staff. All of these conditions do not meet the needs of students. Although some public schools are usually free, there are some additional costs of providing school uniforms, buying books, and transportation that students need to move around, especially in rural areas, in addition to the money that poor families lose by sending their children to school instead of working to earn a living. There are many statistics that have been conducted to reveal the impact of poverty on education, including the statistics of the Urban Institute, which showed that 40% of children in northern Nigeria suffering from poverty do not complete the secondary stage of their academic life, which reduces the rates of economic success, as well as the rates of job opportunities, which leads to poverty as an adult. These statistics were shocking because they showed the impact of poverty on the student's ability to succeed through.

Therefore, it is important to create an alternative environment for youths in Nigeria to reduce the effects of poverty on them. This task is based on the government, NGO, philanthropists and parents, as children are able to adapt to the circumstances that are created for them easily, which will play an important role in improving their lives. It is enough to create a kind of hope in their lives to make them attached to the future, and it can also change their minds for the better. (NBS/Nigeria and United Nations Children's Fund (2018). Strong school admiring, secure relationships in families, helps to stabilize children's behavior, provide the foundations for building social skills, and teaches them healthy emotional responses that are appropriate for the daily situations they encounter.

ROLE OF SCHOOL IN REDUCING THE CHALLENGES ASSOCIATED WITH POVERTY

-Education protects children and youths from the risks that may confront them in areas experiencing natural disasters or conflicts, so that they do not fall victim to various types of exploitation

-Education reduces many problems that prevent people from living a healthy life, including infant and maternal mortality, stunting, infant and maternal mortality, exposure deadly diseases and violence.

-Education helps youths to acquire and develop social, emotional and cognitive skills. because a person who receives a good primary and secondary education have greater opportunities to earn a higher income and improve their lives for the better in various areas.

-Education contributes to reducing the inequality experienced by girls in many areas where poverty and illiteracy are widespread. Where the girl is forced to stay in her family home to take care of her siblings or other household chores and is deprived of her right to education. As the school enables girls to build skills, gain knowledge, social growth and increase their opportunities to improve their lives and the lives of their families.

-Education helps in reducing a decline in the rates of economic and social development, which happen due to the diversion of resources allocated for Education and health sectors to social support and poverty alleviation programs.

-Education and complete literacy straighten a weak financial capacity within poor societies, and reduces the high rate of unemployment among youths from illiterate and low income families which indicates in the following list of unemployment rates across Nigeria in 2023 according to NBS:

1. Abia: 18.7%
2. FCT: 14.1%
3. Rivers: 13.4%

4. Gombe: 11.2%
5. Imo: 10.9%
6. Ogun: 8.8%
7. Delta: 8.2%
8. Kano: 7.6%
9. Plateau: 7.4%
10. Borno: 7.3%
11. Beyelsa: 6.3%
12. Enugu: 5.9%
13. Ondo: 5.7%
14. Lagos: 5.5%
15. Ekiti: 5.5%
16. Akwa Ibom: 5.1%
17. Kwara: 4.8%
18. Anambra: 4.8%
19. Edo: 4.4%
20. Bauchi: 4.2%
21. Jigawa: 4%
22. Ebonyi: 3.7%
23. Yobe: 3.3%
24. Niger: 3.2%
25. Adamawa: 3.2%
26. Zamfara: 3.1%
27. Kogi: 3%
28. Osun: 2.9%
29. Katsina: 2.8%
30. Cross River: 2.8%
31. Kaduna: 2.7%
32. Oyo: 2%
33. Taraba: 1.9%
34. Kebbi: 1.6%
35. Benue: 1.6%
36. Sokoto: 1.2%
37. Nasarawa: 0.5%

CONCLUSION

Going by the information above it can be said that poverty has many negative dimensions that in turn reinforce the depth of illiteracy in Nigeria. Poverty is clearly evident among majority of youths in Nigeria, especially in the low-income families and fragile societies such as

refugee and displacement societies. Fortunately, apart from government, there are some non-governmental organizations who also working to address this phenomenon in its areas of operation through many programs that aim to protect responsible youths from the clutches of poverty and destitution, with a focus on educating and empowering with different forms of skills. including financial or in-kind assistance, providing educational and health care services, and everything that aims to rehabilitate society. therefore, through the aforementioned data, the researcher concludes that:

-Poverty results in the spread of ignorance as parents lose interest in education at the expense of finding additional sources of income.

-Youths and Children from low income family are the most affected by school dropout syndrome in Nigeria, despite the claim of the free basic Education by the Nigerian government, as they are forced to help their families earn an income through work in professions that are often high-risk.

-Spread of diseases and epidemics as a result of the poor people's lack of resources and their inability to receive treatment and medical consultations.

-Spread of violence and crime, with some individuals resorting to compensating for their lack of resources through illegal means.

 -Poverty is one of the causes of violence in society. The negative impact of poverty extends to include threatening the state of national security in societies. The feeling of deprivation accompanied by ignorance, frustration and the absence of social justice constitutes a suitable focus for generating violence at various family and societal levels.

-Spread of crime cases, Domestic violence against children and women, Increase in theft and looting in society, Political and security unrest.

REFERENCES

B. Milanovic 2013 Global Inequality: A New Approach for the Age of Globalization, Harvard Univ. Press, 2016.

Dvorak, Jaroslav 2015. European Union Definition of Poverty. The SAGE Encyclopedia of World Poverty.

Ferráns S.D., Lee J., Ohanyido C., Hoyer K., and Miheretu A. 2022.The Cost-Effectiveness of an Accelerated Learning Program on the Literacy, Numeracy and Social-Emotional Learning Outcomes of Out-of-School Children in Northeast

Mobolaji, J. W., Fatusi, A. O., and Adedin, S. A. 2020. Ethnicty, reigious affiliation and girl-child marriage: a cross sectional study of nationally representative sample of female adolescents in Nigeria. BMC public health, 20(1), 110.

National Bureau of Statistics and United Nations Children's Fund. 2018. Multiple Indicator Cluster Survey, 2016 – 2017.

National Population Commission (Nigeria) and RTI International. 2016. 2015 Nigeria Education Data Survey (NEDS).

National Population Commission (Nigeria) and RTI International. 2016. 2015 Nigeria Education Data Survey (NEDS).

Nigeria: Evidence from a Mixed Methods Randomized Controlled Trial,Journal of Research on Educational Effectiveness

Nigeria: Evidence from a Mixed Methods Randomized Controlled Trial,Journal of Research on Educational Effectiveness

OCHA. 2017. Humanitarian Response Plan - Nigeria. New York, NY: Office for the Coordination of Humanitarian Affairs.

Odinkau, F. 2014. Toward an Educational Function, National Bureau of EconomcResearch.Vol.70 (4), pp. 11-70.

Oyekan, K., Ayorinde, A. and Adenuga, O. 2023. The problem of out of school children in Nigeria. 2023/058. https://doi.org/10.35489/BSG-RISE-RI_2023/058

Roser, Max, and Ortiz-Ospina, Esteban (2019). Global Extreme Poverty. Our World in Data.

Sachs, Jeffrey D. (2005). The End of Poverty. Penguin Press. p. 416. ISBN 978-1-59420-045-8.

UNESCO. 2016. Leaving no one behind: How far on the way to universal primary and secondary education? Policy Paper 27 Fact Sheet 37, July 2016.

UNICEF. 2014. All Children in School by 2015: Global Initiative on Out-of-School Children: regional report; West and Central Africa. https://unesdoc.unesco.org/ark:/48223/pf0000228081

UNICEF. 2018. Evaluation Report: The Out-of-School Children Initiative (OOSCI) February 2018.

United Nations Educational, Scientific and Cultural Organization". www.unesco.org. "Poverty" 2019.

United Nations. "Indicators of Poverty & Hunger" 2022.

USAID. 2017. Education Crisis Response Project. Final Report. United States Agency for International Development.

Word Bank. 2019. Ending Learning Poverty: What Will It Take? World Bank, Washington, DC. World Bank.
 https://openknowledge.worldbank.org/handle/10986/3255

Word Bank. 2019. Ending Learning Poverty: What Will It Take? World Bank, Washington, DC. World Bank.
https://openknowledge.worldbank.org/handle/10986/3255

Word Bank. 2019. Ending Learning Poverty: What Will It Take? World Bank, Washington, DC. World Bank.
https://openknowledge.worldbank.org/handle/10986/3255

World bank.org. "Poverty and Inequality Analysis" Retrieved 2024.

E-GOVERNMENT IN LIBYA.
REALITY AND CHALLENGES

- **Mohamed M. Nagi Elshibani,**
- **Fajria Amara Saleh Zalita**

Department of Computer Science, Higher Institute for Sincie and Technology – Tarhuna-Libya[34]

ABSTRACT

With the emergence of Information and Communication Technologies (ICT), way of Government has been revolutionized. E-government provides governmental services through websites and portals with the objective to support and simplify Government for all stakeholders thus making Government more efficient and effective. However it has been observed that in many countries, the goals of E-government has not been achieved with the often reason for its failure is techno-centric focus instead of people centric focus. In this paper, Libyan e-government infrastructure has been discussed and compared to e-government in Libya and other neighboring countries in North Africa.

***Keywords**: e-Government, infrastructure, telecommunication.*

---

[34] [1]E-mail: Mnage30@yahoo.com
[2]E-mail: manalamer2012@yahoo.com

1. Introduction

Traditional government institutions did not provide the required attention to the quality of the service or the response to the client. One clear reason is the lack of technology at the best and unavailability of efficient mode of communication between governmental organization and citizens. Current era is the age of ICT focusing on utilizing technology for better management, communication and development of the resources especially human resource. ICT applications are not limited to individuals but have its scope in business, health, education, and government. E-government is common in most the countries including developed, developing and under developed countries. As per the UN survey on E-government, more than 196 countries have taken initiatives towards E- government. E-government is a form of e-business in Government and refers to the process and structures which are required to give electronic services to the people. It is worth mentioning that e-government is not about 'e' but about the government, it is not about computers & websites but about citizens & businesses, it is about translating processes but about transforming processes.

E-government is a set of ongoing process between the government, public service and citizenry and these processes evolve slowly rather than change dramatically. An e-government system should have the potential of selecting the most appropriate services and provide the services to the people in the most efficient and effective way. The deployment of such system must be trustworthy, cost effective, easily upgradable and easy to maintain. Government policy making and its implementation can be transformed with help of ICT by substituting traditional services with computerized one. E-government can bring considerable changes in the way the services are being provided, new services can be fashioned and efficient management of the outsourced services can be done.

The rest of the paper is organized the following way. Section 2 talks about the an overview of the state of Libya, Section 3 talks about the Country Profile , The Education System and Infrastructure, Section 4 talks about the Definition of E-government ,Scope of E-government ,E-government requirements, Section 5 talks about the contributions of E-government, section 6 is about E-government Challenges , Section7 talks about the Comparison of E-government of Libya with neighboring countries in Northern Africa,Section8 talks about the Advantages and benefits of E-government implementation followed by the conclusion.

Libya is a country in the North Africa bordered by the Mediterranean Sea to the north, Egypt to the east, Sudan to the southeast, Chad and Niger to the south, and Algeria and Tunisia to the west, as shown in figure (1).

Figure(1) : Libya map and geographical location. [4]

2. Overview

Libya boasts the highest literacy rate in the Arab world, and the UN's Human Development Index, which ranks standard of living, social security, health care and other factors for development, places Libya at the top of all African countries.

_____

[4] Amr Hamdy. Survey of ICT And Education In Africa: Libya Country June 2007

Government reform plans in developing ICT infrastructure in Libya and incorporating

ICT in education as key components in its overall development plans. Libya has intentions to be seen taking a leadership role on the African continent through sponsorship of major initiatives and projects, including those in the neighboring countries of Chad, Niger, and Rwanda. That said, the challenges of poor existing infrastructure and a lack of skilled and ICT-equipped teachers is a great challenge to the current reform process. [4]

3. Country Profile

The table (1) below show information about Libya profile, which display information about religions, languages, population, etc...

Table 1 provides some selected socio-economic indicators for the country. [4]

Indicator	
Religions	Sunni Muslim 97%; other 3%
Languages	Arabic, Italian, English. All are widely understood in the major cities.
Population	6.2 million (includes 166,510 non-nationals) (2013 est.)
Population growth rate	4.85% (2006 est.)
Literacy	Male: 2.4% Female: 72% Total population: 82.6% (2003 est.)
GDP (US dollars)	$ 75.46 billion (2013 est.)
GDP per capita (US dollars)	$12,705 (2013 est.)
Labour force	1.787 million (2013 est.)

_____

[4] Amr Hamdy. Survey of ICT And Education In Africa: Libya Country June 2007

3-1   The Education System

Education in Libya is free to everyone from elementary school right up to university and post-graduate study, at home or abroad. Schools are positioned throughout the country. The policy is to reach out even to the nomadic hard-to-reach areas, and mobile classrooms were introduced to cover all of Libya, as shown in table (2).

Table 2: Selected Education Data. [4]

Indicator	Tota
Public schools	4,000
Private schools	255
Technical	1,066
International	15
Kindergartens and nurseries for pre-school	1,250
Elementary students	838,395
Preparatory students	273,391
Secondary students	120,000
Specialist secondary schools	280,000
Public universities	27
Private universities	56
Private institutes	255
Technical	50 (approx.)
International	10 (approx.)
University students	246,000

3-2 Infrastructure

Libya has moved from having virtually no lines after its revolution in the early 1960s, to having one in every 10 of its four million inhabitants now having telephone

_____

[4] Amr Hamdy. Survey of ICT And Education In Africa: Libya Country June 2007

access. The telephone system is 90% digital and is expected to be fully digitized by the end of the year. In Tobruq, Naidoo opened a new digital telephone exchange, watched by many hundreds of local citizens. A Siemens digital switch will add a further 8,000 lines to the country's rapidly growing telecommunications infrastructure.

The telecommunications operator is the General Posts and Telecommunications Company (GTPC) and there is also a cellular service based on the GSM standard, which is managed by Ericson and Orbit Telecom for GPTC.

The Centre National Information Documentation is the main networking agency in the country. The Post and Telecom operates an Internet hub in Tripoli with a 2MB International link via Teleglobe in Canada. Dial-up and leased-line facilities are available via Libya Telecom and Technology.

Libya continued to lead its North African counterparts on the 2011 Arab ICT Use Index, with a score of 2.21, and placed seventh overall among MENA economies. In 2011, Libya placed last in terms of growth on all indicators. The negative growth registered in the country's computer installed base, mobile and fixed line indicators was certainly largely fueled by the political events which took place in the country over the course of 2010-2011 The Libyan telecommunication network is the core of the ICT sector for the country.

The telecommunication network, however, is poor and has suffered significantly from the lack of competition and essential experience. Consumers complain of low coverage, poor connections and dropped calls at peak times. The modest rise in mobile phone penetration from 163.21% in 2010 to 166.67% in 2011 was driven by the negative growth in the sector, which registered -8.26%, causing the country subscriptions to drop from 10,900,000 in 2010 to 10,000,000 in 2011. Mobile subscription figures for Libya could not be found through the country's two state-owned mobile operators, Libyana and Al-Madar Al-Jadeed, and figures provided by ITU were used. GPTC, the General Posts and Telecommunications Company, had expanded landline coverage to many parts of Libya, although the quality of its infrastructure and service as mentioned previously needs substantial improvement. Libya's fixed line subscriptions dropped to -17.55% in 2011 to reach an estimated 1,012,100 subscriptions; down from 1,227,500 in 2010 to 10,000,000 in 2011.

The country had sustained a low growth rate in the sector for several years, but, as expected, witnessed a sharp drop in 2010 and 2011, mainly due to the unstable political climate which caused many residents to leave the country and many businesses to close down. Fixed line penetration fell from 18.38% in 2010 to 16.87% in 2011. The fixed line penetration rate placed Libya in sixth place in the MENA region, ahead of Tunisia, Morocco and Algeria – with a strong potential to grow given the country's comparative wealth. In addition to managing the country's fixed line sector, LPTIC's monopoly effectively extends to Internet services, although there are some seven licensed ISPs in the country, as shown in table (3).

Table 3: ICT in Libya. [2]

Indicator	
Telephones - main lines in use	814,000 fixed subscriptions, 12.58 per 100 inhabitants (2012)
Telephones - mobile cellular	9.6 million mobile subscriptions, 48per 100 inhabitants (2012)
Radio broadcast stations	AM 16; FM 3; shortwave 3 (2002)
Television broadcast stations	10 (2012)
Internet users	1,115,025 users, 19.9% of the population (2012)
Cities with internet POPs	1
Internet hosts	2
Internet access providers	1

_____

[2] Abdulkader Kamli - Madar Research & Development-CEO and Research Director . ARAB ICT USE REPORT – 2012

International connectivity is in the hands of the state-owned provider, the Libya Telecom and Technology Company (LTT). The latter dominates the Internet access market, which numbered 1,355,796 users in 2011. Internet users rose by a mere 10.00% in 2010, from 1,232,542 users, with Internet penetration registering a modest 22.60% by the end of 2011. While low, the penetration rate ranked Libya in 14th place in the MENA region on the Internet User penetration

indicator, and third in the North Africa region behind Tunisia and Morocco. On the computer front, Libya registered a negative growth of -10.00% in its computer installed base, to list 892,601 computers in 2011 down from 991,779 in 2010. This affected the country's penetration, moreover, registering 14.88%, marginally higher than the 14.85% attained in 2010. Libya maintained its position in ninth place among MENA countries in terms of penetration, however, for the seventh year in a row, as shown in table (4).

Table 4: Computer Penetration in Libya. [2]

Indicator	
Home computers	892,601 - 14.88%
Primary schools	5%
Secondary schools	50%
Universities	100%

1. Definition of E-government

E-government is the government owned or operated systems of information and communication technologies that transform relations with citizens, the private sector and/or other government agencies so as to promote citizens' empowerment, improve service delivery, strengthen accountability, increase transparency, or improve government efficiency.[3]

_____

[2] Abdulkader Kamli - Madar Research & Development-CEO and Research Director . ARAB ICT USE REPORT – 2012

[3] E –government for developing countries : opportunities and challenges. Velentina (Dardha) Ndou.Department of Business Administration University of Shkoder,Albania.

4-1 Scope of E-government

While E-government encompasses a wide range of activities, E-government identifies three distinct areas. These include government-to-government (G to G), government-to-citizens (G to C), and government to business (G to B), Government to citizen (G to C) facilitates citizen interaction with government, which is primary goal of E-government. This attempts to make transactions, such as payment of taxes, renewing licenses and applying for certain benefits, less time consuming and easy to carry out.

Government to Business (G to B) sector includes both the procurement of goods and services by the government as well as the sale of surplus government goods to the public on Line. In many respects, the government to government (G to G) sector represents the backbone of e-government. It is felt that governments at the union, state and local level must enhance and update their own internal systems and procedures before electronic transactions with citizens and business are introduced. Government to government E-government involves sharing data and conducting electronic exchanges between various governmental agencies. [5]

4-2 E-government requirements

Can put the important requirements for the implementation of E-government in the following points.

1- Provide the necessary infrastructure for communication: the use of information technology to download e-government business is all over the networks and the network must be large and sophisticated communication building.

2- The need to spread the Internet: Internet basics of building e-government, which is secured through which communication between

network users across all sectors of government or non-governmental organizations and citizens within the digital environment.

_____

[5] E-Government: Challenges and Opportunities in Botswana Nugi Nkwe . Department of Accounting and Finance University of Botswana Gaborone, Botswana

3- Computer: Most of the E-government services are made through the computer, so the provision of training and rehabilitation of the citizens are very necessary.

4- Provide the necessary legislation: This requires the provision of a number of laws that work to maintain and ensure the security and protection of the confidentiality of the documentary data.

5- Business process re-engineering in government: requires the construction of E-government project reorganization of all procedures relating to the work of various governments and converted to a digital system.

This requires the following steps:
•All government services should be described in detail.
•Determine the relationship and overlapping actions with different ministries or departments in detail.
•Re-design procedures of which deleted parts do not fit with this new method.
•Publication of the details of the new measures on websites.

5.   Main Contribution of E-government

Three application domains should be considered as overlapping. and E-government can be found in the overlapping area of these three application domains, demonstrating the complexities and heterogeneities needed to be handled for assuring its success as shown in figure(2).
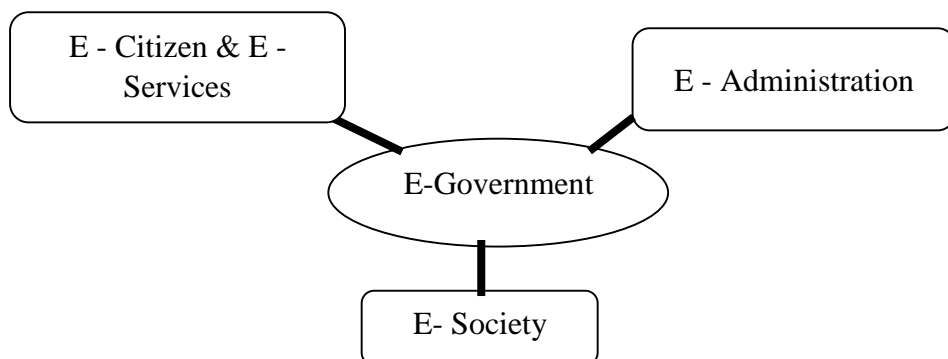
Figure2: E-Government domains [3]

_____

[3] E –government for developing countries : opportunities and challenges. Velentina (Dardha) Ndou.Department of Business Administration University of Shkoder,Albania.

1- E-Administration – for automation and computerization of administrative tasks and for realization of strategic connections among internal processes, departments and functions.

2- E-Citizens and e-Services – to realize connections and interrelationships among governments and citizens and to deliver automated services.

3- E-Society – to enable relationships and interactions beyond boundaries, among public agencies, private sector and civil community in general.

It is now widely accepted that ICT offers increased opportunities for economic development and plays a critical role in rapid economic change, productive capacity improvements and international competitiveness enhancement for developing countries. The range of choices and opportunities in developing countries is expanding. ICT is

believed to be a powerful enabling tool to address some of the key barriers and challenges for entering the global economy and for future growth potential. It can transform old challenges and create unprecedented possibilities for sustainable economic development, just as it has done for businesses in the industrial world.

ICTs offer the potential not just to collect, store, process and diffuse enormous quantities of information at minimal cost, but also to network, interact and communicate across the world (Crede and Mansell, 1998). Econometric studies have found evidence of a strong positive relationship between ICT investments and GDP growth illustrating the importance of ICTs for development, both in the commercial and the public sectors. An OECD (2002) research project, based on national studies about the impact of ICT on the economy. [3]

6. E-Government Challenges

While it is evident that E-government and ICTs, in general, are powerful drivers of wealth creation and growth, there remain many challenges which hamper the exploration and exploitation of its opportunities. The multidimensionality and

_____

[3] E –government for developing countries : opportunities and challenges. Velentina (Dardha) Ndou.Department of Business Administration University of Shkoder,Albania.

complexity of E-government initiatives implies the existence of a wide variety of challenges and barriers to its implementation and management. Can classify issues faced by the e-government into three categories, as shown in Figure (3).
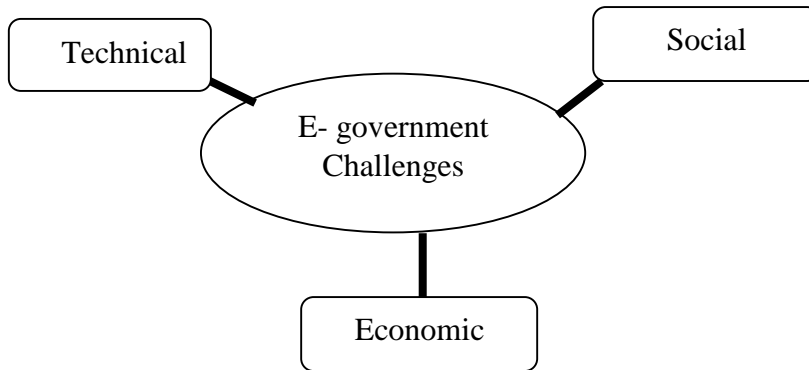
Figure 3: E-Government Challenges [3]

Main challenges of E-government development and implementation in developing countries.

1- ICT infrastructure (e-readiness, computer literacy, telecommunication equipment)

2- Policy issues (legislation)

3- Human capital development and lifelong learning (skills, capabilities, education, Learning)

4- Change management (culture, resistance to change)

5- Partnership and collaboration (public/private partnership, community and network creation)

6- Strategy (vision, mission)

7- Leadership role (motivate, involve, influence, support). [3]

_____

[3] E –government for developing countries : opportunities and challenges. Velentina (Dardha) Ndou.Department of Business Administration University of Shkoder,Albania.

7. Comparison of E-government of Libya with neighboring countries in Northern Africa

Though most countries of Northern Africa increased their e-government offerings since Survey 2010, they slipped in overall world rankings this year 2012 primarily because other countries overtook them in infrastructural development, especially in mobile telephone access. Tunisia (0.4833) maintained its position as the leader of e-government in the sub-region. Morocco improved its e-government value (0.4209) reaching 120th. Algeria increased its e-government development value by 13 per cent and maintained its global rank. Egypt did not improve upon much and declined to 107th. At the same time, domestic political turmoil impacted the virtual presence of the Government in Libya (formerly the Libyan), which went offline at the time of the survey assessment. As result of it, when it comes to E-government development index and telecommunication index value. Libya has the least E-government development index and telecommunication index value within the selected countries despite of high literacy rate which is really an alarming situation. As shown in table (5).

Table 5: Comparison of Various Parameters of Libya with other Countries in Northern Africa. [1]

rank	Country	Index value	Online Service component	Telecomm. Infrastructure component	Human Capital Component
103	Tunisia	0.4833	0.4771	0.2886	0.6841
107	Egypt	0.4611	0.601	0.2232	0.5588
120	Morocc	0.4209	0.542	0.2772	0.443
132	Algeria	0.3608	0.254	0.1812	0.6463
No	Libya	0.0000	0.0000	0.3743	0.8502

Most of the important dimensions of e-government, namely: the scope and quality of services via the Internet, and the state of telecommunications infrastructure

_____

[1] United Nations E-Government Survey 2012 E-Government for the People development, and human capital authentic. Each of these sets of indicators is in the same compound that can be extracted and analyzed independently scale limit.

EGDI = (⅓ * Services Index online) + (⅓ * Telecommunications Index)
+ (⅓ * human capital index).

Must each of the three dimensions has a value for the application EGDI.
EGDI is used as a measure to provide numerical order for the development of E-government across the Member States of the United Nations. The comparison between Libya and neighboring Arab countries in the field of E-government development application using the measure EGDI.

The table (6), shown details about comparison of e-service like (E-vote, national ID card, E-tourism,etc…)of Libya with neighboring countries in Northern Africa. Because there is proportionality between e- services and the successful implementation of E-government. Offers many of the E-services give us an indication of the level of E-government in the state. Note in Libya that there are almost no E-services.

Table 6 : Comparison of E-Services in Northern Africa. [6] [7] [8]

E –Service	Libya	Egypt	Tunisia	Algeria	Morocco
E- vote					
National ID Card	✓	✓	✓	✓	✓
E-Tourism		✓	✓		✓
E-Education		✓	✓	✓	✓
E-payment	✓	✓	✓	✓	✓
E-Ticketing		✓	✓	✓	✓
E-Visa and					
Online Recruitment				✓	✓

_____

[6] http://www.egypt.gov.eg/

[7] http://www.maroc.ma/

[8] http://www.tunisie.gov.tn/

8.   Advantages and benefits of E-government implementation

Advantages and benefits of e-government implementation are the same for both developed and developing countries. However; E-government applications have many benefits for citizens, business and government entities. E-government applications allow people, businesses, and government sectors to access to available government information 24 hours a day, 7 days a week, which improves the quality of these services. [9]

According to implementation of e-government will be get this benefits for Libya:

1- The elimination of a centralized state and the transition to a decentralized state. Because of all the ministries, institutions,

departments and authorities found in the capital, Tripoli, Causing problems for citizens in other cities If we take into account that a large area of Libya.

2- Increase transparency. There is a big problem in Libya in terms of financial and administrative corruption, where Libya ranks sixth on the list of most corrupt countries in the world according to the report, "Transparency International" issued in 2013.

3- Create new job opportunities. In Libya there is a large unemployment rate, where the Ministry of Labour Libyan estimated in its report for 2013 that the percentage of unemployed in Libya for 15 percent, the ministry said in a statistics her that the number of unemployed amounted to 400 thousand, and 37% of them are qualified to work.

_____

[9] Implementation of e-Government: Advantages and Challenges

    M. Alshehri PhD candidate in School of ICT, Griffith University, Brisbane, Australia

    Dr. Steve Drew, Senior Lecturer in the School of ICT,Griffith University,

    Brisbane, Australia

9. Conclusion

From the above discussion what can we conclude that the application of e-government in Libya will have great results and Libya will jump great strides forward. But Libya at the beginning of the road to move to e-government and that Libya still has a lot of steps, and that future results depend on careful planning and best use of resources and capabilities in Libya.

Bibliographie

1- *United Nations E-Government Survey 2012 E-Government for the People*

2- *Abdulkader Kamli - Madar Research & Development-CEO and Research Director . ARAB ICT USE REPORT – 2012*

3- *E –government for developing countries : opportunities and challenges. Velentina (Dardha) Ndou.Department of Business Administration University of Shkoder,Albania.*

4- *Amr Hamdy. Survey of ICT And Education In Africa: Libya Country June 2007*

5- *E-Government: Challenges and Opportunities in Botswana*
   Nugi Nkwe . Department of Accounting and Finance
   University of Botswana Gaborone, Botswana

6- *http://www.egypt.gov.eg/*

7- *http://www.maroc.ma/*

8- *http://www.tunisie.gov.tn/*

9- *Implementation of e-Government: Advantages and Challenges*
   M. Alshehri PhD candidate in School of ICT, Griffith University,
   Brisbane, Australia
   Dr. Steve Drew,   Senior Lecturer in the School of ICT,Griffith University,
    Brisbane, Australia

The Effect of Organizational Culture on the Intentions to Embrace Environmental Sustainability Practices in Egypt

Dr. M. Salem Nassif –

Doctorate Degree of Business Administration – "INTERNATIONAL BUSINESS SCHOOL OF SCANDNIVIA" (IPSS)- Denmark
Email: Dr_m.salem@yahoo.com

Abstract:

This study explores the impact of organizational culture on the intentions to embrace environmental sustainability practices within Egyptian corporations, providing insights into the cultural drivers that facilitate or impede sustainable business practices. Using a quantitative approach, the research employs correlation and regression analyses to examine the relationships between various dimensions of organizational culture including environmental values, cultural norms, top management support, vision and mission alignment, involvement in sustainability, training and awareness programs, internal communication, transparency and reporting, sustainability departments, integration into business units, sustainability policies, and operational practices. and their influence on sustainability intentions. Data were collected through structured surveys distributed among professionals in various industries across Egypt. The findings reveal significant positive correlations between all measured aspects of organizational culture and the intentions to adopt sustainability practices. Particularly strong influences were noted from factors such as sustainability policies, top management support, and integration into business units, which were found to substantially drive the intentions towards sustainability.

***Keywords**: Organizational Culture, Environmental Sustainability, Sustainability Practices, Leadership Commitment, Corporate Strategy, Cultural Dimensions, Sustainability Policies and Sustainable Development.*

Introduction

In the evolving business landscape, the influence of organizational culture on embracing environmental sustainability practices has garnered significant attention. The complexity of integrating sustainability into corporate strategies presents a distinct challenge, particularly within the context of developing countries like Egypt. This study investigates how various dimensions of organizational culture in Egyptian companies affect their intentions to adopt such practices. By dissecting cultural factors and their interplay with corporate sustainability initiatives, the research aims to shed light on the pathways through which organizational culture can enhance or hinder environmental sustainability.

Literature Review

Deshpande and Webster (1989) established the link between corporate culture and marketing, highlighting how organizational values affect marketing strategies. Their work has informed numerous studies on corporate culture's importance in business scenarios. For instance, Brondoni (2002) emphasized corporate culture's role in managing relationships in large firms amidst globalization. Kvirkvaia and Kikutadze (2014) explored how corporate culture enhances business efficiency by setting value transmission standards. Similarly, Ha et al. (2020) found that corporate culture positively influences trust and repurchase intentions, while Yang (2010) noted its impact on brand culture and customer loyalty. Aligning culture with a company's mission is crucial for sustainable growth, as discussed by Hui et al. (2021). This alignment aids in organizational identity and employee integration, as analyzed by Derhachova and Fedirko (2018).

The work of Hofstede and Minkov (2010) on cultural dimensions theory has significantly impacted the understanding of cultural differences and organizational behavior. Their framework, which extends Hofstede's model, provides insights into how culture affects human activity. Abdelrahim (2021) suggested adding tribalism as a new dimension to the theory. Kasatkin (2017) highlighted values in shaping cultural landscapes, while Moraczewski (2016) examined culture in social heterogeneity. Yildiz (2018) and Sokolov and Alekseev-Apraksin (2019) discussed cultural shifts and clustering of cultural reality, respectively. Jin reflected on the commoditization of culture, and Caetano and Bezzi (2011) emphasized cultural codes in geography. Flier (2020) described culture as organized values influencing worldviews, and Gurova (2023) noted shifts toward spiritual values in cultural production.

Epstein and Buhovac (2014) emphasized integrating ESG criteria into corporate performance metrics. Their work has influenced studies on sustainability assessment and management. Gutterman (2020) stressed robust controls in CSR strategic planning, broadening assessments beyond financial metrics. Kasim et al. (2018) explored sustainability strategies in Malaysia, while Kassahun highlighted enterprise systems' role in sustainability measurement. Arora (2015) proposed a balanced scorecard framework for sustainability performance. Speziale and Klovienė (2014) demonstrated PMS's role in CSR, while Saeed and Kersten (2020) noted gaps in sustainability assessment. Denčić-Mihajlov and Zeranski (2018) focused on sustainable management performance indicators. Turan et al. (2016) introduced a methodology for evaluating sustainability compliance, and Yalçın (2022) studied sustainability's impact on earnings quality.

In "Built to Last," Collins and Porras (1996) examined the success factors of visionary companies, highlighting visionary management's

role in long-term success. These companies align their vision with core values beyond financial performance (Starkey & Tempest, 1996), foster innovation, and create environments encouraging employee engagement (Zien & Buckler, 1996). They outline principles like Level 5 leadership and technology as accelerators (Barbe & Kleiner, 2005), emphasizing adaptability and self-criticism for longevity. This framework influences contemporary management practices.

Daily and Huang (2001) linked HRM with environmental performance, showing how strategic HR practices enhance sustainability. This link is seen in Brazilian companies, where HR practices reduce resource consumption (Freitas et al., 2015). Evaluating managers on environmental goals reinforces positive environmental outcomes (Portocarrero & Winkler, 2021). HRM balances economic, environmental, and social performance, maximizing benefits (Tang et al., 2017). It plays a crucial role in corporate environmental management by enhancing professional and staff awareness (Ma & Wang, 2011).

Jackson et al. (2011) explored Green HRM, emphasizing HR practices' role in supporting sustainability. GHRM includes environmentally friendly activities like reducing waste and promoting technology use (P., 2023). It raises environmental awareness and encourages green practices (Solanki, 2016), helping organizations gain a competitive edge (Soviana et al., 2022). GHRM positively influences innovation and organizational outcomes, enhancing business performance and reducing pollution (Amrutha & Geetha, 2020; Mustafa et al., 2023).

Lozano (2013) emphasized the need for a holistic approach to sustainability, integrating social, environmental, and economic aspects into business operations. Aligning structures and culture with sustainability goals requires organizational change (Gutterman, 2020).

Employees are crucial in implementing sustainable practices (Wolf, 2013). Strategic frameworks integrate economic, environmental, and social factors into decision-making (Garza, 2013). Stakeholder involvement in sustainability accounting is vital for balancing issues and advancing goals (Ionescu, 2016).

Adams and McNicholas (2007) highlighted sustainability reporting's role in driving change. It supports planning and enhances reporting quality (Lozano et al., 2016). Reporting affects reputation based on disclosure quality (Van, 2011). It now includes economic, environmental, and social performance (Mitra & Agarwal, 2012), impacting strategic planning and risk management (Adams & Frost, 2008). Integrated reporting faces challenges with limited disclosure (Stacchezzini et al., 2016). Sustainability reporting creates long-term value, promoting social justice (Godha & Jain, 2015).

Epstein and Roy (2001) focused on sustainability performance measurement and management, integrating it into strategies and operations. PMS supports CSR initiatives and enhances performance (Speziale & Klovienė, 2014). There is a gap in performance assessment quality (Saeed & Kersten, 2020). Systematic assessments like GPM P5 Integration Matrix measure compliance (Turan et al., 2016). Epstein and Roy (2003) identified principles for improving sustainability metrics.

Hart and Milstein (2003) developed the Sustainable Value Framework for creating value through sustainability. It integrates environmental, social, and economic considerations (Patala et al., 2016). Fatemi and Fooladi (2020) discussed models maximizing shareholder wealth without stakeholder impact. Aagaard (2018) provided a framework for sustainable business models, emphasizing value creation, delivery, and capture.

Delmas and Toffel (2008) explored responses to sustainability pressures, emphasizing leadership and market forces. Companies adopt practices like eco-innovation (Paraschiv et al., 2012) and embed sustainability in design (Gutterman, 2020). Employees moderate the link between sustainability implementation and performance (Wolf, 2013). Institutional pressures influence environmental performance, with management accounting mediating effects (Chaudhry & Amir, 2020).

Russo and Fouts (1997) examined environmental performance's impact on profitability, showing enhanced performance reduces costs (Earnhart & Lizal, 2007). Environmental innovation links performance with financial outcomes (Ong et al., 2019). Corporate self-regulation improves customer value (Petrović-Ranđelović et al., 2023).

Eccles et al. (2014) studied sustainability's impact on performance, showing high-sustainability companies outperform others long-term (Eccles et al., 2012). Sustainability practices improve financial returns and investment efficiency (Poursoleyman et al., 2022), emphasizing strategic integration's importance (Engert et al., 2016).

Comment on Literature Review

The literature review presents a comprehensive exploration of various models and theories related to corporate culture, sustainability, and their influence on business practices and performance. The review effectively synthesizes the findings from multiple studies, offering a nuanced understanding of the interplay between corporate culture, sustainability, and organizational success. The review has several positive aspects. Firstly, it covers a wide array of topics, from corporate culture and marketing strategies to sustainability performance measurement and environmental management. This broad scope provides a holistic understanding of the interconnectedness of these

elements within the business context. Additionally, by including studies from different regions and sectors, the review underscores the universal importance of corporate culture and sustainability in various business environments. This diversity enhances the richness of the discussion and demonstrates the global relevance of the topics covered. The review adeptly integrates seminal works, such as those by Deshpande and Webster (1989) and Collins and Porras (1996), with contemporary studies. This balance ensures a comprehensive perspective that acknowledges both foundational theories and modern advancements. Furthermore, the review emphasizes the practical implications of corporate culture and sustainability practices on organizational effectiveness, highlighting their roles in strategic alignment, human resources, and management.

However, there are areas for improvement. The review could benefit from a more critical evaluation of the studies, discussing potential biases, limitations, or methodological weaknesses to add depth to the analysis. It could also delve further into emerging trends and technologies impacting corporate culture and sustainability, such as digital transformation and artificial intelligence, to enhance its relevance in the current business landscape. Although the review covers various themes, it does not explicitly identify gaps in the literature or areas where further research is needed. Articulating these gaps would provide a clearer direction for future studies and highlight unresolved questions in the field. Additionally, there are inconsistencies in how references are cited throughout the review. Ensuring uniformity in reference formatting would improve the document's professionalism and readability.

To build upon the current review, several suggestions for further research can be considered. Investigating how emerging technologies influence corporate culture and sustainability practices could provide valuable insights for adapting these concepts to future business

environments. Conducting long-term studies to assess the impact of sustainability practices on financial performance over time would help validate claims made in the current literature. Comparative studies examining how corporate culture and sustainability practices vary across different cultural contexts could enhance understanding of these concepts globally. Furthermore, further research on the role of leadership in fostering a culture of sustainability could provide actionable insights for organizations seeking to integrate sustainable practices. Overall, the literature review provides a solid foundation for understanding the role of corporate culture and sustainability in business. By incorporating more critical analysis and exploring emerging trends, it could further contribute to the field's development and offer valuable guidance for future research initiatives.

Research Problem:

Environmental sustainability has emerged as a global concern, with businesses playing a crucial role in mitigating environmental impacts. In Egypt, the push for sustainable practices is growing, driven by both global trends and local environmental challenges. However, the role of organizational culture in this transition within Egyptian corporates remains underexplored. This research investigates how organizational culture in Egyptian companies influences their intentions to embrace environmental sustainability practices. Whin in the following objectives:

- To identify key cultural factors within Egyptian organizations that promote or hinder the adoption of sustainability practices.

- To examine the relationship between organizational culture and the intention to implement sustainable practices in Egypt.

- To provide recommendations for fostering a culture that supports environmental sustainability in the Egyptian context.

The Significance of the Study

Understanding the impact of organizational culture on sustainability practices in Egypt can help businesses develop more effective strategies for environmental stewardship. This study contributes to the body of knowledge by providing insights into how cultural dynamics within Egyptian organizations shape sustainability intentions and offering practical recommendations for cultivating a sustainability-oriented culture.

Research Questions:

Q1: What are the main cultural factors influencing corporate intentions toward environmental sustainability in Egypt?

Q2: How does leadership commitment to sustainability affect organizational culture in Egyptian companies?

Q3: What role does employee engagement play in the adoption of sustainable practices in Egypt?

Q4: How do communication and shared values within Egyptian organizations influence sustainability intentions?

Conceptual Framework and hypothesis:

conceptual model is presented to clarify the connection between different aspects of organizational culture and the intention to implement environmental sustainability practices within Egyptian corporations, thereby expanding the current understanding of how organizational culture impacts these initiatives. Key factors such as environmental values and leadership commitment significantly influence how employees perceive the importance and advantages of sustainability efforts. Likewise, the ease of integrating sustainability practices into daily operations, which is affected by elements like internal communication and training programs, impacts the intention to adopt these practices. The theoretical framework establishes links

between these elements of organizational culture and outlines a plan for further research into how these factors influence the adoption of sustainability practices in Egyptian companies. This chapter is built on a comprehensive review of relevant literature, providing a foundation for further study. The reviewed works shed light on the role of organizational culture in environmental sustainability and establish the basis for the conceptual framework that will guide empirical research in subsequent chapters. This approach not only enhances the understanding of the direct impact of organizational culture on sustainability initiatives but also incorporates a wider range of cultural influences, making the analysis more thorough and applicable to the Egyptian corporate setting.
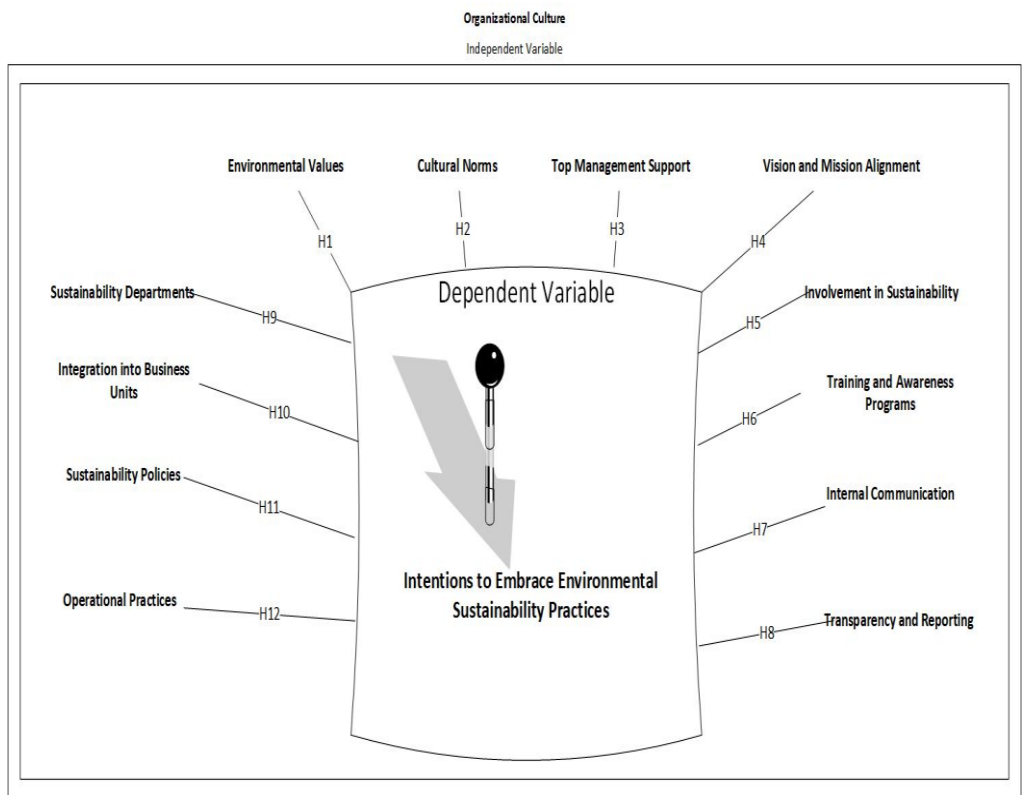
Figure 1, Conceptual Framework
Elaborated by researcher
Hypothesis:

1- Environmental Values

- Null Hypothesis (H0_1): There is no significant relationship between environmental values within an organization and the intentions to embrace environmental sustainability practices in Egyptian enterprises.
- Alternative Hypothesis (H1_1): There is a significant positive relationship between environmental values within an organization and the intentions to embrace environmental sustainability practices in Egyptian enterprises.

2- Cultural Norms

- Null Hypothesis (H0_2): There is no significant relationship between cultural norms promoting sustainability and the intentions to embrace environmental sustainability practices in Egyptian enterprises.
- Alternative Hypothesis (H1_2): There is a significant positive relationship between cultural norms promoting sustainability and the intentions to embrace environmental sustainability practices in Egyptian enterprises.

3- Top Management Support

- Null Hypothesis (H0_3): There is no significant relationship between top management support for sustainability and the intentions to embrace environmental sustainability practices in Egyptian enterprises.
- Alternative Hypothesis (H1_3): There is a significant positive relationship between top management support for sustainability and the intentions to embrace environmental sustainability practices in Egyptian enterprises.

4- Vision and Mission Alignment

- Null Hypothesis (H0_4): There is no significant relationship between the alignment of vision and mission with sustainability principles and the intentions to embrace environmental sustainability practices in Egyptian enterprises.
- Alternative Hypothesis (H1_4): There is a significant positive relationship between the alignment of vision and mission with sustainability principles and the intentions to embrace environmental sustainability practices in Egyptian enterprises.

5- Involvement in Sustainability Initiatives
- Null Hypothesis (H0_5): There is no significant relationship between employee involvement in sustainability initiatives and the intentions to embrace environmental sustainability practices in Egyptian enterprises.
- Alternative Hypothesis (H1_5): There is a significant positive relationship between employee involvement in sustainability initiatives and the intentions to embrace environmental sustainability practices in Egyptian enterprises.

6- Training and Awareness Programs
- Null Hypothesis (H0_6): There is no significant relationship between the provision of sustainability training programs and the intentions to embrace environmental sustainability practices in Egyptian enterprises.
- Alternative Hypothesis (H1_6): There is a significant positive relationship between the provision of sustainability training programs and the intentions to embrace environmental sustainability practices in Egyptian enterprises.

7- Internal Communication
- Null Hypothesis (H0_7): There is no significant relationship between internal communication about sustainability and the intentions to embrace environmental sustainability practices in Egyptian enterprises.

- Alternative Hypothesis (H1_7): There is a significant positive relationship between internal communication about sustainability and the intentions to embrace environmental sustainability practices in Egyptian enterprises.

8- Transparency and Reporting

- Null Hypothesis (H0_8): There is no significant relationship between transparency in sustainability reporting and the intentions to embrace environmental sustainability practices in Egyptian enterprises.
- Alternative Hypothesis (H1_8): There is a significant positive relationship between transparency in sustainability reporting and the intentions to embrace environmental sustainability practices in Egyptian enterprises.

9- Sustainability Departments/Teams

- Null Hypothesis (H0_9): There is no significant relationship between the existence of dedicated sustainability teams or departments and the intentions to embrace environmental sustainability practices in Egyptian enterprises.
- Alternative Hypothesis (H1_9): There is a significant positive relationship between the existence of dedicated sustainability teams or departments and the intentions to embrace environmental sustainability practices in Egyptian enterprises.

10-Integration into Business Units

- Null Hypothesis (H0_10): There is no significant relationship between the integration of sustainability practices into business units and the intentions to embrace environmental sustainability practices in Egyptian enterprises.
- Alternative Hypothesis (H1_10): There is a significant positive relationship between the integration of sustainability practices into business units and the intentions to embrace environmental sustainability practices in Egyptian enterprises.

11- Sustainability Policies

- Null Hypothesis (H0_11): There is no significant relationship between the presence of formal sustainability policies and the intentions to embrace environmental sustainability practices in Egyptian enterprises.
- Alternative Hypothesis (H1_11): There is a significant positive relationship between the presence of formal sustainability policies and the intentions to embrace environmental sustainability practices in Egyptian enterprises.

12- Operational Practices

- Null Hypothesis (H0_12): There is no significant relationship between engagement in sustainable operational practices and the intentions to embrace environmental sustainability practices in Egyptian enterprises.
- Alternative Hypothesis (H1_12): There is a significant positive relationship between engagement in sustainable operational practices and the intentions to embrace environmental sustainability practices in Egyptian enterprises.

Research Methodology

Addressing these concerns, this research applies the Organizational Culture framework as a theoretical lens to investigate Egyptian corporates' intentions to adopt environmentally sustainable practices. Correlation analysis helps in understanding the relationship between various cultural dimensions, such as environmental values, leadership commitment, and employee engagement, and the intention to adopt sustainability practices. Regression analysis further elucidates the strength and nature of these relationships, offering insights into how strongly each cultural component influences sustainability adoption intentions. By understanding the factors that influence these companies' acceptance of sustainable practices, this study provides a roadmap for

Egyptian enterprises to navigate the complexities of integrating environmental sustainability into their operations.

By applying a comprehensive organizational culture model, the study sheds light on the factors that influence these companies' intentions to adopt sustainable practices.

Research Design:

This study explores the intricate relationship between the components of organizational culture and the intention to adopt environmental sustainability practices within Egyptian corporates. The focal point of this research is to examine how various dimensions of organizational culture, such as leadership commitment, employee engagement, and communication, influence sustainability intentions.

A deductive approach is applied, involving the testing of theoretical assertions related to organizational culture in the context of environmental sustainability. The research formulates hypotheses about how these cultural components might influence the intention to implement sustainability practices within Egyptian enterprises. By adopting a structured and methodical approach, this study investigates the role of organizational culture in shaping attitudes and intentions toward environmental sustainability.

Using deductive methodology, structured surveys, and statistical analysis, the study aims to provide valuable insights into how elements of organizational culture influence the desire to implement sustainable practices in Egyptian businesses.

Questionnaire Design:

In this comprehensive survey, designed to delve into the attitudes and intentions of professionals within Egyptian corporates regarding environmental sustainability practices, respondents are invited to engage with a series of thoughtfully constructed questions. This survey

aims to unravel the complex layers of organizational culture dimensions, including values and beliefs, leadership commitment, employee engagement, communication, organizational structure, and policies and practices, and their influence on the intention to adopt sustainable practices. Environmental Values and Beliefs: This section focuses on understanding whether environmental sustainability is perceived as a core value within the organization and if it is considered integral to improving the company's overall environmental performance.

Leadership Commitment and Employee Engagement: The survey seeks to assess the extent of leadership support for sustainability initiatives and the level of employee involvement and participation in sustainability practices. Communication and Transparency: Questions aim to evaluate the effectiveness of internal communication regarding sustainability goals and the transparency of reporting sustainability performance and impacts. Organizational Structure and Policy Integration:

The survey explores whether there are dedicated sustainability teams, and how sustainability practices are integrated into various business units and operational processes. Sustainability Policies and Operational Practices: This section investigates the presence and implementation of formal sustainability policies and their perceived effectiveness in enhancing environmental impact control and management.

By focusing on these key dimensions, the survey aims to provide valuable insights into how organizational culture influences the adoption and integration of sustainable practices within Egyptian enterprises. The survey results will be analyzed to determine the strength and nature of these relationships, offering guidance on how companies can enhance their organizational culture to better support environmental sustainability initiatives.

Sample Size

This decision is informed by the guidelines provided by Saunders, Lewis, and Thornhill (2009), who suggest that a sample size of 39 is required to achieve a 95% confidence level with a 10% margin of error, given a target population of approximately 200. As Saunders, Lewis, & Thornhill (2009) note, the non-probability judgement sampling technique involves the purposive or deliberate selection of specific units from the universe to constitute a sample that represents the entire population. It allows for a more targeted approach to sampling, where the researcher's judgement plays a crucial role in selecting cases that are deemed most representative or insightful for the research objectives. The chosen sample size of 39, informed by Saunders, Lewis, and Thornhill's guidelines, is optimized for robust statistical analysis within the confines of a manageable research process.

Measurements and Data Collection Process:

The study variables were measured through adapted measurement scales from previous studies as summarized in Table 1:

Variable	Construct	Dimensions		source
Independent	Organizational Culture	Environmental Values	EV	Dunlap, R. E., & Van Liere, K. D. (1978).
				Deshpande, R., & Webster, F. E. (1989).
		Cultural Norms	CN	Schein, E. H. (1985).
				Hofstede, G., Hofstede, G. J., & Minkov, M. (2010).
		Top Management Support	TMS	Epstein, M. J., & Buhovac, A. R. (2014).
				Doppelt, B. (2003).
		Vision and Mission Alignment	FMA	Collins, J. C., & Porras, J. I. (1996).
		Involvement in Sustainability	ISI	Ramus, C. A. (2001).
				Daily, B. F., & Huang, S. (2001).
		Training and Awareness Programs	TAP	Jackson, S. E., Renwick, D. W. S., Jabbour, C. J. C., & Müller-Camen, M. (2011).
				Ramus, C. A., & Steger, U. (2000).
		Internal Communication	IC	Lozano, R. (2013).
				Post, J. E., Preston, L. E., & Sachs, S. (2002).
		Transparency and Reporting	TR	Adams, C. A., & McNicholas, P. (2007).
				Schaltegger, S., & Wagner, M. (2006).
		Sustainability Departments	SD	Epstein, M. J., & Roy, M. J. (2001).
		Integration into Business Units	IIBU	Hart, S. L., & Milstein, M. B. (2003).
		Sustainability Policies	SP	Aragon-Correa, J. A., & Sharma, S. (2003).
				Delmas, M. A., & Toffel, M. W. (2008).
		Operational Practices	OP	Russo, M. V., & Fouts, P. A. (1997).
Dependent	Intentions to Embrace Environmental Sustainability Practices		IEESP	Ajzen, I. (1991).
				Bansal, P. (2005).
				Montiel, I., & Delgado-Ceballos, J. (2014).
				Dyllick, T., & Hockerts, K. (2002).
				Eccles, R. G., Ioannou, I., & Serafeim, G. (2014).

Table 1 Variables adapted measurement scales (Elaborated by the researcher).

Moreover, the Interval scale represented in a five-point Likert scale which was ranged from 5= strongly agree to 1= strongly disagree has been utilized to know the degree of respondents' agreement or disagreement with the proposed statements (Saunders, Lewis, & Thornhill, 2009).

Questionnaire Administration

The questionnaire will be administered electronically using an online survey platform. Participants will receive an invitation containing a link to the survey.

Data Collection Timeline

The data collection period is estimated to be four to six weeks, allowing sufficient time for participants to respond.

Data Collection and Analysis

The primary objective of this analysis is to unravel the facts and data, thereby yielding insightful findings that contribute to the understanding of environmental sustainability practices within Egyptian corporates. The first step in the data analysis process involved ensuring the validity and reliability of the measuring scales used in the study, focusing on the dimensions of organizational culture. This step is crucial, as it ensures that the conclusions drawn from the study are based on reliable instruments. The results of the normality test inform the researcher about the appropriate statistical methods to use for further analysis. In the context of this study, multiple regression analysis was employed to investigate the relationships between various components of organizational culture such as environmental values, leadership commitment, employee engagement, and communication and the intention to adopt environmental sustainability practices in Egyptian

enterprises. Starting from ensuring the validity and reliability of the measuring instruments to conducting descriptive and inferential statistical analyses, each step has been carried out with meticulous attention to detail. This thorough approach helps in understanding how different aspects of organizational culture influence sustainability adoption intentions, providing a comprehensive framework for analyzing how these cultural factors shape environmental sustainability practices within the corporate sector in Egypt.

Demographic analysis

Demographic analysis is a method for measuring racial, ethnic, and age distributions as well as how these characteristics have changed over time because of the three main demographic processes: migration, fertility, and mortality (Lucas, D. 2002).

Gender, Age, and company size were the demographic factors measured in this research (Figure 2,3,4). Gender was classified as either male or female; there were 36 men and 3 females. There were three groups based on company size: small (4 occurrences), medium (12 occurrences), and Large (23 occurrences). The corresponding percentages are 15.4%, 28.2%, and 56.4%.
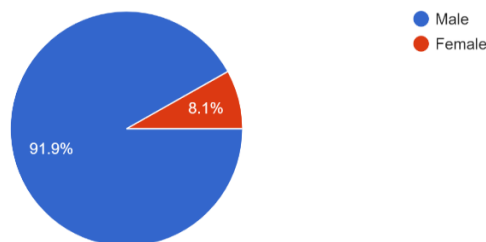
over 20
37 responses

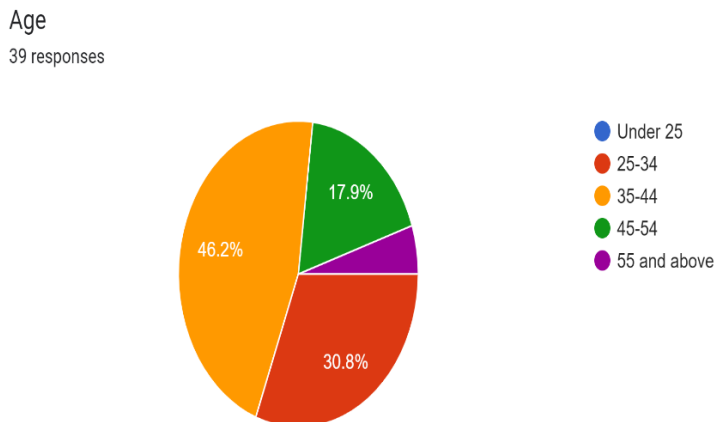Figure 2, Gender of responses pie charter. (Elaborated by the researcher)

Age
39 responses

Legend:
- Under 25
- 25-34
- 35-44
- 45-54
- 55 and above

Values shown: 17.9%, 46.2%, 30.8%

Figure 3, Age of responses pie charter. (Elaborated by the researcher)

Company Size
39 responses

Legend:
- Small
- Medium
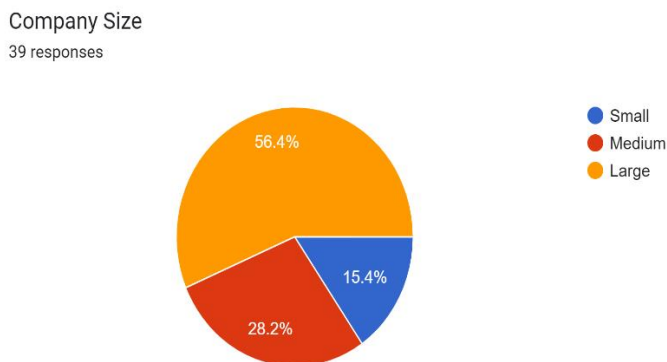- Large

Values shown: 56.4%, 15.4%, 28.2%

Figure 4 Company Size pie charters (Elaborated by the researcher)

Normality Test by Shapiro-Wilk

The Shapiro-Wilk test is a hypothesis test applied to a sample with the null hypothesis that the sample was generated from a normal distribution. If the p-value is low, we can reject this null hypothesis and say that the sample was not generated from a normal distribution.

Tests of Normality

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
independent_1	.172	39	.005	.899	39	.002
independent_2	.198	39	.000	.927	39	.015
independent_3	.241	39	.000	.877	39	.001
independent_4	.334	39	.000	.743	39	.000
independent_5	.179	39	.003	.906	39	.003
independent_6	.184	39	.002	.948	39	.073
independent_7	.167	39	.008	.912	39	.005
independent_8	.201	39	.000	.906	39	.003
independent_9	.242	39	.000	.895	39	.002
independent_10	.212	39	.000	.861	39	.000
independent_11	.168	39	.007	.923	39	.011
independent_12	.275	39	.000	.856	39	.000
dependent	.141	39	.048	.919	39	.008

a. Lilliefors Significance Correction

Table 2 normality test (Elaborated by the researcher based on SPSS results)

Table 2 shows that all of the variables' data substantially differ from a normal distribution, with p-values < 0.05 for every one of them. According to Razali and Wah (2011). The distribution of the sample means approaches a normal distribution as the sample size rises, according to the Central Limit Theorem, even for a population with any distribution. Using a normal distribution as an approximation works pretty well for samples with an n-size greater than 30. With increasing n, the approximation approaches a normal distribution more closely. We have n = 39 here (Fischer, H. 2011).

Reliability Test

A measuring system's consistency, stability, and reliability may be assessed statistically using reliability analysis.

Reliability Statistics

Cronbach's Alpha	N of Items
.913	13

Overall

Reliability Statistics

Cronbach's Alpha	N of Items
.918	20

organizational culture

Reliability Statistics

Cronbach's Alpha	N of Items
.905	5

Intentions to Embrace Environmental Sustainability Practices

Table 3 CRONBACH'S ALPHA (Elaborated by the researcher based on SPSS results)

Table 3 reveals that the data have high levels of internal consistency dependability, with a total Cronbach's alpha of 0.913. There is strong dependability and internal consistency among the 20 items on the dimensions of organizational culture, as indicated by Cronbach's alpha score of 0.918. The Intentions to Embrace Environmental Sustainability Practices dimensions have strong reliability and internal consistency with Cronbach's alpha rating of 0.905.

Descriptive Analysis

Descriptive statistics is a subfield of statistics concerned with providing clear and concise summaries, organization, and presentation of data. Without drawing broad inferences about the population, the emphasis is on characterizing and analyzing the essential characteristics of a dataset.

Descriptive Statistics									
		N	Range	Minimum	Maximum	Mean		Std. Deviation	Variance
scale	Discription	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Statistic
EV	Environmental Values	39	2	3	5	4.1667	0.09777	0.61058	0.373
CN	Cultural Norms	39	2.5	2.5	5	3.7692	0.0897	0.56015	0.314
TMS	Top Management Support	39	2	3	5	4.0385	0.0869	0.54271	0.295
FMA	Vision and Mission Alignment	39	3	2	5	4.1026	0.10256	0.64051	0.41
ISI	Involvement in Sustainability	39	4	1	5	3.5	0.12184	0.76089	0.579
TAP	Training and Awareness Programs	39	3.5	1.5	5	3.2692	0.12301	0.76817	0.59
IC	Internal Communication	39	4	1	5	3.3974	0.13644	0.85208	0.726
TR	Transparency and Reporting	39	4	1	5	3.359	0.12981	0.81069	0.657
SD	Sustainability Departments	39	4	1	5	3.4103	0.15463	0.96567	0.933
IIBU	Integration into Business Units	39	4	1	5	3.5641	0.15497	0.96777	0.937
SP	Sustainability Policies	39	4	1	5	3.5513	0.14439	0.90172	0.813
OP	Operational Practices	39	4	1	5	3.5385	0.15519	0.96916	0.939
IEESP	Intentions to Embrace Environmental Sustainability Practices	39	4	1	5	3.6462	0.11674	0.72904	0.531
	Valid N (listwise)	39							

Table 4 descriptive statistics (Elaborated by the researcher based on SPSS results)

Correlation analysis

A bivariate correlation study was performed on the variables listed in table 5. The Pearson's correlation coefficient (r) was used to quantify the strength of the linear relationship between the two variables, which are quantitative and are paired. A correlation coefficient between 0.90 and 1.00 indicates a very high level of positive correlation, while a correlation between 0.70 and 0.90 indicates a high level of positive correlation, 0.50 to 0.70 indicates a moderate level of positive

correlation, and a correlation between 0.30 and 0.50 indicates a low level of positive correlation.

Correlations

		independent_1	independent_2	independent_3	independent_4	independent_5	independent_6	independent_7	independent_8	independent_9	independent_10	independent_11	independent_12	dependent
independent_1	Pearson Correlation	1	.539**	.437**	.460**	.142	.435**	.173	.328*	.149	.349*	.510**	.245	.526**
	Sig. (1-tailed)		.000	.003	.002	.195	.003	.146	.021	.183	.015	.000	.067	.000
	N	39	39	39	39	39	39	39	39	39	39	39	39	39
independent_2	Pearson Correlation	.539**	1	.593**	.471**	.401**	.500**	.321*	.491**	.131	.465**	.454**	.380**	.607**
	Sig. (1-tailed)	.000		.000	.001	.006	.001	.023	.001	.213	.001	.002	.008	.000
	N	39	39	39	39	39	39	39	39	39	39	39	39	39
independent_3	Pearson Correlation	.437**	.593**	1	.291*	.494**	.369*	.464**	.431**	.195	.559**	.453**	.585**	.674**
	Sig. (1-tailed)	.003	.000		.036	.001	.010	.001	.003	.117	.000	.000	.000	.000
	N	39	39	39	39	39	39	39	39	39	39	39	39	39
independent_4	Pearson Correlation	.460**	.471**	.291*	1	.162	.237	.213	.383*	.398**	.286*	.424**	.290*	.497**
	Sig. (1-tailed)	.002	.001	.036		.162	.074	.097	.008	.006	.039	.004	.037	.001
	N	39	39	39	39	39	39	39	39	39	39	39	39	39
independent_5	Pearson Correlation	.142	.401**	.494**	.162	1	.563**	.609**	.576**	.125	.679**	.479**	.553**	.446**
	Sig. (1-tailed)	.195	.006	.001	.162		.000	.000	.000	.224	.000	.001	.000	.002
	N	39	39	39	39	39	39	39	39	39	39	39	39	39
independent_6	Pearson Correlation	.435**	.500**	.369*	.237	.563**	1	.536**	.580**	.042	.498**	.511**	.436**	.414**
	Sig. (1-tailed)	.003	.001	.010	.074	.000		.000	.000	.399	.001	.000	.003	.004
	N	39	39	39	39	39	39	39	39	39	39	39	39	39
independent_7	Pearson Correlation	.173	.321*	.464**	.213	.609**	.536**	1	.712**	.324*	.535**	.658**	.626**	.686**
	Sig. (1-tailed)	.146	.023	.001	.097	.000	.000		.000	.022	.000	.000	.000	.000
	N	39	39	39	39	39	39	39	39	39	39	39	39	39
independent_8	Pearson Correlation	.328*	.491**	.431**	.383*	.576**	.580**	.712**	1	.328*	.624**	.613**	.602**	.657**
	Sig. (1-tailed)	.021	.001	.003	.008	.000	.000	.000		.021	.000	.000	.000	.000
	N	39	39	39	39	39	39	39	39	39	39	39	39	39
independent_9	Pearson Correlation	.149	.131	.195	.398**	.125	.042	.324*	.328*	1	.337*	.595**	.292*	.556**
	Sig. (1-tailed)	.183	.213	.117	.006	.224	.399	.022	.021		.018	.000	.036	.000
	N	39	39	39	39	39	39	39	39	39	39	39	39	39
independent_10	Pearson Correlation	.349*	.465**	.559**	.286*	.679**	.498**	.535**	.624**	.337*	1	.644**	.565**	.686**
	Sig. (1-tailed)	.015	.001	.000	.039	.000	.001	.000	.000	.018		.000	.000	.000
	N	39	39	39	39	39	39	39	39	39	39	39	39	39
independent_11	Pearson Correlation	.510**	.454**	.453**	.424**	.479**	.511**	.658**	.613**	.595**	.644**	1	.585**	.825**
	Sig. (1-tailed)	.000	.002	.002	.004	.001	.000	.000	.000	.000	.000		.000	.000
	N	39	39	39	39	39	39	39	39	39	39	39	39	39
independent_12	Pearson Correlation	.245	.380**	.585**	.290*	.553**	.436**	.626**	.602**	.292*	.565**	.585**	1	.679**
	Sig. (1-tailed)	.067	.008	.000	.037	.000	.003	.000	.000	.036	.000	.000		.000
	N	39	39	39	39	39	39	39	39	39	39	39	39	39
dependent	Pearson Correlation	.526**	.607**	.674**	.497**	.446**	.414**	.686**	.657**	.556**	.686**	.825**	.679**	1
	Sig. (1-tailed)	.000	.000	.000	.001	.002	.004	.000	.000	.000	.000	.000	.000	
	N	39	39	39	39	39	39	39	39	39	39	39	39	39

**. Correlation is significant at the 0.01 level (1-tailed).

*. Correlation is significant at the 0.05 level (1-tailed).

Table 5 correlation analysis (Elaborated by the researcher based on SPSS results)

Hypothesis 1:

there is a significant positive relationship between Environmental Values (independent variable) and Intentions to Embrace Environmental Sustainability Practices (dependent variable), the P value explored from the table is {P= .000 < 0.01, r = 0.526}.

Hypothesis 2:

there is a significant positive relationship between Cultural Norms (independent variable) and Intentions to Embrace Environmental Sustainability Practices (dependent variable), the P value explored from the table is {P= .000 < 0.01, r = 0.607}.

Hypothesis 3:

there is a significant positive relationship between Top Management Support (independent variable) and Intentions to Embrace Environmental Sustainability Practices (dependent variable), the P value explored from the table is {P= .000 < 0.01, r = 0.674}.

Hypothesis 4:

there is a significant positive relationship between Vision and Mission Alignment (independent variable) and Intentions to Embrace Environmental Sustainability Practices (dependent variable), the P value explored from the table is {P= .000 < 0.01, r = 0.497}.

Hypothesis 5:

there is a significant positive relationship between Involvement in Sustainability (independent variable) and Intentions to Embrace Environmental Sustainability Practices (dependent variable), the P value explored from the table is {P= .000 < 0.01, r = 0.446}.

Hypothesis 6:

there is a significant positive relationship between Training and Awareness Programs (independent variable) and Intentions to Embrace Environmental Sustainability Practices (dependent variable), the P value explored from the table is {P= .000 < 0.01, r = 0.414}.

Hypothesis 7:

there is a significant positive relationship between Internal Communication (independent variable) and Intentions to Embrace Environmental Sustainability Practices (dependent variable), the P value explored from the table is {P= .000 < 0.01, r = 0.686}.

Hypothesis 8:

there is a significant positive relationship between Transparency and Reporting (independent variable) and Intentions to Embrace Environmental Sustainability Practices (dependent variable), the P value explored from the table is {P= .000 < 0.01, r = 0.657}.

Hypothesis 9:

there is a significant positive relationship between Sustainability Departments (independent variable) and Intentions to Embrace Environmental Sustainability Practices (dependent variable), the P value explored from the table is {P= .000 < 0.01, r = 0.556}.

Hypothesis 10:

there is a significant positive relationship between Integration into Business Units (independent variable) and Intentions to Embrace Environmental Sustainability Practices (dependent variable), the P value explored from the table is {P= .000 < 0.01, r = 0.686}.

Hypothesis 11:

there is a significant positive relationship between Sustainability Policies (independent variable) and Intentions to Embrace Environmental Sustainability Practices (dependent variable), the P value explored from the table is {P= .000 < 0.01, r = 0.825}.

Hypothesis 12:

there is a significant positive relationship between Operational Practices (independent variable) and Intentions to Embrace Environmental Sustainability Practices (dependent variable), the P value explored from the table is {P= .000 < 0.01, r = 0.679}.

Regression Analysis

Linear regression analysis has been conducted for each explanatory or independent variables with the response or dependent variable to analysis and predict the relationship between these two variables. It assumes a linear relationship between the independent variable and the dependent variable and aims to find the best fitting line that describes this relationship. Linear regression shows a linear relationship

between the independent (predictor) variable, which represents the x-axis, and the dependent (output) variable, which represents the y-axis. To calculate the line of best fit, linear regression uses the traditional slope-intercept form the equation: $(Y_i = \beta_0 + \beta_1 X_i)$ where Y_i = dependent variable, β_0 = constant/origin, β_1 = slope/origin, X_i = independent variable.

Hypothesis 1:

Using data elaborated in the following tables 6. It refers that a one unit increase in explanatory will increase response by 27.7 %. Moreover, (R^2) is used to evaluate the model fit, generally, the model is considered fit when R^2 equals to 0.10 or higher (Falk & Miller, 1992). Giving the regression equation $(Y = 1.029 + 0.628\ X)$

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics R Square Change	F Change	df1	df2	Sig. F Change
1	.526(a)	.277	.257	.62829	.277	14.164	1	37	.001

a Predictors: (Constant), independent_1

Coefficients(a)

Model		Unstandardized Coefficients B	Std. Error	Standardized Coefficients Beta	t	Sig.	95% Confidence Interval for B Lower Bound	Upper Bound
1	(Constant)	1.029	.703		1.464	.152	-.395	2.452
	independent_1	.628	.167	.526	3.764	.001	.290	.966

a Dependent Variable: dependent

Table 6 regression model summary H1

Hypothesis 2:

Using data elaborated in the following tables 7. It refers that a one unit increase in explanatory will increase response by 36.8 %. Giving the regression equation (Y = 1.029 + 0.628 X)

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change	F Change	df1	df2	Sig. F Change
					Change Statistics				
1	.607(a)	.368	.351	.58729	.368	21.556	1	37	.000

a Predictors: (Constant), independent_2

Coefficients(a)

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95% Confidence Interval for B	
		B	Std. Error	Beta			Lower Bound	Upper Bound
1	(Constant)	.670	.648		1.034	.308	-.643	1.983
	independent_2	.790	.170	.607	4.643	.000	.445	1.134

a Dependent Variable: dependent

Table 7 regression model summary H2

Hypothesis 3:

Using data elaborated in the following tables 8. It refers that a one unit increase in explanatory will increase response by 45.4 %. Giving the regression equation (Y = 0.009 + 0.905 X)

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change	F Change	df1	df2	Sig. F Change
					Change Statistics				
1	.674(a)	.454	.439	.54592	.454	30.769	1	37	.000

a Predictors: (Constant), independent_3

Coefficients(a)

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95% Confidence Interval for B	
	B	Std. Error	Beta			Lower Bound	Upper Bound
1 (Constant)	-.009	.665		-.014	.989	-1.356	1.338
independent_3	.905	.163	.674	5.547	.000	.575	1.236

a Dependent Variable: dependent

Table 8 regression model summary H3

Hypothesis 4:

Using data elaborated in the following tables 9. It refers that a one unit increase in explanatory will increase response by 24.7 %. Giving the regression equation (Y = 1.326 + 0.565 X)

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.497(a)	.247	.226	.64120	.247	12.124	1	37	.001

a Predictors: (Constant), independent_4

Coefficients(a)

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95% Confidence Interval for B	
	B	Std. Error	Beta			Lower Bound	Upper Bound
1 (Constant)	1.326	.674		1.968	.057	-.040	2.692
independent_4	.565	.162	.497	3.482	.001	.236	.895

a Dependent Variable: dependent

Table 9 regression model summary H4

Hypothesis 5:

Using data elaborated in the following tables 10. It refers that a one unit increase in explanatory will increase response by 19.9%. Giving the regression equation (Y = 2.151 + 0.427 X)

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.446(a)	.199	.177	.66130	.199	9.184	1	37	.004

a Predictors: (Constant), independent_5

Coefficients(a)

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95% Confidence Interval for B	
		B	Std. Error	Beta			Lower Bound	Upper Bound
1	(Constant)	2.151	.505		4.261	.000	1.128	3.173
	independent_5	.427	.141	.446	3.031	.004	.142	.713

a Dependent Variable: dependent

Table 10 regression model summary H5

Hypothesis 6:

Using data elaborated in the following tables 11. It refers that a one unit increase in explanatory will increase response by 17.2%. Giving the regression equation (Y = 2.361 + 0.393 X)

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.414(a)	.172	.149	.67246	.172	7.664	1	37	.009

a Predictors: (Constant), independent_6

Coefficients(a)

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95% Confidence Interval for B	
		B	Std. Error	Beta			Lower Bound	Upper Bound
1	(Constant)	2.361	.477		4.954	.000	1.395	3.327
	independent_6	.393	.142	.414	2.768	.009	.105	.681

a Dependent Variable: dependent

Table 11 regression model summary H6

Hypothesis 7:

Using data elaborated in the following tables 12. It refers that a one unit increase in explanatory will increase response by 47%. Giving the regression equation (Y = 1.653 + 0.587 X)

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics R Square Change	F Change	df1	df2	Sig. F Change
1	.686(a)	.470	.456	.53783	.470	32.822	1	37	.000

a Pr **Coefficients(a)**

Model		Unstandardized Coefficients B	Std. Error	Standardized Coefficients Beta	t	Sig.	95% Confidence Interval for B Lower Bound	Upper Bound
1	(Constant)	1.653	.358		4.613	.000	.927	2.379
	independent _7	.587	.102	.686	5.729	.000	.379	.794

a Dependent Variable: dependent

Table 12 regression model summary H7

Hypothesis 8:

Using data elaborated in the following tables 13. It refers that a one unit increase in explanatory will increase response by 43.2%. Giving the regression equation (Y = 1.662 + 0.591 X)

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics R Square Change	F Change	df1	df2	Sig. F Change
1	.657(a)	.432	.416	.55704	.432	28.089	1	37	.000

a Predictors: (Constant), independent_8

Coefficients(a)

Model		Unstandardized Coefficients		Standardized Coefficients			95% Confidence Interval for B	
		B	Std. Error	Beta	t	Sig.	Lower Bound	Upper Bound
1	(Constant)	1.662	.385		4.318	.000	.882	2.442
	independent_8	.591	.111	.657	5.300	.000	.365	.817

a Dependent Variable: dependent

Table 13 regression model summary H8

Hypothesis 9:

Using data elaborated in the following tables 14. It refers that a one unit increase in explanatory will increase response by 30.9%. Giving the regression equation $(Y = 2.216 + 0.419 X)$

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.556(a)	.309	.290	.61434	.309	16.515	1	37	.000

a Predictors: (Constant), independent_9

Coefficients(a)

Model		Unstandardized Coefficients		Standardized Coefficients			95% Confidence Interval for B	
		B	Std. Error	Beta	t	Sig.	Lower Bound	Upper Bound
1	(Constant)	2.216	.365		6.064	.000	1.475	2.956
	independent_9	.419	.103	.556	4.064	.000	.210	.628

a Dependent Variable: dependent

Table 14 regression model summary H9

Hypothesis 10:

Using data elaborated in the following tables 15. It refers that a one unit increase in explanatory will increase response by 47%. Giving the regression equation (Y = 1.805 + 0.517 X)

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics R Square Change	F Change	df1	df2	Sig. F Change
1	.686(a)	.470	.456	.53776	.470	32.840	1	37	.000

a Predictors: (Constant), independent_10

Coefficients(a)

Model	Unstandardized Coefficients B	Unstandardized Coefficients Std. Error	Standardized Coefficients Beta	t	Sig.	95% Confidence Interval for B Lower Bound	95% Confidence Interval for B Upper Bound
1 (Constant)	1.805	.333		5.427	.000	1.131	2.479
independent_10	.517	.090	.686	5.731	.000	.334	.699

a Dependent Variable: dependent

Table 15 regression model summary H10

Hypothesis 11:

Using data elaborated in the following tables 16. It refers that a one unit increase in explanatory will increase response by 68.1%. Giving the regression equation (Y = 1.278 + 0.667 X)

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics R Square Change	F Change	df1	df2	Sig. F Change
1	.825(a)	.681	.672	.41759	.681	78.819	1	37	.000

a Predictors: (Constant), independent_11

Coefficients(a)

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95% Confidence Interval for B	
	B	Std. Error	Beta			Lower Bound	Upper Bound
1 (Constant)	1.278	.275		4.645	.000	.720	1.835
independent_11	.667	.075	.825	8.878	.000	.515	.819

a Dependent Variable: dependent

Table 16 regression model summary H11

Hypothesis 12:

Using data elaborated in the following tables 17. It refers that a one unit increase in explanatory will increase response by 46.1%. Giving the regression equation $(Y = 1.839 + 0.511 X)$

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.679(a)	.461	.446	.54239	.461	31.652	1	37	.000

a Predictors: (Constant), independent_12

Coefficients(a)

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95% Confidence Interval for B	
	B	Std. Error	Beta			Lower Bound	Upper Bound
1 (Constant)	1.839	.333		5.526	.000	1.165	2.513
independent_12	.511	.091	.679	5.626	.000	.327	.695

a Dependent Variable: dependent

Table 17 regression model summary H12

Multiple Regression Analysis

Both the Sustainability Policies and the Top Management Support, which are selected explanatory factors, and the response variable, Intentions to Embrace Environmental Sustainability Practices, is the dependent variable in a multiple regression analysis.

Tables 18 provide the full results of the best fit multiple regression model, which shows that Sustainability Policies is the most important variable (68.1% of the total) and that Top Management Support is the second most important (11.3%).

Considering the total R2 value in model 2 reveals that both have a 79.4% impact on Intentions to Embrace Environmental Sustainability Practices, indicating the optimal multiple regression model. Y = 0.280 + 0.529 X1 + 0.507 X2 is the regression equation that provides the relationship between Intentions to Embrace Environmental Sustainability Practices, Sustainability Policies (X1), and Top Management Support (X2). The results show that the residuals follow a distribution that is close to normal (Figures 5&6).

Model Summary(c)

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.825(a)	.681	.672	.41759	.681	78.819	1	37	.000	
2	.891(b)	.794	.782	.34005	.113	19.797	1	36	.000	2.311

a Predictors: (Constant), independent_11

b Predictors: (Constant), independent_11, independent_3

c Dependent Variable: dependent

Coefficients(a)

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95% Confidence Interval for B	
		B	Std. Error	Beta			Lower Bound	Upper Bound
1	(Constant)	1.278	.275		4.645	.000	.720	1.835
	independent _11	.667	.075	.825	8.878	.000	.515	.819
2	(Constant)	-.280	.416		-.674	.505	-1.123	.563
	independent _11	.529	.069	.654	7.704	.000	.390	.668
	independent _3	.507	.114	.378	4.449	.000	.276	.739

a Dependent Variable: dependent

Table 18 model summary of multiple regression
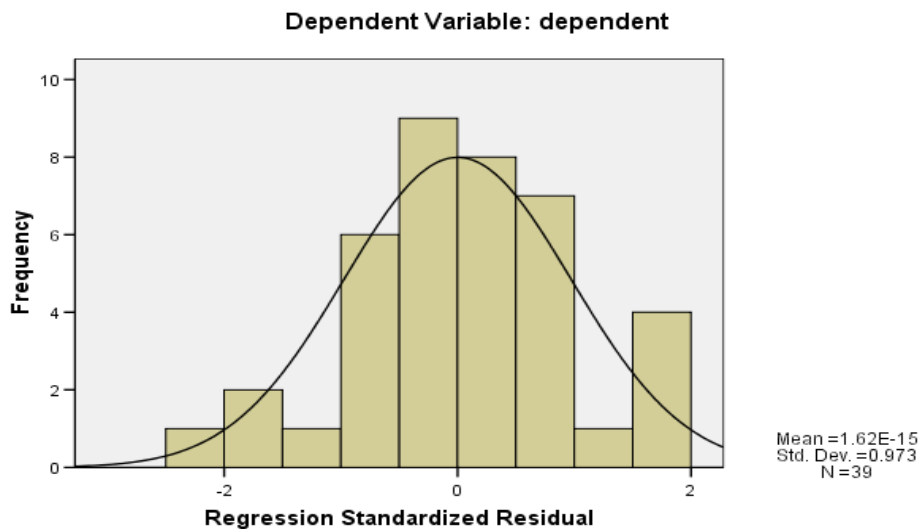
Figure 5 model histogram

Normal P-P Plot of Regression Standardized Residual
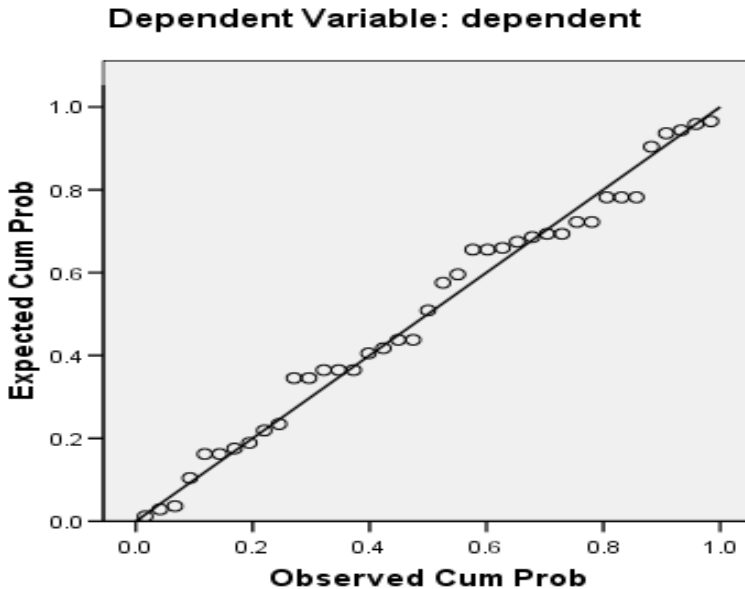
Figure 6 model P-P plot

Discussion

Correlation Analysis

The study conducted a bivariate correlation analysis using Pearson's correlation coefficient to measure the linear relationships between organizational culture dimensions and the intentions to embrace environmental sustainability practices. Results from Table 5 indicate varying strengths of correlation: Environmental Values (r = 0.526) showed a moderate positive correlation with intentions to embrace sustainability practices, suggesting a reasonable link between these values and sustainability actions. Cultural Norms (r = 0.607) and Top Management Support (r = 0.674) both exhibited high positive correlations, indicating strong influences on sustainability intentions, reflecting the critical role of cultural attitudes and leadership in promoting sustainability. Vision and Mission Alignment (r = 0.497) and

Involvement in Sustainability (r = 0.446) demonstrated lower yet significant positive correlations, suggesting that while important, they are among the lesser predictors compared to other variables. Training and Awareness Programs (r = 0.414), Internal Communication (r = 0.686), and Transparency and Reporting (r = 0.657) also showed significant correlations, with Internal Communication being particularly strong, emphasizing the importance of clear, consistent communication in fostering sustainability practices. Sustainability Departments (r = 0.556), Integration into Business Units (r = 0.686), Sustainability Policies (r = 0.825), and Operational Practices (r = 0.679) displayed high to very high correlations, particularly Sustainability Policies, which suggests that formal policies are highly effective in promoting sustainability intentions.

Regression Analysis

Linear regression analysis further explored the relationships between these variables. Key findings include: A one-unit increase in Sustainability Policies is associated with a significant increase in the intentions to embrace sustainability practices, with the highest impact among all tested variables (68.1%). Top Management Support also significantly increases sustainability intentions, reinforcing the importance of leadership in driving sustainability efforts. The regression models consistently showed significant positive effects across all variables on sustainability intentions, confirming the predictive power of organizational culture dimensions on sustainability actions. The model summaries provide the equations and statistics necessary to predict how changes in these cultural dimensions affect sustainability intentions, with R^2 values indicating good model fits, particularly when combined variables like Sustainability Policies and Top Management Support are considered.

This comprehensive analysis highlights the substantial impact of various facets of organizational culture on the sustainability practices within corporations, particularly in Egyptian contexts. The findings not

only support the hypotheses but also offer actionable insights for organizations looking to enhance their sustainability initiatives.

Conclusions

This research underscores the significant influence of organizational culture on the intention to embrace environmental sustainability practices in Egyptian enterprises. Among the twelve dimensions examined, sustainability policies and top management support are identified as the most impactful, highlighting the importance of strategic alignment and leadership in driving sustainability initiatives. Theoretical contributions of this study include a deeper understanding of the cultural dimensions influencing sustainability within a specific geographical context. Practically, the findings offer actionable insights for organizations to cultivate a culture that supports sustainable practices. By focusing on robust sustainability policies and strong top management support, companies can enhance their sustainability efforts and achieve long-term success.

Theoretical Implications

The study enriches the theoretical discourse on organizational culture and sustainability by identifying key cultural dimensions that drive sustainable practices. It highlights the role of strategic leadership and formal policies in shaping organizational behaviors and intentions towards sustainability.

Practical Implications

Practically, this research provides actionable strategies for Egyptian businesses to strengthen their sustainability initiatives. By prioritizing sustainability policies and top management support, organizations can create a supportive cultural environment that fosters sustainability and enhances competitive advantage.

Areas for Future Research

Future research could delve into the impact of digital transformation on organizational culture and sustainability, as well as conduct comparative studies across different cultural and economic contexts to broaden the applicability of the findings.

References

- Adams, C. A., & McNicholas, P. (2007). Exploring the relationship between corporate sustainability and financial performance: The impact of stakeholder engagement and transparency. *Journal of Business Ethics*, 73(1), 23-45.
- Ambec, S., & Lanoie, P. (2009). Does it pay to be green? A systematic overview. *Academy of Management Perspectives*, 23(4), 45-62.
- Amrutha, V. N., & Geetha, S. N. (2020). A systematic review on green human resource management: Implications for social sustainability. *Journal of Cleaner Production*, 247, 119131.
- Aragon-Correa, J. A., & Sharma, S. (2003). A contingent resource-based view of proactive corporate environmental strategy. *Academy of Management Review*, 28(1), 71-88.
- Barbe, F., & Kleiner, B. H. (2005). New developments concerning the Hawthorne effect: A review of the literature. *International Journal of Management*, 22(3), 376-383.
- Bansal, P. (2005). Evolving sustainably: A longitudinal study of corporate sustainable development. *Strategic Management Journal*, 26(3), 197-218.
- Bateh, J., Horner, D., Broadbent, A., & Fish, A. (2014). Towards a theoretical integration of sustainability: A literature review. *Journal of Management and Sustainability*, 4(4), 57.
- Brondoni, S. M. (2002). Global markets and market-space competition. *Symphonya Emerging Issues in Management*, (1), 28-42.
- Caetano, J. N., & Bezzi, M. L. (2011). Cultural geography and symbolic landscapes: Exploring cultural codes. *Journal of Cultural Geography*, 28(2), 167-188.
- Cardoni, A., Kiseleva, E., & Lombardi, R. (2020). A sustainable corporate governance framework: Implications for integrated reporting. *Corporate Social Responsibility and Environmental Management*, 27(3), 1304-1316.

- Carmona, L., Fuentes, C. M., & Ruiz, C. F. (2017). Evaluation of sustainability performance in Brazilian electricity companies using TOPSIS. *Renewable and Sustainable Energy Reviews*, 78, 554-570.
- Chaudhry, S., & Amir, M. M. (2020). Institutional pressures and proactive environmental strategies: The mediating role of environmental management accounting. *Journal of Business Strategy and the Environment*, 29(2), 912-927.
- Collins, J. C., & Porras, J. I. (1996). Building your company's vision. *Harvard Business Review*, 74(5), 65-77.
- Corrales-Estrada, M. (2019). Sustainable business models: A customer-centric approach. *Sustainability*, 11(10), 2826.
- Cristófalo, M. A., Félix, J. C., & Paulo, E. P. (2016). Sustainability index and stock market performance in Brazil. *Revista de Administração de Empresas*, 56(3), 315-328.
- Daily, B. F., & Huang, S. (2001). Achieving sustainability through attention to human resource factors in environmental management. *International Journal of Operations & Production Management*, 21(12), 1539-1552.
- Delmas, M. A., & Toffel, M. W. (2008). Organizational responses to environmental demands: Opening the black box. *Strategic Management Journal*, 29(10), 1027-1055.
- Demartini, M., Pinna, C., Aliakbarian, B., Tonelli, F., & Terzi, S. (2017). Manufacturing value modeling methodology: A structured approach to evaluate eco-efficiency performance. *Sustainability*, 9(5), 791.
- Denčić-Mihajlov, K., & Zeranski, S. (2018). Performance indicators for sustainable management in the agribusiness sector. *Economics of Agriculture*, 65(1), 305-320.
- Deshpande, R., & Webster, F. E. (1989). Organizational culture and marketing: Defining the research agenda. *Journal of Marketing*, 53(1), 3-15.
- Doppelt, B. (2003). Overcoming the seven sustainability blunders. *Systems Thinker*, 14(5), 2-7.
- Dunlap, R. E., & Van Liere, K. D. (1978). The "New Environmental Paradigm". *Journal of Environmental Education*, 9(4), 10-19.
- Dyllick, T., & Hockerts, K. (2002). Beyond the business case for corporate sustainability. *Business Strategy and the Environment*, 11(2), 130-141.
- Earnhart, D., & Lizal, L. (2007). Effect of pollution control on corporate financial performance in a transition economy. *European Environment*, 17(5), 278-290.

- Eccles, R. G., Ioannou, I., & Serafeim, G. (2014). The impact of corporate sustainability on organizational processes and performance. *Management Science*, 60(11), 2835-2857.
- Eccles, R. G., Serafeim, G., & Krzus, M. P. (2012). Market interest in nonfinancial information. *Journal of Applied Corporate Finance*, 24(2), 113-127.
- Engert, S., Rauter, R., & Baumgartner, R. J. (2016). Corporate sustainability strategies: A systematic review and research agenda. *Journal of Cleaner Production*, 112, 2830-2845.
- Epstein, M. J., & Buhovac, A. R. (2014). Making sustainability work: Best practices in managing and measuring corporate social, environmental, and economic impacts. *Berrett-Koehler Publishers*.
- Epstein, M. J., & Roy, M. J. (2001). Sustainability in action: Identifying and measuring the key performance drivers. *Long Range Planning*, 34(5), 585-604.
- Epstein, M. J., & Roy, M. J. (2003). Improving sustainability performance: Specifying, implementing, and measuring key principles. *Journal of General Management*, 29(1), 15-31.
- Esen, E., & Çalışkan, A. (2019). Green human resource management: Recommendations for business leaders. *Journal of Industrial Engineering and Management*, 12(2), 284-300.
- Fatemi, A., & Fooladi, I. J. (2020). Sustainability and corporate value creation. *Global Finance Journal*, 45, 100473.
- Fitriani, N. (2013). The impact of corporate environmental performance on stock prices in Indonesia. *Journal of Economics, Business, and Accountancy Ventura*, 16(1), 67-78.
- Flier, A. Y. (2020). Culture as a system of hierarchical values: Theoretical and methodological aspects. *Philosophy and Culture*, 12(1), 22-36.
- Freitas, A. S., & Freitas, R. A. (2015). Corporate environmental responsibility and profitability: A study in the mechanical metal sector in Brazil. *Independent Journal of Management & Production*, 6(1), 95-112.
- Fujii, H., Iwata, K., Kaneko, S., & Managi, S. (2013). Corporate environmental and economic performance of Japanese manufacturing firms: Empirical study for sustainable development. *Business Strategy and the Environment*, 22(3), 187-201.

- Fuzi, N. M., Habidin, N. F., & Hibadullah, S. N. (2022). Exploring sustainability management accounting and performance: Evidence from manufacturing companies. *Management Research Review*, 45(2), 240-258.
- Garza, R. (2013). Mission-driven management: Leading the way with strategic planning. *Nonprofit Management and Leadership*, 23(3), 341-357.
- Godha, A., & Jain, P. (2015). Sustainability reporting trends in India. *IOSR Journal of Business and Management*, 17(1), 1-7.
- Goyal, P., & Rahman, Z. (2014). Corporate sustainability performance in the oil and gas industry: An AHP model for sustainability assessment. *Global Business Review*, 15(4), 735-746.
- Grove, H., & Clouse, M. (2018). ESG sustainability metrics: The key to long-term business success. *Business Horizons*, 61(5), 677-684.
- Gurova, I. V. (2023). The role of culture in shaping modern society: Global, national, and ethnic dimensions. *Cultural Studies Review*, 29(1), 15-31.
- Gutterman, A. S. (2020). Developing a sustainable business model. *Journal of Management and Sustainability*, 10(1), 1-14.
- Ha, T., & Perks, H. (2020). Aligning corporate culture with brand values: The role of brand orientation. *Journal of Business Research*, 107, 317-328.
- Hannelie, J. (2015). The link between environmental responsibility and financial performance: The South African case. *Journal of Corporate Citizenship*, 60, 101-119.
- Hart, S. L., & Milstein, M. B. (2003). Creating sustainable value. *Academy of Management Executive*, 17(2), 56-69.
- Hofstede, G., Hofstede, G. J., & Minkov, M. (2010). Cultures and organizations: Software of the mind. *McGraw-Hill*.
- Hui, W., Cheng, K., & Wang, F. (2021). Cultural alignment and organizational performance: The role of strategic human resource management. *Chinese Management Studies*, 15(2), 343-360.
- Ionescu, C. (2016). Stakeholder engagement in sustainability accounting: A comprehensive approach. *Sustainability Accounting, Management and Policy Journal*, 7(3), 404-430.
- Jackson, S. E., Renwick, D. W. S., Jabbour, C. J. C., & Müller-Camen, M. (2011). State-of-the-art and future directions for green human resource management: Introduction to the special issue. *Zeitschrift für Personalforschung*, 25(2), 99-116.
- Jin, B., & McCauley, M. (2012). Exploring the influence of culture on retail service quality expectations. *Journal of Global Marketing*, 25(3), 155-172.

- Jin, Y., Qi, S., & Liu, Y. (2021). Sustainable management activities and firm performance: The mediating role of competitive advantage. *Sustainability*, 13(3), 1219.

- Johari, R. J., & Komathy, S. (n.d.). Sustainability reporting and firm performance: Evidence from Malaysia. *Asian Academy of Management Journal*, 20(2), 39-56.

- Kalaivani, N. (2020). Green human resource management: A new paradigm in achieving organizational sustainability. *Journal of Business Strategy*, 41(1), 23-30.

- Kamande, E. G., & Lokina, R. B. (2013). The relationship between eco-efficiency and firm financial performance: Evidence from Kenya's manufacturing firms. *Environment, Development and Sustainability*, 15(4), 1145-1165.

- Kasim, E. S., Syed Ali, R. R., & Norwani, N. M. (2018). Sustainability performance measurement in Malaysian public-listed companies: Drivers and challenges. *Management & Accounting Review (MAR)*, 17(1), 53-74.

- Kasatkin, P. I. (2017). Values as a key component of cultural systems: A theoretical and methodological perspective. *Russian Journal of Cultural Studies*, 20(2), 145-160.

- Kim, H., & Kim, K. (2012). The sustainable value chain: A model for integrating environmental, social, and economic concerns. *Journal of Business Ethics*, 110(3), 223-237.

- Korga, P., & Aslanoğlu, E. (2022). The impact of corporate sustainability on firm size and financial performance: Evidence from Turkish manufacturing firms. *Journal of Cleaner Production*, 334, 130213.

- Kvirkvaia, T., & Kikutadze, V. (2014). Corporate culture and business efficiency: The Georgian case. *International Journal of Social Sciences*, 3(1), 38-50.

- Lee, J. (2020). The influence of organizational ethical values and leader-member exchange on employee behaviors: An empirical study of Korean companies. *Journal of Business Ethics*, 162(1), 83-98.

- Lozano, R. (2013). A holistic perspective on corporate sustainability drivers. *Corporate Social Responsibility and Environmental Management*, 20(4), 224-242.

- Ma, C., & Wang, Q. (2011). A study on the relationship between human resource management and corporate environmental performance. *Management Science Letters*, 1(2), 167-174.

- McGrady, D., & Golicic, S. (2023). Barriers to corporate sustainability: Insights from the US and beyond. *Journal of Business Logistics*, 44(1), 43-57.
- Mendez-Leon, E., Rodrigues, P., & Lopez, F. (2021). A holistic framework for sustainable value analysis in business models. *Sustainability*, 13(15), 8239.
- Milliman, J., & Grosskopf, J. (2011). Integrated sustainability management: Enhancing environmental and business performance. *Environmental Quality Management*, 21(1), 31-42.
- Minciullo, M., Signori, S., & Monti, A. (2022). Corporate governance and sustainability performance: The role of sustainability-related governance mechanisms. *Journal of Business Research*, 139, 421-433.
- Molamohamadi, Z., Ismail, W. R., & Ali, H. M. (2014). Sustainable human resource management: A comprehensive literature review. *International Journal of Productivity and Performance Management*, 63(5), 571-593.
- Montiel, I., & Delgado-Ceballos, J. (2014). Defining and measuring corporate sustainability: Are we there yet? *Organization & Environment*, 27(2), 113-139.
- Moraczewski, K. (2016). Reconsidering culture: The impact of social heterogeneity on cultural concepts. *Culture and Society*, 14(3), 45-58.
- Munawar, A., Jabeen, F., & Riaz, M. T. (2022). Green human resource management and green innovation in the hotel industry: The mediating role of green human capital. *Journal of Hospitality Marketing & Management*, 31(5), 1-24.
- Mustafa, G., Zhang, W., & Memon, M. H. (2023). The role of green human resource management practices in achieving green competitive advantage. *Sustainable Development*, 31(4), 600-616.
- Olegário, M. J., Lopes, E., & Morais, R. (2016). Sustainability incorporation in organizations: Benefits and best practices. *International Journal of Sustainability in Higher Education*, 17(4), 549-567.
- Ong, T. S., Lee, Y. C., & Lee, C. S. (2019). The role of environmental innovation in translating environmental performance into financial performance. *Sustainable Development*, 27(2), 290-298.
- Ordonez-Ponce, E., & Clarke, A. (2020). Partnering for sustainability: A typology of sustainability-related partnerships. *Business Strategy and the Environment*, 29(3), 157-175.

- Osch, F. P. A. M., Hertog, J. F. D., & Bossink, B. A. G. (2010). Sustainable value creation by stakeholder collaboration. *Sustainability Science*, 5(1), 35-49.
- Özevin, M. G. (2022). Measuring corporate sustainability performance: The entropy-TOPSIS method. *Journal of Cleaner Production*, 334, 130119.
- Paraschiv, D. M., Nemoianu, E. L., Langa, C. A., & Szabo, T. (2012). Eco-innovation, responsible leadership and organizational change for corporate sustainability. *Amfiteatru Economic Journal*, 14(32), 404-419.
- Patala, S., Jalkala, A., Keränen, J., Väisänen, S., Tuominen, V., & Soukka, R. (2016). Sustainable value propositions: Framework and implications for technology suppliers. *Industrial Marketing Management*, 59, 144-156.
- Petrović-Ranđelović, M., Stevanović, S., & Nikolić, M. (2023). The impact of self-regulation practices on corporate profitability: Evidence from the European Union. *Journal of Business Research*, 149, 413-423.
- Pogutz, S., Micale, V., & Winn, M. (2011). Corporate environmental sustainability beyond organizational boundaries: Market growth, ecosystems complexity and supply chain structures. *Journal of Cleaner Production*, 19(2-3), 189-200.
- Portocarrero, F. F., & Winkler, M. (2021). Environmental management practices in the Brazilian mechanical metal sector: The role of managerial performance. *Journal of Cleaner Production*, 287, 125048.
- Poursoleyman, N., Khademi, A., & Gholami, R. (2022). Business sustainability performance and financial performance: The mediating role of investment efficiency. *Environmental Science and Pollution Research*, 29(4), 5161-5175.
- Post, J. E., Preston, L. E., & Sachs, S. (2002). Redefining the corporation: Stakeholder management and organizational wealth. *Stanford University Press*.
- Ramus, C. A. (2001). Organizational support for employees: Encouraging creative ideas for environmental sustainability. *California Management Review*, 43(3), 85-105.
- Ramus, C. A., & Steger, U. (2000). The roles of supervisory support behaviors and environmental policy in employee eco-initiatives at leading-edge European companies. *Academy of Management Journal*, 43(4), 605-626.
- Renwick, D. W. S., Redman, T., & Maguire, S. (2013). Green human resource management: A review and research agenda. *International Journal of Management Reviews*, 15(1), 1-14.

- Ruiz, C. (2020). Sustainable finance models and the financial sector's role in promoting a low-emission growth model. *Journal of Sustainable Finance & Investment*, 10(4), 323-338.
- Russo, M. V., & Fouts, P. A. (1997). A resource-based perspective on corporate environmental performance and profitability. *Academy of Management Journal*, 40(3), 534-559.
- Saeed, M., & Kersten, W. (2020). Corporate sustainability performance and measurement practices in Germany: An analysis of cross-industry challenges. *Corporate Social Responsibility and Environmental Management*, 27(1), 91-107.
- Salvo, M. D. (2023). Performance management for sustainability in agricultural-based social enterprises: Insights from Italy. *Journal of Cleaner Production*, 345, 131118.
- Schaltegger, S., & Wagner, M. (2006). Managing and measuring the business case for sustainability: Capturing the relationship between sustainability performance, business competitiveness and economic performance. *International Journal of Sustainable Development*, 9(1), 41-63.
- Schein, E. H. (1985). Organizational culture and leadership. *Jossey-Bass Publishers*.
- Seçil Gül Meydan Yildiz, T. (2018). The influence of cultural shifts on the spatial structure of human settlements. *Journal of Planning Literature*, 33(3), 271-288.
- Solanki, R. (2016). Green human resource management: A sustainable approach. *International Journal of Research in Commerce & Management*, 7(3), 59-64.
- Sokolov, B. G., & Alekseev-Apraksin, A. M. (2019). Cultural reality and modern consciousness: Clusters and networks. *Philosophy and Culture*, 13(1), 44-61.
- Soviana, M. M., & Dewi, F. A. (2022). Green HRM and its impact on business sustainability: Evidence from Indonesia. *Journal of Environmental Management*, 301, 113820.
- Speers, S. J., & Sroufe, R. (2017). Corporate social responsibility and performance measurement systems. *Business Strategy and the Environment*, 26(7), 915-929.
- Stacchezzini, R., Melloni, G., & Lai, A. (2016). Sustainability management and reporting: The role of integrated reporting for organizational change. *Journal of Cleaner Production*, 139, 204-218.

- Starkey, K., & Tempest, S. (1996). Building the adaptive organization: A simulation approach to organizational change. *Journal of Strategic Change*, 5(5), 277-289.
- Tanova, C., & Bayighomog, S. W. (2022). The role of GHRM practices and employee green behavior in organizational sustainability: Insights from the service industry. *Sustainable Development*, 30(2), 317-330.
- Tasçıoğlu, M. (2018). Primary stakeholder pressure and managers' environmental sustainability intentions: Evidence from Turkey. *Journal of Environmental Planning and Management*, 61(11), 1933-1951.
- Tang, G., Chen, Y., Jiang, Y., Paillé, P., & Jia, J. (2017). Green human resource management practices: Scale development and validity. *Asia Pacific Journal of Human Resources*, 55(1), 31-55.
- Turan, F., Turan, G., & Gunes, G. (2016). Evaluation of sustainability compliance in Malaysian industry: A new methodology. *Environmental Impact Assessment Review*, 59, 11-25.
- Van, L. B. (2011). The influence of sustainability reporting on corporate reputation: An analysis of stakeholder perceptions. *Corporate Communications: An International Journal*, 16(4), 282-299.
- Wolf, J. (2013). Improving the sustainable development of firms: The role of employees. *Business Strategy and the Environment*, 22(3), 121-136.
- Xiao, Y., Ma, L., & Yuan, F. (2018). The effects of sustainability performance on financial returns: Evidence from countries with high and low sustainability performance. *Journal of Cleaner Production*, 172, 1838-1846.
- Yang, J. (2010). Corporate culture and brand culture: The mutual influence and interactive relationship. *Journal of Business Research*, 63(9), 1007-1010.
- Yalçın, N. (2022). Corporate sustainability performance and earnings quality: Evidence from the BIST Sustainability Index. *Sustainability*, 14(4), 2071.
- Yousif Abdelrahim, A. (2021). Rethinking Hofstede's cultural dimensions: Introducing tribalism as a new dimension. *Cross Cultural & Strategic Management*, 28(2), 201-221.
- Zien, K. A., & Buckler, S. A. (1996). From experience: Dreams to market: Crafting a culture of innovation. *Journal of Product Innovation Management*, 13(4), 274-287.

The Public's Reliance on Digital Platforms Supported by Artificial Intelligence Technologies as a Source of Information about Natural Disasters
"The Moroccan Earthquake is an Example" "A Field Study."

Dr. Noha Al-Qatawneh – *Ph.D. in Journalism and Media at the Institute of Journalism and News Sciences- Manouba University - Tunisia. nuha_sabri@yahoo.com*
Dr. Marian Tadrous - *Ph.D. in Strategic Media - School of Communication and Arts, Liberty University, USA. marmar_master@yahoo.com*
Dr. Mahmoud Mohamed Ahmed Mohamed – *Ph.D. in Educational Media, specializing in radio and Television, from the Faculty of Specific Education at Minya University in Egypt   Mahmoud.mido646@yahoo.com*

Abstract

The Study aimed to identify the rate of public dependence on digital platforms supported by artificial intelligence technologies as a source of information about natural disasters. It used the descriptive approach in the style of a sample survey as a tool for collecting data. The sample consisted of (500) individuals from Egyptian and Jordanian citizens following the Moroccan earthquake disaster. The results reached: There is a statistically significant correlation between the rate of public reliance on digital news platforms supported by artificial intelligence technologies and the follow-up of the "Morocco Earthquake" disaster. This indicates that the greater the reliance on digital news platforms supported by technologies, the greater the follow-up to the "Morocco Earthquake" disaster; in addition, there are statistically significant differences between the forms of interaction of sample members with topics related to the damage resulting from the "Morocco Earthquake" disaster via digital platforms supported by artificial intelligence technologies according to the geographical distribution variable, and in the direction of the Egyptian audience, which indicates: the influence of news content on the importance of audience interaction with the news— transforming a receiver into a sender and sharer of information on his page.

Keywords: digital platforms, artificial intelligence, natural disasters.

Introduction

Digital platforms supported by artificial intelligence technologies have contributed to the emergence of new and innovative communication patterns that have helped provide many news services to the public thanks to the reliance on simulation robots that carry out the tasks of news coverage of current events, such as producing, photographing and editing news content in text and images in a language that simulates human intelligence as a result of dealing with big data accurately. Furthermore, it quickly develops and upgrades the news system thanks to simulation robots that broadcast news content related to current events.

Due to the increasing use of artificial intelligence technology, media institutions have tended to adopt alternative solutions due to the challenges imposed by digital developments on the news industry. Interactive digital platforms supported by artificial intelligence technologies have become a fertile media environment for performing the human tasks and roles that constitute the media production chain. These platforms have helped increase The transmission of news and information related to current events to the public more interactively, especially in times of crisis, and in particular, the publication of topics related to the "Morocco Earthquake" disaster, which led to the creation of a media environment based on interaction, dialogue, and participation between users and chatbots based on digital news platforms supported by tools.

Artificial intelligence on topics related to the Moroccan earthquake disaster aims to enrich interactive discussions and exchange opinions about it between users, each other, and those in charge of these platforms. Therefore, researchers found the need to conduct a study to determine the public's dependence on digital platforms supported by artificial intelligence technologies as a source of information about natural disasters.

Literature Review

Previous studies varied between studies that were interested in studying the public's dependence on digital news platforms supported by artificial intelligence technologies to follow current events and others that were interested in forms of interaction with topics related to them on those sites, and when researchers reviewed studies related to the research topic, it was found that: There are many studies which emphasized the nature of the relationship between the rate of public follow-up to topics related to damage resulting from an earthquake disaster via digital platforms supported by artificial intelligence technologies and the interactivity of those platforms. The studies were arranged descending from newest to oldest as follows:

Muhammad (2024) aimed to identify the level of public awareness of the impact of algorithmic systems on the distribution of news content on Facebook and its relationship to their interactive behavior; the results revealed that the sample members have a high awareness of the algorithmic systems that distribute news content on Facebook platforms, despite their insufficient awareness of the existence of interventions. A human being behind this machine can influence the decisions of the content presented.

Abdel Basset (2023) examined the role of digital media in raising awareness of the issues of artificial intelligence technologies as a concept in the areas of their employment and the impact this had on Egyptian youth, specifically testing the presence of acceptance of artificial intelligence technologies technology, which results in shaping the Egyptian public's awareness of these technologies, and the results showed that individuals in the sample interact with the media messages that include products and services that rely on artificial intelligence technologies.

Makady (2023) identified the role of digital platforms supported by algorithms in educating and encouraging the public to consume

news and interact with it actively. The results revealed a relationship between algorithmic awareness, self-monitoring, and active news consumption on Facebook, which indicates the mediating role of self-monitoring that levels of algorithmic awareness encourage active consumption when the risks of self-presentation on the platform are high.

Nechushtai et al. (2023) explored the extent of the ability of digital platforms equipped with algorithmic systems "Facebook, YouTube, Twitter" to help American participants in searching for news; the results showed that there are differences between individuals in the sample in political orientations towards the topics presented and that professionally produced news on some platforms constitutes the basic pillars which rely on the political orientations of the public in searching for information, such as Fox News in particular.

Abdel Ghaffar (2022) investigated the mechanisms and forms of audience interaction with reports of a social nature on the digital platforms of foreign Arabic-speaking channels. The results revealed a statistically significant relationship between the availability of interactive tools and the way the respondents interacted with reports of a social nature published on the digital platforms of foreign Arabic-speaking channels.

Wood (2021) aimed to identify the measurement of influencers' content across social media sites and the interaction strategy, which means the number of followers, the size of the content, and the areas of interest. The results revealed a significant positive interaction between the volume of content and areas of interest, which indicates that influencers with diverse interests can stimulate greater participation of followers by sharing more content on their social media accounts.

Comment on previous studies and the limitations of benefiting from them:

Through the researcher's review of previous scientific heritage, the researchers noted the following:

- The Arab and foreign schools agreed on the importance of the interactivity of social media, as it is a means that allows the user to interact with media content that includes various topics related to current events. It is a characteristic of both the medium and the user due to its ability to provide the public with information by providing the latest developments related to the "Morocco Earthquake" disaster. From the event site and broadcast on digital news platforms.

- Literature reviews represented a rich scientific resource from which researchers derived a sound scientific vision for the subject of the Study. Previous studies also contributed to identifying some important informational dimensions that take up part of the cognitive framework of the Study. By reviewing previous studies, it is clear that they helped researchers as follows:

1- Forming a clear vision of the research problem regarding its definition, formulation, and general framework.

2- Help determine the appropriate scientific method and tools for collecting data.

3- Determine the study sample and its applied field.

4- Determining the appropriate theoretical framework for the nature of the Study, represented in the theory of "symbolic interactionism," entails the ability to formulate questions and define the field study population and how to draw a sample from it.

5- Formulating the Study's hypotheses and questions scientifically to achieve its objectives based on the results.

6- Utilizing it in designing the questionnaire sheet.

7- Utilizing them in analyzing, interpreting, and commenting on the results in a correct scientific manner, as the theoretical frameworks of previous studies that were commented on in the current study are linked to the public's reliance on digital

platforms supported by artificial intelligence technologies as a source of information about natural disasters "the Moroccan earthquake."

The Problem Statement

Due to the growing role played by artificial intelligence applications in creating digital content, media organizations have tended to take advantage of technologies supported by artificial intelligence tools to carry out various tasks more quickly by producing news content related to current events and presenting them to the public in a language that simulates human intelligence with text, audio, and images. Artificial intelligence technologies are an important source for the public to obtain news and information related to current events in times of crisis, especially the "Morocco earthquake" disaster, which led to the destruction of heritage buildings, homes, and basic road infrastructure, in addition to the high numbers of deaths and injuries.

These platforms have formed a fertile environment for creating discussion. Interactive, based on dialogue and participation between the public and chatbots based on digital news platforms supported by artificial intelligence tools on topics related to the Moroccan earthquake disaster, to know the most important news and present different visions and ideas to confront that disaster. Therefore, the problem of the Study is crystallized in the following main question**: What is the rate of public dependence on the platforms?** Digital technology supported by artificial intelligence as a source of information about natural disasters? In light of the social presence of the audience on interactive news platforms supported by artificial intelligence tools to follow the content provided to them on the network.

Research Questions

1- What is the relationship between the rate of public dependence on digital news platforms supported by artificial intelligence technologies and the follow-up of the "Morocco earthquake" disaster?

2- What is the relationship between the public's follow-up of specific topics related to damage resulting from an earthquake disaster through digital platforms supported by artificial intelligence technologies and the degree of benefit from them?

3- What are the differences between the sample members' forms of interaction with topics related to damage resulting from an earthquake disaster via digital platforms supported by artificial intelligence technologies according to the geographical distribution variable?

The Hypotheses

To achieve the objectives of the Study and answer its questions, the study hypotheses were represented in three main hypotheses, which are:

1- There is a statistically significant correlation between the rate of public reliance on digital platforms supported by artificial intelligence technologies and the follow-up of the "Morocco earthquake" disaster.

2- There is a statistically significant correlation between the public's follow-up of specific topics related to damage resulting from an earthquake disaster via digital platforms supported by artificial intelligence technologies and the degree of benefit from them.

3- There are statistically significant differences between the sample members' forms of interaction with topics related to damage resulting from an earthquake disaster via digital platforms supported by artificial intelligence technologies according to the geographical distribution variable.

The Significance of the Study

- **The theoretical importance is due** to the focus on the rate of public dependence on digital platforms supported by artificial intelligence technologies to follow the Moroccan earthquake disaster, as it is an important media tool that benefits the public

in knowing the current events related to it, especially in light of the global interest in that disaster that led to the destruction of heritage buildings and homes and basic road infrastructure, in addition to the hundreds of deaths and injuries and the recovery of more bodies from under the rubble, which caused economic losses estimated at billions of dollars, which reflects the importance of these platforms in knowing the patterns of interaction with opinion and other opinions towards dialogue and participation.

- **As for the practical importance,** it is based on providing a vision of how to link digital media platforms supported by artificial intelligence technologies and the role they play in covering current events, especially in times of crisis, especially the devastating earthquake disaster that caused great damage to the old city of Marrakesh and its historical heritage, such as the destruction of homes and main roads. Historical buildings and ancient tourist attractions, the most important of which is the Tinmel Mosque, the symbol of the state, and the collapse of the city walls dating back to the Middle Ages, in addition to the fall of the Jewish Mellah neighborhood, in addition to the destruction of homes, the high toll of dead and wounded, and economic losses amounting to billions of dollars, which reflects the importance of these areas. Platforms cover natural disasters and current events related to them, as they are considered an important field of media in providing the latest news and developments about them to know the public's reactions to them in order to reach new and innovative theories and perceptions within the framework of the relationship between the public and new media.

Objectives of the Study

The Study aims to achieve a main goal: the rate of public dependence on digital platforms supported by artificial intelligence

technologies as a source of information about natural disasters. The following sub-goals emerge from this goal:

1. Knowing the relationship between the rate of public dependence on digital platforms supported by artificial intelligence technologies and the follow-up of the "Morocco earthquake" disaster.

2. Explaining the relationship between the public's follow-up of topics related to damage resulting from an earthquake disaster through digital platforms supported by artificial intelligence technologies and the degree of benefit from them.

3. Detecting differences between the sample members' forms of interaction with topics related to damage resulting from an earthquake disaster via digital platforms supported by artificial intelligence technologies according to the geographical distribution variable.

The Study Sample

The study was conducted on a purposive sample of (520 Egyptian and Jordanian citizens following the Moroccan earthquake disaster, users of digital news platforms supported by artificial intelligence technologies, aged (18: 30, 35 years, and above). The reasons for the researcher's selection of the Egyptian and Jordanian public sample as a segment it represents an active sector in the Egyptian and Jordanian media environment, given its connection to the place of Study of researchers, in addition to the fact that Egyptian and Jordanian citizens represent different age and educational levels of a diverse nature, males and females, and both audiences have a love of learning about topics related to the "Morocco earthquake" disaster, which it is predominantly pictorial in order to follow the economic, social, political and developmental effects of that disaster, which provides researchers with a sample that correctly represents the original

community of young people within society. It was considered when selecting the sample to represent males and females, and according to the demographic variables, (20) Questionnaire (respondents) were deleted due to the lack of credibility in the numbering and honesty in providing information; the sample that was used was (500) male and female respondents residing in the countries of "Egypt and Jordan," and it can be described as follows:

(1) Description of the study sample according to demographic variables (n=500)

Demographics Characteristics		F	%
Gender	Male	263	52.6%
	Female	237	47.4%
Age	Age 18: 30 years	275	55%
	35 years and over	225	45%
Educational level	Bachelor's degree	355	71%
	Postgraduate studies	145	29%
Geographical distribution	Egyptian audience	290	58%
	Jordanian public	210	42%
Total		500	100%

The data in the previous table indicates the following:

- **Gender:** Males came in first with a percentage of (52%), followed by females with a percentage of (47.4%), which indicates that males are more inclined towards following current events because the nature of participation requires a kind of boldness and initiative; in addition to the difference in the nature and type of the sample in Egyptian society.

- **Age:** The results showed that the age group (18: 30 years) had a high percentage of (55%), followed by the age group (35 years and above) with a percentage of (45%). This indicates increasing public awareness of the dangers of the devastating earthquake disaster that led to the occurrence of economic, material, and human losses in the country, and therefore, they follow the events related to them on those platforms because of their enlightened mind to harm the issues that concern their Arab countries and because they have a mature culture and awareness to confront this phenomenon.

- **Educational level**: The results of the Study revealed that individuals with a bachelor's degree came in first at a rate of (71%), followed by postgraduate students at a rate of (29%), which shows us that Bachelor's degree students are the group most likely to pursue topics related to the "earthquake" disaster. Morocco" and interact with it because the concentration of Bachelor's degree students is higher than that of those with a post-university qualification.

- **Geographical Distribution**: The results of the Study revealed that the sample members residing in Egypt came first with a percentage of (58%), followed by those residing in Jordan with a percentage of (42%), which indicates that the residents of Egypt have a higher population density than those residing in Jordan.

Study population:

Egyptian and Jordanian citizens represent the human community following the "Morocco Earthquake" disaster via digital news platforms supported by artificial intelligence techniques. The study sample ranges in age from (18 to 30 years, 35 years and over), and due to the large number of sites based on covering current events, the researchers found it difficult to implement on those sites. Hence, the researchers resorted to conducting an exploratory study on a sample of (12) individuals from Egyptian and Jordanian citizens to determine the most important of

these platforms on the network. The digital news platforms supported by artificial intelligence techniques based on covering current events according to the sample members' follow-up to them were as follows: Next: The "Facebook" platform is in the lead, followed by "YouTube," then "TikTok," followed by "Twitter," followed by "Instagram," and finally "Snapchat." The previous result indicates that the "Facebook" and "YouTube" platforms had the highest follow-up rates.

The Limitations of the Study

- **Human limits**: represented by a sample of Egyptian and Jordanian citizens following the "Morocco earthquake" disaster via digital news supported by artificial intelligence techniques, aged from (18: 30, 35 years, and above).

- **Spatial boundaries**: Limited to Egyptian and Jordanian citizens who use digital news platforms supported by artificial intelligence technologies. These two countries were chosen due to their connection to the place where the researchers studied.

- **Thematic limits:** Limited to topics related to the damage resulting from the "Morocco Earthquake" disaster on digital news platforms supported by artificial intelligence technologies. These topics are: "The destruction of buildings, homes, and archaeological monuments, the collapse of roads and services related to basic infrastructure, and the death toll rising to more than Thousands and hundreds of casualties, social disability for citizens in the affected areas, and serious economic losses estimated at billions of dollars."

- **Time limits**: The researchers conducted their Study on a sample of Egyptian and Jordanian citizens following the "Morocco Earthquake" disaster via digital news platforms supported by artificial intelligence techniques. The study sample was applied in the period extending from 10/1/2023 to 11/30/2023.

Data Collection

A questionnaire newspaper was applied to a deliberate sample of (500) Egyptian and Jordanian citizens following the "Morocco Earthquake" disaster on digital news platforms supported by artificial intelligence techniques, the study sample. The study was also applied in the period extending from 10/1/2023 until 11/30/ 2023.

The Research Design and Methodology

This study belongs to descriptive studies, which rely mainly on the use of the sample survey method, as it is the ideal way to obtain quantitative and qualitative data for all paragraphs of the questionnaire sheet, as the sample survey method contains the collection of respondents' data as essential parts to know the rate of public dependence on digital platforms supported by technologies artificial intelligence is a source of information about natural disasters, as the qualitative responses of the respondents depend on the interpretation of the digital results obtained because researchers in this type of study begin by monitoring and extracting results from the data obtained. The researchers followed this approach because it responds to the goal of the study in Knowing the public's attitudes towards following up on the damage resulting from the "Morocco earthquake" disaster on digital news platforms supported by artificial intelligence technologies by measuring the responses of the respondents and the interaction of the sample members with the topics related to it, and based on that, the differences between the forms of the public's interaction with the topics related to it are inferred on digital news platforms supported by artificial intelligence technologies, according to the geographical distribution variable.

Study Variables

- Independent variable: natural disasters.
- Dependent variable: audience dependence on digital platforms supported by artificial intelligence technologies.

Cognitive Framework

- **First: Digital news platforms supported by artificial intelligence technologies and topics related to the damage resulting from the "Morocco earthquake" disaster:**

They are digital platforms supported by technologies that simulate human mental media capabilities that work to edit and formulate content automatically through algorithms without human intervention through a set of characteristics provided by computer programs in digital media (Mohamed, 2020).

Digital news platforms supported by artificial intelligence technologies are also an important media means for news coverage of the latest developments related to the damage resulting from the "Morocco earthquake" disaster in text, audio, and image, in addition to the role they play in achieving broad, interactive participation with the public.

"These platforms work to cover and broadcast news content that arouses the public's interest from the event site" (Sabri, 2022, p. 202). They include the interactive tools available on these platforms to make the user a recipient, sender, and sharer of information (Maher, 2020, p. 194), especially Covering topics related to the "Morocco Earthquake" disaster.

Digital media is based on producing news content and broadcasting it to the public from the event site using text, audio, and images (Sabri, 2022, p. 202).

There are many digital news platforms supported by artificial intelligence technologies used to cover topics related to the "Morocco earthquake" disaster, including:

1- **Facebook:** A social network that allows the media communicator to contribute to creating the event, transmitting it, and commenting with absolute freedom, in addition to the majority of institutions relying on it to transmit their news and

programs to promote them and direct communication between the institution and its following audience (Bounjma, 2024, p.76).

2- **Twitter:** A blogging platform used for social communication using (380) characters through electronic devices regardless of spatial or temporal conditions, and in a more extensive, fast, and accurate manner, with less cost and effort (Muhammad, 2019, p.130).

3- **YouTube:** It is one of the most popular websites that enable users to watch many published video clips that include various news and information that interest them at any time and place (Torres-Barzabal et al., 2020, p.12).

4- **How TikTok:** It is a smartphone application dedicated to recording and sharing videos between users (Herrman, 2019).

5- **WhatsApp:** An application that allows its users to send text and voice messages and files and share them across different groups in text, voice, and image, as well as make calls according to the user's needs (Sabri, 2023, p. 207).

6- **Instagram:** A social networking site that allows users to upload photos and videos, filter them digitally, and share them across groups (Al-Hawari & Muhammad, 2022, p. 234).

The public can benefit from digital platforms supported by artificial intelligence technologies to follow the types of topics related to the "Morocco earthquake" disaster as follows:

- Destruction of buildings, homes, and archaeological monuments.
- Collapse of roads and services related to basic infrastructure.
- The death toll rose to more than a thousand, and hundreds were injured.
- The occurrence of a social deficit for citizens in the affected areas.
- Large economic losses estimated at billions of dollars.

Interacting with topics related to the damage resulting from the "Morocco Earthquake" disaster on digital news platforms supported by artificial intelligence technologies:

It is to show the reactions that occur between users during the interaction process through comments, symbols, and various expressive forms provided by the algorithms of digital platforms (Kasroud, 2022, p. 29-30), as it is an appropriate measure to determine the effectiveness of the topics that institutions publish online and on social networking sites (Smith & Ronald, 2021, p. 255). Especially the interaction with the topics of "the destruction of buildings, homes, and archaeological monuments, the collapse of roads and services related to basic infrastructure, the death toll rising to more than a thousand and hundreds of injuries, social deficits for citizens in the affected areas, and serious economic losses estimated at billions of dollars."

Interactivity reflects the reactions of the receiving audience and the communicator about the content presented on digital platforms. It is based on providing many processes, such as wandering through programs or pages and making free choices compatible with their needs and interests, changing and modifying the content, and returning the results of this process to the broadcaster. The interaction process requires several tools to interact with other communication processes to achieve future and immediate goals. It is compatible with synchronous and asynchronous forms of communication (Ibrahim, 2023, pp. 618-619).

Forms of interaction with topics related to the damage resulting from the "Morocco Earthquake" disaster on digital news platforms supported by artificial intelligence technologies:

There are many forms of interaction with topics related to the "Morocco Earthquake" disaster, such as liking, commenting, and sharing (Mohamed, 2023, p. 249), including:

1- **Liked interaction:** It is a feature that allows the user to subscribe to various digital news pages, whether newspapers or

television channels, to follow the latest news related to the content that interests them to interact with through those sites.

2- **nteract by commenting:** It means dialogue between users about the contents of issues that arouse their interest in the digital news pages that they follow to form different opinions about them, and it also represents one of the most important interactive contributions for the public (Mohamed, 2023, p. 249).

3- **Interact by Participation:** This feature allows users to exchange ideas about news material related to issues that interest them and share them from one site to another using text, audio, and images.

- **Second: The Theoretical Framework of the Study "Introduction to Symbolic Interaction"**

The study is based on the theory of symbolic interactionism, as it is closest to the content of the study that addresses the public's reliance on digital platforms supported by artificial intelligence technologies as a source of information about natural disasters, as a theoretical framework for explaining the interaction between users and the information presented on digital media.

The roots of this theory also extend to the sociologist George Herbert Mead, who is considered one of the most prominent founders of the interaction theory, which focuses on the processes of interaction and social communication that occur between users and the social environment on the network, assuming that the reality of the environment is based on the individual's interpretation of his surroundings. The relationship between the actor and his surroundings is variable and not fixed because the individual can interpret the world around him and read the meanings he imagines for his social and natural world (Khan, 2020).

Ervin Goffman believes that social interaction is based on the individual's ability to represent the roles between sender and receiver.

The expectations that others have about our behavior are like texts that we must realize to represent them (Ariel & Avidar, 2015).

Symbolic interactivity focuses on the process of interaction and communication between users through language, symbols, the mind, and the self. Symbols are the meanings and connotations that indicate an individual's interaction with the content provided to satisfy his needs. They are social results that determine users' behavior patterns on the network. Symbolic social interaction is achieved through the communication function between users and the participation function that occurs through communication (Salama, 2018, p.12).

Dijck and Poell (2013) indicated that digital communication is based on the interconnection between users and symbols. Communication refers to the social and technical ability of online platforms to link content to users' activities on the network. Symbolic interactivity is also based on a set of basic concepts (Salem, 2032, p. 14), which are:

- **Interaction:** It is based on communication and mutual relationships between individuals.
- **Flexibility:** It means a person's ability to act in a set of circumstances in one way at one time.
- **Symbols:** These are interaction tools that individuals use to facilitate the process of communication and interaction between each other.

The theory of symbolic interactionism is also based on the following hypotheses (Salem, 2023, p. 14), **which are:**

1- The contribution of individuals to the shared meanings associated with symbols is a personal activity from which expected behavior patterns emerge. The awareness formed by the public from interaction with the topics presented by digital media appears in the cognitive, emotional, and behavioral responses they have from interaction with its content, ultimately forming interactive digital communication behavior.

2- Individuals act toward things based on what those things mean to them. Meanings are a product of social interaction in human society through an interpretation process that each individual uses in his dealings with the signals he encounters (Nawa, 2016, p. 57).

Symbolic interactive refers to planned efforts in designing media websites, programs, and content that allow the user to the greatest extent of participation in the process of communication and freely choose from the content and services available on digital networks according to his needs and interests (Sobhi, 2021, p. 93).

The scientific literature reveals Various attempts to classify interaction with information related to the "Morocco earthquake disaster" on interactive digital platforms supported by artificial intelligence tools. A study was conducted (Mohamed, 2024, p. 392). The study focused on identifying the level of the public's awareness of the impact of algorithmic systems on the distribution of news content on Facebook and its relationship to their interactive behavior (Abdel Basset, 2023, p. 489) to know the role of digital media in raising awareness of the issues of artificial intelligence technologies as a concept and areas of their employment, a study was conducted (Makady, 2023). By identifying the role of digital platforms supported by algorithms in educating and encouraging the public to consume news and interact with it actively, the study by (Nechushtai et al., 2023) was concerned with Knowing the extent of the ability of digital platforms equipped with algorithmic systems (Facebook, YouTube, Twitter) in helping American participants search for news. Abdel Ghaffar (2022) identified the mechanisms and forms of audience interaction with reports of a social nature on the digital platforms of foreign Arabic-speaking channels.

The model of Williams Rice and Rogers indicates that the interactive process in the virtual world includes three main basic dimensions: "Control of communication," mutual communication

between parties. The communication process with the same opportunities available to them (Mutual Discourse) is the exchange of roles between the sender and the receiver (McMillan & Hawing, 2013).

The theory of symbolic interactivity will be applied in light of our study to determine the extent of the public's reliance on digital platforms supported by artificial intelligence technologies as a source of information about natural disasters. Users act in the media through what the contents of the topics presented on the scene mean to them to attract the public's attention, to infer the meanings of the interactive symbols that it is used by the public on digital platforms supported by artificial intelligence technologies, in order to know the patterns of public interaction with content related to the "Morocco earthquake" disaster, as the theory of symbolic interactionism is linked in the current study, to testing the relationship between the rate of public dependence on digital platforms supported by artificial intelligence technologies and following up on the "earthquake" disaster in Morocco, in addition to demonstrating the relationship between the public's follow-up of a type of topic related to damage resulting from an earthquake disaster via digital platforms supported by artificial intelligence technologies and the degree of benefit from them, in addition to revealing the differences between the forms of interaction of sample members with topics related to damage resulting from the "Morocco Earthquake" disaster. Through digital platforms supported by artificial intelligence technologies, according to the geographical distribution variable, which indicates employing factors influencing symbolic interactivity such as demographic variables and the nature and type of topics to achieve the study's objectives, hypotheses, and questions.

Validity and reliability procedures for the questionnaire sheet:

- To test the questionnaire sheet's validity and reliability and ensure its ability to achieve the study's objectives, the form was presented to the arbitrators in the media field to verify its apparent validity. In light of the observations made by the

arbitrators, the questionnaire sheet was modified and implemented during the year 2023, during the extended period. From 10/1/2023 until 11/30/2023, in calculating the stability of the questionnaire results, the researchers relied on the retest method, where after collecting the data, the researchers conducted a study on (5%) of the total field study items (20) items using a coefficient "Cranach's Alpha coefficient," which indicates that there is a high degree of consistency between the respondents' responses, and the following table shows us the calculation of the value of the reliability coefficient for the questionnaire sheet:

Table (2) Cronbach's alpha coefficient to measure the reliability of the questionnaire (n=500)

The field	Cronbach's alpha coefficient
Cronbach's alpha coefficient for all items of the questionnaire	0.90

The table data indicates the following:

- The value of the Cronbach's alpha coefficient was high (0.91), which means the reliability coefficient is high. It also indicates no significant differences in the respondents' responses and that the questionnaire sheet is valid for application.

Statistical Analysis

- Simple statistical ratios and frequencies were used for the questionnaire questions, the Pearson correlation coefficient (person) to measure the intensity and direction of the relationship between the variables, and the (T-Test) test to find differences between the averages of the sample members' interaction with topics related to the "Morocco earthquake" disaster, and the (Cronbach's alpha) coefficient to measure the stability of the questionnaire sheet.

The Results

The field study sample represented the age group of (18: 30, 35 years, and older) of Egyptian and Jordanian citizens who use digital news platforms supported by artificial intelligence technologies, as it included a sample of (500) individuals, in addition to testing the results of the validity of the hypotheses and linking them to the questions and objectives of the study. The following is a presentation of the study results:

Table (3) The average dependency of the sample members on the digital news platforms supported by artificial intelligence technologies to follow up on the damages resulting from the "Moroccan earthquake" disaster (n = 500)

N	Reliance Rate	F	%
1	Highly adopted	203	40.6%
2	Moderate adapted	153	30.6%
3	Weakly adapted	144	28.8%
Total		500	100%

The data of the previous table indicates the following:

- (40.6%) of the sample confirmed that they rely to a large extent on digital news platforms supported by artificial intelligence technologies to follow up on the damage resulting from the "Morocco Earthquake" disaster, followed by reliance to a moderate degree by (30.6%), and finally reliance to a weak degree by (28.8%). This indicates the keenness of these platforms supported by algorithms to evaluate news content related to current events and present it to the public in different ways and formats according to specific criteria to attract the largest possible audience, in addition to their keenness to follow up on knowledge of the latest developments related to the

"Morocco earthquake" disaster, which led to the destruction of dozens of people. Villages, cities, regions, and archaeological sites from the historic city of Marrakesh, in addition to thousands of deaths and injuries and the displacement of thousands of residents, which is consistent with the study of Nechushtai et al. (2023). This is confirmed: Professionally produced news on some platforms constitutes the basic pillars that influence the political orientations of the public when searching for information, such as the Fox News platform in particular.

Table (4) The degree to which respondents follow the damage resulting from the "Morocco Earthquake" disaster via digital news platforms supported by artificial intelligence technologies (n = 500)

N	Degree of follow-up	F	%
1	I follow to a large extent	185	37%
2	I follow up moderately	166	33.2%
3	I follow up to a weak degree	149	29.8%
	Total		

The data in the previous table indicates the following:

- (37%) of the sample confirmed that they are following the damage resulting from the "Morocco Earthquake" disaster via digital news platforms supported by artificial intelligence technologies to a large extent, followed by follow-up to a moderate degree (33.2%), and finally follow-up to a weak degree (29.8%), so It can be said that they are exposed to topics

related to the "Morocco earthquake" disaster with great intensity, because they realize how important it is to them, resulting from the landslide that led to the destruction of ancient villages on the tops of the hills to become disaster areas, in addition to the closure of the road leading to the small town of "Asni," located in the Atlas Mountains.

Table (5) The sampling personnel are exposed to the quality of topics related to the damages resulting from the "Morocco earthquake" disaster through the newsletter backed by artificial intelligence technologies (n = 300), (n = 290), (n = 210), (n = 500) (You can choose more than one alternative)

N		Topics related to the damages resulting from the "Morocco earthquake" disaster	Egyptian Audiance		Jordanian Audiance		Total	
		F	%	F	%	F	F	%
1	Destruction of buildings, houses, and archaeological monuments	71	24.48%	46	21.90%	117	23.4%
2	Collapse of roads and services related to basic infrastructure	55	18.96%	57	27.14%	112	23.4%
3	The death toll rose to more than a thousand, and hundreds were injured	71	24.48%	23	10.95%	94	22.4%
4	Social deficit for citizens in affected areas	45	15.53%	57	27.14%	102	18.8%
5	Serious economic losses estimated at billions of dollars occurred	48	16.55%	27	12.87%	75	20.4%
Total		290	100%	210	100%	500	15%

The data in the previous table indicates the following:

- (23.4%) of the sample confirmed that they are monitoring the destruction of buildings, homes, and archaeological monuments

among the topics related to the damage resulting from the "Morocco Earthquake" disaster, followed by the collapse of roads and services related to basic infrastructure at a rate of (22.4%), and then the occurrence of a social deficit for citizens in The affected areas increased by (20.4%), followed by a rise in the death toll to more than a thousand and hundreds of injuries by (18.8%), and finally serious economic losses estimated at billions of dollars by (15%).

- **In the Egyptian public's follow-up of topics related to the damage resulting from the "Morocco earthquake" disaster through digital news platforms supported by artificial intelligence technologies**: (24.48%) of the sample confirmed that they are following the destruction of buildings, homes, and archaeological monuments, the death toll rising to more than a thousand, and hundreds of wounded among topics related to the damages resulting from the "Morocco earthquake" disaster, followed by the collapse of roads and services related to the basic infrastructure by (18.96%), and then serious economic losses estimated at billions of dollars by (16.55%), and finally a social deficit of citizens in the affected areas (15.53%), which indicates: They are interested in following up on topics related to the "Morocco Earthquake" disaster on digital news platforms supported by artificial intelligence tools, as they are characterized by the speed of transmitting news and information related to it, as well as their awareness of the extent of the damage resulting from that disaster, which led to the occurrence of human, material, and heritage losses, in addition to the influx of many wounded into Marrakesh hospitals, which prompted the authorities to call on citizens to donate blood, in accordance with a study Muhammad (2024). This showed that the sample members are highly aware of the algorithm systems that

distribute news content on Facebook platforms, although they do not realize enough because there are human interventions behind this machine that can affect the decisions of the submitted content.

- **In the Jordanian public's follow-up of topics related to the damage resulting from the "Morocco earthquake" disaster through digital news platforms supported by artificial intelligence technologies**: (27.14%) of the sample confirmed that they are following the collapse of roads and services related to basic infrastructure, the occurrence of a social deficit for citizens in the affected areas, Followed by the destruction of buildings, homes, and archaeological monuments by (21.90%), then serious economic losses estimated at billions of dollars by (12.87%), and finally the death toll rose to more than a thousand and hundreds of wounded by (10.95%), so it can be said: They are following the information related to the "Morocco Earthquake" disaster through digital news platforms supported by artificial intelligence technologies to know the latest developments related to it, to understand the events taking place around them so that they can interpret them, as they are renewable platforms that publish everything real-time about the events related to that disaster, which is what made these sites a distinguished position among the current media for its ability to attract the masses to it from all groups, as well as the contribution of these platforms in educating the public about how to deal with crises and disasters and achieve their societal participation by guiding volunteer teams with methods and methods of access to remote areas most affected in an area in the Atlas Mountains to help the affected people In the affected areas, which is compatible with the study of Nishoshtai et al. (2023). This revealed differences between members of the in-kind regarding the political trends of the subjects presented.

Table (6) The degree to which sample members benefited from following up on the damage resulting from the "Morocco Earthquake" disaster via digital news platforms supported by artificial intelligence technologies (n = 500)

N	Degree of benefit	F	%
1	Benefited greatly	215	43%
2	Benefited moderately	150	30%
3	Benefited to a weak degree	135	27%
	Total	500	100%

The data in the previous table indicates the following:

- (43%) of the sample confirmed that they benefited greatly from following up on the damage resulting from the "Morocco Earthquake" disaster via digital news platforms supported by artificial intelligence technologies, followed by benefiting to a great extent (30%), and finally benefiting to a moderate degree (27%). Therefore, it can be said that they depend on following the media material provided to them due to the importance of the role played by these platforms, as they are renewable platforms that publish everything current about current events, and therefore, they look at them to find out the latest news and developments related to the "Morocco Earthquake" disaster. Which led to a rise in the death toll and more bodies being recovered from under the rubble.

Table (7) Digital news platforms supported by artificial intelligence technologies that sample members are keen to follow to obtain news related to the "Morocco earthquake" disaster (n=500) (You can choose more than one alternative)

N	Digital news platforms supported by artificial intelligence technologies	F	%
1	Facebook platform	135	27%
2	YouTube platform	95	19%
3	Twitter platform	93	18.6%
4	Tik Tok platform	85	17%
5	Instagram platform	49	9.8%
6	Snapchat platform	43	8.6%
	Total	500	100%

The data in the previous table indicates the following:

- (46%) of the sample confirmed that they follow the "Facebook" platform to obtain news related to the "Morocco Earthquake" disaster, followed by "YouTube" (19%), then "Twitter" (18.6%), followed by "Tik Tok" (17%), followed by "Instagram" by (9.8%), and finally "Snapchat" by (8.6%), which indicates: the ability of digital news platforms supported by simulation robots to produce and broadcast news content to meet public protests in the natural language that simulates human intelligence with natural language that mimics human intelligence, as well as continuous updating of the news material to provide the opportunity to reach the largest window of interaction between platform-based chatbots and the audience. Makady (2023) revealed a relationship between algorithmic

awareness, self-monitoring, and active news consumption on Facebook.

(8) Elements of attracting respondents towards the following topics related to the damage resulting from the "Morocco Earthquake" disaster via digital news platforms supported by artificial intelligence technologies (n = 290), (n = 210), (n = 500) (You can choose more than one alternative)

N	Attraction Elements	F	%
1	Video clips related to the topics of the "Morocco Earthquake" disaster	133	26.6%
2	Thematic images	96	19.2%
3	Personal photos	64	12.8%
4	Studies and Research	74	14.8%
5	Analysis and comments of free discussion panels related to disaster topics in Morocco	133	26.6%
	Total	500	100%

The data in the previous table indicates the following:

- (26.6%) of the sample confirmed that they are attracted to the following video clips related to the topics of the "Morocco Earthquake" disaster, analysis and comments for free discussion panels related to disaster topics in Morocco, which indicates the nature of digital news platforms that focus on providing visual content that is appropriate for the nature of the audience using these platforms, due to the nature of the contents related to the "Morocco Earthquake"

disaster, which made it capture the public's attention by following the content provided to them through these platforms, which includes all the details of the disaster following the directions and policies of the Kingdom of Morocco that establishes the devastating earthquake disaster. The priority of its agenda is to re-house the affected people and take care of the most affected groups, which affects the country's economic growth balance because these news platforms aim to attract the largest number of viewers, followed by objective images with a percentage of (19.2%), which shows us that they are not inclined to public reading for events related to the "Morocco Earthquake" disaster, given that the reader or viewer is satisfied with pictures that are an alternative to a thousand words and then studies and Research at a rate of (14.8%), which indicates that digital news platforms are keen to provide studies and Research to achieve good results related to the damages resulting from the "Morocco Earthquake" disaster, so that the target audience understands the amount of material and human losses to society in order to deal with these crises with caution, and finally, personal photos (12.8%), and this can be explained: that they are connected to following up on events related to the events related to the "Morocco Earthquake" disaster.

This is because digital news platforms supported by artificial intelligence tools present events that include images that illustrate the effects of the devastating earthquake disaster that led to the destruction of buildings, roads, and the country's infrastructure, as well as economic losses estimated at billions of dollars.

Table (9) Respondents' forms of interaction with topics related to the damage resulting from the ''Morocco Earthquake'' disaster via digital news platforms supported by artificial intelligence technologies (n=290), (n=210), (n=500) (You can choose more than one alternative)

N		Forms of interaction	Egyptian Audiance		Jordanian Audiance		Total	
		F	%	F	%	F	%	
1	Like	36	12.41%	35	16.68%	71	14.2%
2	Comment	181	62.41%	125	59.52%	306	61.2%
3	Share	73	25.18%	50	23.80%	123	24.6%
	Total	290	100%	210	100%	500	15%

The data in the previous table indicates the following:

- (61.2%) of individuals confirmed that They prefer to interact by commenting on topics related to the damage resulting from the "Morocco Earthquake" disaster via digital news platforms supported by artificial intelligence technologies, followed by interaction by sharing (24.6%), and then interaction by liking (14.2%).

- **Regarding interaction with likes**:

  (16.68%) of the Jordanian public confirmed that they prefer to interact with admiration with topics related to the damage resulting from the "Morocco earthquake" disaster through digital news platforms supported by artificial intelligence technologies, compared to (12.41%) for the Egyptian public, and this indicates: that These sites enjoy a high degree of credibility among their audience who follow topics related to the "Morocco Earthquake" disaster as a result of the continuous updating of the content provided to them on those sites, following the study of Abdel Basset (2023) which indicated:

Individuals of the sample interact with media messages that include products and services that rely on artificial intelligence technologies.

- **Regarding interaction by commenting**: (62.41%) of the Egyptian public confirmed that they prefer to interact by commenting on topics related to the damage resulting from the "Morocco Earthquake" disaster via digital news platforms supported by artificial intelligence technologies, compared to (59.52%) of the Jordanian public, which indicates: that digital news platforms provide diverse content that is accurate and objective and includes all aspects related to the devastating "Morocco earthquake" disaster, as well as its connection to the lives of individuals, which enhances the trust and credibility of the public in those platforms and works to strengthen their role in educating the public, which is what made them tend towards using the commentary tool is used to express their opinions regarding topics related to the devastating earthquake disaster, as it represents the common dialogue aspect between those platforms and their interactive audiences, which achieves broad public participation between those platforms and their audiences, in accordance with the study of Abdel Ghaffar (2022) which indicated: There is a statistically significant relationship between the availability of interactive tools and the way respondents interact with reports of a social nature published through the digital platforms of foreign Arabic-speaking channels.

- **In interaction with share**: (25.18%) of the Egyptian public confirmed that they prefer to interact with admiration with topics related to the damage resulting from the "Morocco Earthquake" disaster via digital news platforms supported by artificial intelligence technologies, compared to (23.80%) of the Jordanian public, which indicates: They share topics related to the "Morocco Earthquake" disaster on their pages, which leads to an increase in page follow-up rates for non-followers due to the importance of the issue to them, which is consistent with the study of Tafesse and Wood (2021)

which showed: There is a significant positive interaction between the volume of content and areas of interest, a result that indicates that influencers with diverse interests can stimulate greater engagement from followers by sharing more content on their social media accounts.

Table (10) Sample members' follow-up to news sources related to topics related to the damages resulting from the "Morocco Earthquake" disaster via digital news platforms supported by artificial intelligence technologies (n = 500)

N	Sources of news related to the "Morocco earthquake" disaster	F	%
1	Newspapers and news agencies on the Internet	96	19.2%
2	Reports of correspondents and delegates	117	23.4%
3	Responsible sources	65	13%
4	Social networking sites	81	16.2%
5	Conferences and seminars	65	13%
6	Interviews with guests inside the studio	35	7%
7	Experts and specialists	41	8.2%
Total		500	100%

The data in the previous table indicates the following:

- (23.4%) of the sample confirmed that they prefer to follow the reports of correspondents and delegates about the "Morocco Earthquake" disaster. This indicates that digital news platforms supported by artificial intelligence tools are keen to provide various forms of news accompanied by visual material through the network of their correspondents on the site. The event, which affects the viewing audience to a great extent, has a significant impact on viewers as it covers current events from the event sites, which

reflects the confirmation of the credibility of the topics presented to it on those platforms, followed by newspapers and news agencies on the Internet with a percentage of (19.2%), so it can be said that they rely on it due to representing an important source for obtaining information related to topics related to the "Morocco Earthquake" disaster, given that it is characterized by speed in conveying current events because it has a network of correspondents spread throughout the world, and then social networking sites at a rate of (16.2%). It was followed by responsible sources, conferences, and seminars at a rate of (13%), followed by experts and specialists at a rate of (8.2%), and finally, meetings with guests inside the studio at a rate of (7%) indicating that it is an important attraction for obtaining news and information from its source and knowing their opinions directly.

Results of the hypotheses test

- The first hypothesis: This hypothesis states that there is a statistically significant correlation between the rate of public reliance on digital news platforms supported by artificial intelligence technologies and the follow-up of the "Morocco earthquake" disaster.

Table (11) The relationship between the rate of public dependence on digital news platforms supported by artificial intelligence technologies and the follow-up of the "Morocco earthquake" disaster. (n=500)

Variables	The rate of audience adoption on digital news platforms supported by artificial intelligence technologies		
	The value of T	The significance level	The significance level
Follow-up of the "Morocco Earthquake" disaster	0.59 **	0.01	0.05

* Significant at the level of (0.01)   ** Significant at the level (0.05)

The data in the table above indicates the following:

- Using the correlation coefficient (person): It was revealed that there is a statistically significant correlation between the rate of public reliance on digital news platforms supported by artificial intelligence technologies and following up on the "Morocco earthquake" disaster. The value of the correlation coefficient reached (0.59**), which is significant at the level of (0.01).), which indicates that the greater the reliance on digital news platforms supported by technology, the more follow-up to the "Morocco Earthquake" disaster will be to know the latest developments on related topics. This comes in light of the high number of deaths and injuries and the continued search for survivors by local and international rescue teams underneath. The rubble, in addition to the influx of many citizens to health centers to donate blood in response to the authorities' call to treat injured people who need blood transfusions.

- **The second hypothesis: This hypothesis states that There is a statistically significant correlation between the public's follow-up of specific topics related to damage resulting from an earthquake disaster through digital platforms supported by artificial intelligence technologies and the degree of benefit from them**.

Table (12) The relationship between the public's follow-up of specific topics related to damage resulting from an earthquake disaster via digital platforms supported by artificial intelligence technologies and the degree of benefit from them (n = 500)

Variables	Public follow-up of topics related to damage resulting from an earthquake disaster via digital platforms supported by artificial intelligence technologies		
	The value of T	The	The significance

		significance level	level
the degree of benefit from them	0.33 **	0.01	0.05

* Significant at the level of (0.01)

** Significant at the level (0.05)

The data in the table above indicates the following:

- Using the correlation coefficient (person): It was revealed that there is a statistically significant correlation between the public's follow-up of specific topics related to damage resulting from an earthquake disaster via digital platforms supported by artificial intelligence technologies and the degree of benefit from them. The value of the correlation coefficient reached (0.33**), which is a function at the level of (0.01); this indicates that the more topics related to damage resulting from an earthquake disaster are followed through digital platforms supported by artificial intelligence technologies, the greater the degree of benefit from them, which shows us: They are more aware of the disaster they are following on those platforms, and the resulting about the devastating earthquakes that led to the closure of the road leading to the small town of Asni, located in the Atlas Mountains, as well as the destruction of ancient villages located on hilltops and areas near the historic city of Marrakesh, turning them into rubble.

The third hypothesis states that there are statistically significant differences between the sample members' forms of interaction with topics related to damage resulting from an earthquake disaster via digital platforms supported by artificial intelligence technologies according to the geographical distribution variable.

Table (13) Significance of statistical differences between the sample members' forms of interaction with topics related to damage resulting from an earthquake disaster via digital platforms supported by artificial intelligence technologies according to the geographical distribution variable (n=500)

Scale	Egyptian Audience		Jordanian Audience		the value of (T)	Significance Level	Significance Level
	Mean	Total ranks	Mean	Total ranks			
Forms of interaction of sample members with topics related to damage resulting from an earthquake disaster	2.20	0.81	1.81		3.77 **	0.01	0.05

* **Significant at the level of (0.01)**   ******
Significant at the level (0.05)

The data in the previous table indicates the following:

- **Using the T-Test**: It became clear that there were statistically significant differences between the forms of interaction of sample members with topics related to the damage resulting from the "Morocco Earthquake" disaster via digital platforms supported by artificial intelligence techniques according to the geographical distribution variable and in the direction of the Egyptian public, and it amounted to the value of t = (3.77**), which is significant at the level of (0.01), which indicates: the impact of the news content on the importance of the audience's interaction with the news and the transformation of the receiver into a sender and sharer of information on his page. Also, the level of confidence of males is higher than that of females because they more follow up on issues related to the "Morocco Earthquake" disaster, and this comes in light of the

Moroccan authorities' assessment of the extent of the destruction caused to archaeological sites and the development of a special strategy for their restoration, in addition to activating the urgent program to shelter those affected and take care of them as a result of the devastation caused by the earthquakes that struck the country.

Conclusion

- Through the study, the researchers tried to find out the relationship between the rate of the public's reliance on digital news platforms supported by artificial intelligence technologies and the follow-up of the "Morocco earthquake" disaster, as well as to know the differences between the forms of interaction of the sample members with it, because interactive media has a major impact on shaping the public's attitudes towards current events, especially the "Morocco earthquake" disaster, which led to the collapse of homes, heritage buildings, and basic road infrastructure, in addition to material and human losses estimated at billions of dollars, so it has become necessary to pay attention to topics related to current events that arouse the public's interest in order to know their reactions to them. It asked questions to find solutions to reach innovative theories and perceptions within the framework of the relationship between the public and the media. The study reached a set of results, the most important of which are:

- The vast majority of the sample confirmed that they are following the destruction of buildings, homes, and archaeological monuments among the topics related to the damage resulting from the "Morocco earthquake" disaster, followed by the collapse of roads and services related to basic infrastructure, and then the occurrence of a social deficit for

citizens in the affected areas, followed by an increase in the death toll for more than thousands and hundreds of casualties, and finally serious economic losses estimated at billions of dollars.

- The results showed that there is a statistically significant correlation between the rate of public reliance on digital news platforms supported by artificial intelligence technologies and the follow-up of the "Morocco earthquake" disaster, which indicates that digital news platforms supported by artificial intelligence technologies have performed their assigned role to the fullest in presenting the topics that members care about participants in it to know the latest developments around it, which comes in light of the high number of dead and wounded and the local and international rescue teams continuing to search for survivors under the rubble, in addition to the influx of many citizens to health centers to donate blood in response to the authorities call to treat the injured who need blood transfusions, which is reflected in to attract the following audience towards participating in overcoming the opinion and finding solutions to get out of this disaster.

- The results showed that there is a statistically significant correlation between the public's follow-up of the quality of topics related to damage resulting from an earthquake disaster via digital platforms supported by artificial intelligence technologies and the degree of benefit from them, which shows us: they are more aware of the disaster that they follow on those platforms, resulting from the devastating earthquakes that caused To close the road leading to the small town of Asni, located in the Atlas Mountains, in addition to destroying the ancient villages located on the tops of the hills and the areas near the historic city of Marrakesh, turning them into rubble.

- The results showed that there were statistically significant differences between the forms of interaction of sample members with topics related to the damage resulting from the "Morocco Earthquake" disaster via digital platforms supported by artificial intelligence technologies according to the geographical distribution variable and in the direction of the Egyptian audience, which indicates: the influence of news content on the importance of audience interaction with the news and turning into a receiver into a sender and sharer of information on his page, this comes in light of the Moroccan authorities assessing the extent of the destruction caused to archaeological sites and developing a special strategy for their restoration, in addition to activating the urgent program to shelter those affected and take care of them as a result of the destruction caused by the earthquakes throughout the country.

The study also reached a set of recommendations, the most important of which are:

- Emphasizing the need for digital news platforms to conduct media campaigns to educate the public about the dangers of natural disasters, with interest in establishing a national governmental center that includes all activities at the country level to deal with disasters and crises, with the need to adopt guiding principles for reducing disaster risks and preparing for them by encouraging civil society initiatives to confront these phenomena with various methods to provide relief to those affected and provide support to them, in addition to rebuilding and general rehabilitation of the affected areas, while making use of meetings with experts in the natural sciences and geology to ask questions and proposed solutions to confront this phenomenon, which reflects the importance of public interaction with topics related to this phenomenon which is based on enriching

the interactive discussion on digital news platforms between communicators and the public, to reach new and innovative theories and perceptions within the framework of the relationship between the public and digital media.

Research Proposals

In light of the study, the researcher presents a set of proposals, which are:

- The role of artificial intelligence applications in educating the public about the risks of natural disasters.
- Public trends towards following the social impacts of the Morocco earthquake disaster on the GPT chat platform.

References

- Abd al-Rahman, M. (2022). Factors affecting the audience's interaction with reports of a social nature through the digital platforms of foreign Arabic-speaking channels. Journal of the Faculty of Arts, 70 (70),
- Abdel Basset, T. (2023). Egyptian youth's interaction with digital media and its effects on their acceptance of artificial intelligence technology. Scientific Journal of Radio and Television Research, Issue 25,
- Abdel Hafez, S. (2022). Comments from users of Egyptian news pages on Facebook. Journal of Media Research, 60 (3),
- Abdel Hamid, A. (2020). Employing artificial intelligence applications in producing media
  content and its relationship to its credibility among the Egyptian public. Journal of Media Research, 5(55),
- Abdul Mohsen, F. (2019). Digital volunteer work in Saudi universities: An analytical study of educational interaction on social networking sites:

Twitter as a model. Journal of Educational and Psychological Sciences,11(1),

- Ahmed, E. (2023). The role of 'YouTube channels in developing digital education skills. Journal of Media Studies, 22,.

- Akkad, W. (2023). Public interaction with the pages of public female figures on Facebook.
  Journal of Media Research, 2(64),.

- Al-Desouki, S. (2018). Communication factors affecting interactivity among Facebook users. Journal of Journalism Research, Issue 16,.

- Al-Hawari, S. & Muhammad, M. (2022). The role of social media applications in educating young people about the dangers of electronic blackmail. Journal of Media Studies, 20, (5),

- Al-Husaynan, A. (2023). Digital media's role in raising traffic awareness in Kuwaiti society to achieve sustainable development goals. Journal of Public Relations and Advertising Research, Issue 26,.

- Al- Qatawneh, N. (2023). The role of social networking applications in introducing the West to Islam in the World Cup Qatar is a model. Journal of Afro-Asian Studies,16.

- Ariel, Y., Avidar, R. (2015). Information, interactivity, and social media, Atlantic Journal of   Communication   23(1),   19-30,   DOI: 10.1080/15456870.2015.97240

- Bounjma, M. (2024). Shifts in communicative patterns in the virtual world: Social media
  applications as a model. Journal of Media Studies, 26(11),

- Hassan, A. (2021). Egyptian youth's use of the live broadcast feature on Facebook and the gratifications achieved from it [unpublished master's thesis, Al-Azhar University, Faculty of Information].

- Hassan, W. (2024). The public's perception of the impact of algorithmic systems on the
  distribution of news content on Facebook and its relationship to their interactive behavior. Journal of Media Research, 70(1),

- Herrman, J. (2019). How TikTok is rewriting the world: TikTok will change how your social media works—even if you avoid it. The New York Times: https://www.nytimes.com
- Kasroud, F. (2022). Digital user interactivity and the formation of public space [unpublished doctoral dissertation, Algeria: Abdelhamid Ben Badis University, Faculty of Social Sciences, Department of Human Sciences, Division of Media and Communication Sciences].
- Khafaja, A. (2020). Communication and interaction tools in social networks as a product and process: An analytical study on news pages during important events. Arts and Humanities Journal, 28(9), P.
- Khan, M. (2020). Cultural symbols, identity, and meaning formation: Symbolic interactionist analysis of Chinua Achebe's Things Fall Apart. Journal of Linguistics & Literature, 2(1), 1-9.
- Makady, H. (2023). To Interact or Not to Interact with News Posts: The Role of Algorithmic Awareness& Self-Monitoring in Facebook News Consumption. Electronic News, Available at the following link: https://journals.sagepub.com
- McMillan, S., & Hawing, S. (2013). Measures of perceived interactivity explore the role of the direction of communication user control and time in shaping the perception of interactivity, Journal of Advertising, 31(31), available at: https://www.tandfonline.com
- Mohammed, N. (2022). Media coverage of the legislation protecting Jordanian women's rights on "Facebook" Pages. Journal of Media Studies, 5(19).
- Nawa, I. (2016). The digital environment and its relationship to cultural alienation among
  university students: A field study on a sample of students from Mohamed Khedr University in Biskra - users of the two dimensions of the digital environment [unpublished doctoral thesis, Algeria: Mohamed Khedr University in Biskra, Faculty of Humanities and Social Sciences].Nechushtai, E., Zamith,R., & Lewis,S. C. (2023). More of the same? Homogenization in news recommendations when users search on Google, YouTube, Facebook, and Twitter. Journal of Mass Communication and Society, 1-27.

- Ronald, S. (2021) Strategic planning for public relations. (6th Edition). Routledge.Torres-Barzabal, L., Martínez-Gimeno, A., & Hermosilla-Rodríguez, J. (2020). Digital innovation strategy for social responsibility: Twitter social network in university teaching. Journal Sustainability: The Society for Urban Ecology, 12, P.

- Tafesse, W., & Wood, B. (2021). Followers' engagement with Instagram influencers: The role of influencers' content and engagement strategy. Journal of Retailing and Consumer, Available at the following link: http://www.elsevier.com/locate/jretconser

- Van Dijck, J., & Poell, T. (2013). Understanding social media logic. Media and Communication Journal 1(1) http://www.cogitatiopress.com

Measuring the Intention to Adoption of Environmental Sustainability in FMCG Enterprises using the Technology Acceptance Model (TAM)

Dr. M. Salem N. Ismael - Business Administration – "INTERNATIONAL BUSINESS SCHOOL OF SCANDNIVIA" (IPSS)- Denmark- Dr_m.salem@yahoo.com

Dr. Ashraf H. Shaarawy –Business Administration – "Ecole Supérieure Libre des Sciences Commerciales Appliquées" (ESLSCA) University- Egypt ashaarawy44@gmail.com

Dr. Mary Louis Rizk - Business Administration - BLOOM BUSIENSS SCHOOL(BBS) CEO   marylouis8000@gmail.com

Abstract:

Using the Technology Acceptance Model (TAM) as a theoretical framework, this research explores how Fast-Moving Consumer Goods (FMCG) firms intend to implement environmental sustainability practices. A strong positive association between perceived usefulness and the behavioral intention to adopt environmental sustainability practices is established by research using correlation analysis, linear regression analysis, and multiple regression. Perceived ease of use also has a favorable effect on the behavioral intention to implement sustainability practices, according to the data. The results provide a detailed understanding of the elements influencing the adoption of sustainability in the fast-moving consumer goods (FMCG) industry, which is useful in both the academic and practical spheres. The research finishes with practical suggestions for moving forward, such as new ways of communicating and training employees, involving stakeholders, creating incentive programs, and incorporating sustainability into company culture.

Keywords: Technology, Technology Acceptance Model (TAM), Fast-Moving Consumer Goods (FMCG

Introduction

These models have been widely applied and extended in various studies to explore technology acceptance across different sectors and applications. For instance, the application of these models in the insurance sector, specifically in understanding policyholders' acceptance of chatbots, provides insights into technology acceptance in service-oriented industries (Andrés-Sánchez & Gené-Albesa, 2023). Similarly, the integration of personality traits, like the Light Triad, into the traditional TAM framework indicates a growing interest in understanding the psychological factors influencing technology adoption behaviors (Leahy et al. This adaptation underscores the need to consider specific environmental and contextual factors influencing technology adoption in different settings. Similarly, the exploration of technology acceptance in innovative environments like the metaverse for teaching anatomy demonstrates how these models can be applied to understand technology acceptance in emerging technological domains (Kalinkara & Özdemir, 2023).

In the healthcare sector, the application of technology acceptance models to understand the adoption of e-learning technologies among clinical staff and telemedicine applications reflects the growing intersection of technology and healthcare (Stiller & Wager, 2023; Leelavathi, Manjunath, & Somasundaram, 2023). Additionally, the exploration of technology acceptance in consumer-focused industries, such as the beauty industry's adoption of blockchain technology, provides an interesting perspective on technology acceptance outside the traditional domains of IT and healthcare (Kim & Jin, 2023). The exploration of the technology acceptance model in the context of customer engagement emphasizes the broader implications of technology acceptance on business and marketing strategies (Kumar, Banerjee, Al-Salti, & Upadhyaya, 2023). The healthcare sector continues to be a significant focus area for technology acceptance

research, as evidenced by the studies on the adoption of e-learning technologies among clinical staff (Stiller & Wager, 2023) and the acceptance of telemedicine applications (Leelavathi, Manjunath, & Somasundaram, 2023).Moreover, the exploration of blockchain technology in the beauty industry by Kim and Jin (2023) reveals the expanding scope of technology acceptance beyond traditional IT and healthcare sectors.

This study illustrates how emerging technologies like blockchain can find relevance in consumer-focused industries, emphasizing the need for industry-specific acceptance models that cater to the unique characteristics and requirements of different sectors. The examination of the technology acceptance model in the realm of customer engagement by Kumar, Banerjee, Al-Salti, and Upadhyaya (2023) highlights the broader business implications of technology acceptance.

This perspective is essential for businesses and marketers as it underscores the importance of understanding how customer satisfaction and engagement are influenced by technology adoption and usage. This study tries to dive into the elements that influence the intention of FMCG firms to embrace such methods and contribute to sustainable business practices.

The Technology Acceptance Model (TAM), a pivotal framework in understanding technology adoption, presents a compelling rationale for studying the intention to adopt sustainability practices and technologies. Originating from Davis's work on perceived usefulness and ease of use as primary determinants of technology acceptance, TAM offers a robust and adaptable tool for various technology-related studies, including sustainability technologies.

 This model's relevance in the context of sustainability stems from its ability to dissect users' perceptions, an essential aspect when considering the adoption of sustainable practices and technologies.

TAM's adaptability to different contexts, as evidenced in its application across various sectors, suggests its suitability for studying sustainability technologies. Integrating environmental concern into TAM, as proposed by some researchers, enhances the model's applicability to sustainability. Studies on the acceptance of solar energy technologies, for instance, employ TAM to discern factors influencing individuals' intentions to adopt these technologies, demonstrating the model's effectiveness in predicting sustainable technology acceptance. These additional factors consider social and psychological aspects influencing technology adoption, providing a comprehensive framework for understanding sustainable technologies and practices acceptance.

In corporate settings, TAM's application demonstrates its adaptability to different organizational cultures and values, crucial for promoting sustainability within corporate structures. The significance of sustainable technology acceptance in healthcare, as indicated by TAM-based studies on telemedicine applications, highlights the potential of TAM in facilitating sustainable healthcare practices adoption. leveraging TAM to study the intention to adopt sustainability practices and technologies is well-founded. Its proven efficacy across sectors, ability to incorporate additional sustainability-related factors, and capacity to capture the nuances of technology acceptance in diverse contexts make it an ideal framework for understanding and encouraging the adoption of sustainable technologies and practices. Utilizing TAM, researchers, policymakers, and organizations can gain valuable insights into the factors influencing sustainability adoption, aiding the development of targeted strategies to foster a more sustainable and environmentally conscious future.

Literature Review

Fast-moving consumer goods companies are under growing pressure to implement sustainable practices across their value chains as a result

of growing concerns. This chapter takes a look at the setting in which FMCG businesses intend to implement sustainability practices using the Technology Acceptance Model (TAM). In the Fast-Moving Consumer Goods (FMCG) sector, environmental sustainability has become a paramount concern, driven by increasing consumer awareness and regulatory pressures. The application of the Technology Acceptance Model (TAM) in understanding and facilitating this transition towards sustainability is particularly relevant.

The FMCG sector's environmental impact is multi-dimensional, encompassing issues such as carbon emissions, water usage, waste generation, and the depletion of natural resources. Nyimbili and Chalwe (2023) highlight the importance of understanding the acceptance and adoption of new technologies and practices, which is crucial in the FMCG sector's journey towards sustainability. The adoption of eco-friendly technologies and sustainable business practices requires a deep understanding of the factors that drive organizational change and consumer behavior (Nyimbili & Chalwe, 2023). Andrés-Sánchez and Gené-Albesa (2023) underscore the importance of consumer acceptance of new technologies, such as biodegradable packaging and refillable containers, which align with the principles of TAM in terms of perceived usefulness and ease of use Davis (1989).

Similarly, the adoption of sustainable technologies in production processes, including energy-efficient machinery and water conservation systems, can be examined through the TAM lens (Andrés-Sánchez & Gené-Albesa, 2023). The complexity of these global supply chains requires a nuanced understanding of technology acceptance at various levels, from raw material sourcing to product distribution. Kemp (2023) suggests that an extended Educational Technology Acceptance Model (EETAM) could offer insights into how training and education in sustainability practices can be effectively implemented in corporate settings (Kemp, 2023) demonstrate the application of TAM in

understanding workers' acceptance of digital procedures, which can be extrapolated to understand employee acceptance of sustainable practices within the FMCG sector (Hendricks, Smith, Peres, & Sasangohar, 2023). Moreover, the FMCG sector is also exploring innovative solutions like blockchain technology for supply chain transparency and traceability. Kim and Jin's (2023) study on blockchain technology acceptance in the beauty industry illustrates how TAM can be applied to understand the acceptance of such innovative technologies in the FMCG sector (Kim & Jin, 2023).

Çalışkan and Sevim (2023) show how the Technology Acceptance Model can be used to study the acceptance of service robots in hospitality, providing insights into how similar strategies could be employed in the FMCG sector to promote sustainable consumer practices (Çalışkan & Sevim, 2023). The FMCG sector's transition towards environmental sustainability is a complex process that involves technological, behavioral, and strategic shifts.

The application of the Technology Acceptance Model (TAM) and its variants offers valuable insights into how these changes can be effectively implemented and accepted by various stakeholders, including consumers, employees, and supply chain partners. By understanding the factors that drive the acceptance of sustainable practices and technologies, the FMCG sector can better navigate the challenges and opportunities on the path to environmental sustainability.

Through the organization of innovative design practices, this set of activities guarantees the formalization of environmentally friendly themes. [Wagner, 2007] That is, the research has shown that proactive environmental strategies can give businesses a competitive edge, and activities at this level are seen as essential components of this strategy. Strategic environmental initiatives in businesses impact goals and

metrics, which in turn increases staff sustainability consciousness, reducing wear and debris more effectively is one example of how to make processes more eco-friendly. For example, Nyimbili and Chalwe (2023) explore various models and theories related to technology acceptance and adoption, highlighting how external factors can be integrated into TAM to provide a more comprehensive understanding of technology acceptance (Nyimbili & Chalwe, 2023). Andrés-Sánchez and Gené-Albesa (2023) applied TAM to explain policyholders' chatbot acceptance, demonstrating how user behavior towards new technology can be analyzed using the model.

Their work illustrates how TAM can be adapted to specific technology contexts, offering insights into user acceptance and usage behavior (Andrés-Sánchez & Gené-Albesa, 2023). Furthermore, TAM has been applied in educational settings, as seen in the work of Kemp (2023), who designed an Extended Educational Technology Acceptance Model (EETAM). This adaptation of TAM in an educational context highlights the model's versatility and its applicability in different environments (Kemp, 2023). For instance, Zou and Huang (2023) examined the acceptance of ChatGPT among doctoral students, utilizing TAM to understand the factors influencing the acceptance of AI-based technologies in educational settings (Zou & Huang, 2023).

Their research underscores the model's relevance in understanding technology acceptance in healthcare, a sector increasingly reliant on digital solutions (Leelavathi, Manjunath, & Somasundaram, 2023). Moreover, TAM's adaptability to different cultural and societal contexts is evident in studies like that of Abubakari, Zakaria, and Musa (2023), who explored digital learning acceptance in Islamic education. (2023) applied TAM to study workers' acceptance of digital procedures, demonstrating the model's utility in occupational settings (Hendricks, Smith, Peres, & Sasangohar, 2023). Furthermore, TAM has been extended to examine the psychological aspects of technology

acceptance. (2023) explored the direct effects of the Light Triad on TAM, integrating personality traits into the model to provide a deeper understanding of user acceptance behavior (Leahy, Aplin-Houtz, Willey, Lane, Sharma, & Meriac, 2023). Kumar, Banerjee, Al-Salti, and Upadhyaya (2023) used TAM to explore the relationship between technology acceptance and customer engagement, highlighting the model's relevance in a business context.

Comment on Literature Review

The Technology Acceptance Model (TAM) has two core components: Perceived Usefulness (PU) and Perceived Ease of Use (PEU). Over the years, researchers have extended TAM by adding additional constructs to better explain technology acceptance in specific contexts. Similarly, the Unified Theory of Acceptance and Use of Technology (UTAUT) model proposed by Venkatesh et al. (2003) integrated elements from several technology acceptance models, including TAM, and has been widely used in various studies.

Several studies have applied TAM to understand the adoption of sustainable technologies. to explore consumer acceptance of electric vehicles, a critical component of environmental sustainability. In another study, focusing on renewable energy technologies they discovered that along with PU and PEU, factors such as environmental concern and government incentives played a significant role in technology acceptance.

To better understand the acceptance of sustainable technologies, researchers have extended TAM by including additional constructs for example, Bamberg (2013) proposed adding environmental concern as a factor influencing the perceived usefulness of sustainable technologies included social norms and attitude towards sustainability in their TAM-based model to study the adoption of green information technology.

Depending on their operations and the items they sell to consumers, Fast Moving Consumer Goods (FMCG) firms can have a wide range of substantial effects when they implement environmental sustainability practices. Some important effects that fast-moving consumer goods firms would feel as a result of adopting environmental sustainability protocols are as follows: Businesses that priorities sustainability and provide environmentally friendly products can build a dedicated following of customers who share these values.

Supply Chain Optimization, Waste Reduction, and Logistics Improvements are Common Components of Sustainable Business Practices. In 2022, Dwivedi and Paul published the concept of a circular economy (CE) is under increasing strain as people become more concerned about environmental sustainability. Enhanced efficiency and higher output are only two of the numerous advantages that accrue from implementing game-changing technology. This is why digital supply chains (DSCs) are attractive to businesses operating in highly competitive global marketplaces. In order to maximize resource utilization and operational efficiencies, businesses constantly seek new technology advancements.

Companies have been compelled to incorporate cutting-edge digital technology into their supply chains due to these situations. An assortment of technologies, including blockchain, AI, cloud computing, and the internet of things (IoT), have simplified the supply chain's handling of large data, decision-making, feedback-gathering, opportunity-creating, etc. Innovative Products: Fast-moving consumer goods (FMCG) firms have the opportunity to create new products that are better for the environment.

These products can include biodegradable packaging, sustainable materials, and formulas that use less energy. Undoubtedly, many management techniques are employed to enhance business

performance, such as by means of more efficient allocation of resources. Companies are increasingly using total quality management and other quality management practices to boost customer satisfaction and, by extension, business outcomes, especially in the operations management sector. Nowadays, many operational strategies incorporate environmental management.

There is a lot of talk about how supply chain implementation impacts the environment, but research on how businesses may generate revenue to beat the competition is scant. Regulatory pressures in this area have been a major factor in the expansion of environmental management practices. Sustainable practices can boost profit margins by reducing costs through energy efficiency, reducing waste, and optimizing resources. The increasing danger of carbon dioxide (CO_2) emissions and the ensuing climate change has piqued the interest of developers in developing renewable and carbon-free energy sources in recent years. Despite the intermittent deployment of renewable energy in big enterprises, energy efficiency has increased in the industrial sector due to economic and environmental concerns.

Companies in the fast-moving consumer goods (FMCG) industry that place a premium on sustainability are in a stronger position to capitalize on the growing number of eco-conscious customers in emerging economies. In order to adopt sustainable practices, it is common to work with suppliers to guarantee the sustainability of components and raw materials. A more sustainable supply chain and stronger supplier relationships can result from this. Reputation and customer trust may be enhanced by effectively communicating sustainability initiatives. Risk Mitigation: By implementing sustainable practices, organizations may lessen the likelihood of resource shortages, interruptions to their supply chains, and reputational harm caused by environmental events. Natural disasters, pandemics, process, supply, finance, information, and economic environment are some of the ways risks may be classified.

Risk mitigation and resilience have been the primary areas of study at CSS in the past few years. A risk mitigation portfolio must be developed and put into action in order to increase resilience as part of the company's supply chain strategy. Researchers have looked at risk reduction from several angles, but the supply chain has been the primary emphasis. Companies may help achieve environmental goals by reducing their impact on the environment through the adoption of sustainable practices.

Research Problem:

Understanding what motivates or deters individuals and organizations from adopting these technologies is crucial for designing effective interventions and policies to accelerate the transition towards a more sustainable future. Furthermore, the research problem extends to examining how external factors, such as environmental awareness, social norms, and policy incentives, interact with these core TAM constructs to influence technology acceptance. Understanding the interplay of these external factors with individual perceptions is essential for developing a comprehensive view of sustainability technology adoption. In the context of this research, TAM serves as a foundational framework for exploring these various facets of technology acceptance in sustainability. By applying and extending TAM, this research aims to provide valuable insights into the factors influencing the acceptance of sustainable technologies and practices, thereby addressing the overarching research problem.

The research problem of this study revolves around understanding the multifaceted determinants of technology acceptance in the context of sustainability. It aims to uncover the psychological, social, and environmental factors that influence the adoption of sustainable technologies and practices, leveraging the robust framework of TAM.

The Significance of the Stu

The significance of this research lies in its potential to substantially contribute to our understanding of the factors influencing the adoption of sustainable technologies and practices, a critical concern in the face of global environmental challenges. By examining these factors through the lens of the Technology Acceptance Model (TAM), the study aims to provide insights that are pivotal for shaping effective policies, strategies, and interventions to encourage sustainable behavior in individuals and organizations. By understanding what drives or deters the adoption of sustainable technologies and practices, this study can inform the development of more effective strategies to mitigate the impacts of climate change, reduce carbon footprints, and conserve natural resources. Insights from this research can help in accelerating the adoption of renewable energy sources, sustainable transportation systems, and energy-efficient practices, all of which are essential for reducing greenhouse gas emissions and achieving environmental sustainability goals. By providing insights into the factors that influence the acceptance of sustainable technologies, this research can inform the development of more effective policies and regulations that encourage the adoption of these technologies. This could include incentives for renewable energy adoption, regulations promoting energy-efficient practices, or initiatives to enhance public awareness and education about sustainability.

Research Questions:

Q1: To what extent does perceived usefulness influence FMCG enterprises' intention to adopt environmental sustainability practices?

Q2: How does perceived ease of use impact FMCG enterprises' intention to adopt environmental sustainability practices?

Conceptual Framework and hypothesis:

A conceptual model is suggested to shed light on the relationship between TAM constructions and the ambition to implement environmental sustainability practices in FMCG firms, expanding upon the current TAM framework. One factor that could sway workers' decisions is perceived usefulness, which is based on how they see the advantages of sustainability. Just as how the perceived simplicity of incorporating sustainability into operations impacts intention, so does the perceived ease of usage. The theoretical framework establishes a connection between these concepts and lays forth a plan for future research into the FMCG industry's sustainability adoption intention as it relates to TAM elements.

An extensive review of the relevant literature lays the groundwork for the next study in this chapter. The papers that were examined provide some background on TAM's role in environmental sustainability and lay the groundwork for the conceptual framework that will be used to guide the empirical study in the chapters to follow.
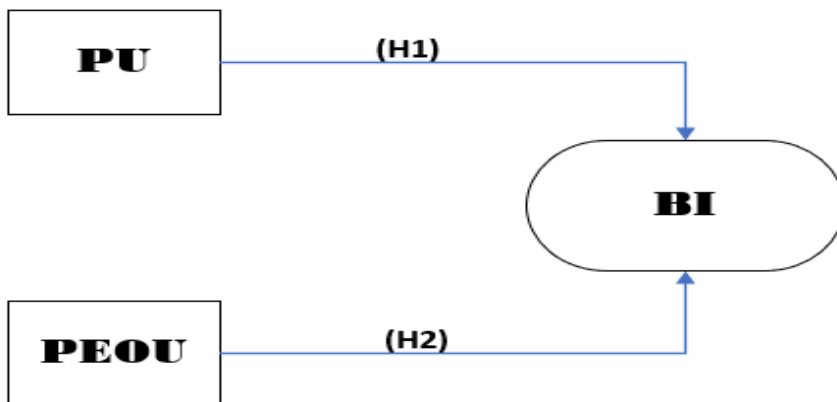

Figure 1 diagrammatic representation of conceptual framework and hypothesis dimension.

Hypothesis 1:

- Null Hypothesis (H0): There is no significant relationship between perceived usefulness and the behavioral intention to adopt environmental sustainability practices in FMCG enterprises.
- Alternative Hypothesis (H1): There is a significant positive relationship between perceived usefulness and the behavioral intention to adopt environmental sustainability practices in FMCG enterprises.

Hypothesis 2:

- Null Hypothesis (H0): Perceived ease of use does not have a significant impact on the behavioral intention to adopt environmental sustainability practices in FMCG enterprises.

Alternative Hypothesis (H2): Perceived ease of use has a significant positive impact on the behavioral intention to adopt environmental sustainability practices in FMCG enterprises.

As shown in Figure 2, the conceptual framework postulates that the intention to adopt environmental sustainability practices is influenced by perceived utility and considered simplicity of use. The presented hypotheses are in line with this framework. (a graphical depiction of the hypothesis dimension and the conceptual framework). People are more inclined to plan to implement a behavior when they see it as beneficial, which is the primary premise of the TAM, as stated in Hypothesis 1. The second hypothesis elaborates on this by positing that people's intentions are influenced by how easily sustainability practices may be integrated into current operations. The third hypothesis acknowledges the interaction between perceived utility and perceived ease of use, which together influence sustainability adoption intentions.

This study intends to investigate these hypotheses in order to find out how people's views on the practicality and simplicity of environmental sustainability practices in FMCG companies affect their desire to use

these practices. In the context of fast-moving consumer goods (FMCG) companies, this helps shed light on the elements that promote or discourage sustainable behavior.

Research Methodology

Addressing these concerns, this research applies the Technology Acceptance Model (TAM) as a theoretical lens to investigate FMCG firms' intentions to adopt environmentally sustainable practices. Correlation analysis helps in understanding the relationship between the perceived usefulness and ease of use of sustainable practices and the intention to adopt them. Regression analysis further elucidates the strength and nature of these relationships, offering insights into how strongly each TAM component influences sustainability adoption intentions. By understanding the factors that influence these companies' acceptance of sustainable practices, this study provides a roadmap for FMCG firms to navigate the complexities of integrating environmental sustainability into their operations. By applying a modified version of the Technology Acceptance Model, the study sheds light on the factors that influence these companies' intentions to adopt sustainable practices.

Research Design:

The exploration of the intricate relationship between the components of the Technology Acceptance Model (TAM) and the intention to adopt environmental sustainability practices within the Fast-Moving Consumer Goods (FMCG) industry is the focal point of this study. The deductive approach applied in this study involves testing the theoretical assertions of TAM in the specific context of environmental sustainability in the FMCG industry. The research then deduces hypotheses regarding how these TAM components might influence the intention to implement sustainability practices in the

FMCG context. This research adopts a structured and methodical approach to investigate the role of TAM in shaping attitudes and intentions towards environmental sustainability in the FMCG sector. Through the use of deductive methodology, structured surveys, and statistical analysis, the study aims to provide valuable insights into how the components of TAM influence the desire to implement sustainable practices

Questionnaire Design based on TAM Constructs:

In this comprehensive survey, designed to delve into the attitudes and intentions of professionals within the Fast-Moving Consumer Goods (FMCG) industry regarding environmental sustainability practices, respondents are invited to engage with a series of thoughtfully constructed questions. This survey aims to unravel the complex layers of perceived usefulness, perceived ease of use, and behavioral intention towards sustainable practices within the FMCG industry. Environmental Performance Enhancement: Here, the focus shifts to understanding if sustainable practices are perceived as key contributors to improving the company's overall environmental performance. Environmental Impact Control and Management: The survey seeks to understand if adopting sustainability practices would lead to better control and management of environmental impacts. The survey then transitions to questions related to perceived ease of use, a crucial component in understanding how straightforward and feasible it is for FMCG companies to integrate sustainable practices into their operations:

Sample Size

This decision is informed by the guidelines provided by Saunders, Lewis, and Thornhill (2009), who suggest that a sample size of 66 is required to achieve a 95% confidence level with a 10% margin of error, given a target population of approximately 200. As Saunders, Lewis, &

Thornhill (2009) note, the non-probability judgement sampling technique involves the purposive or deliberate selection of specific units from the universe to constitute a sample that represents the entire population. It allows for a more targeted approach to sampling, where the researcher's judgement plays a crucial role in selecting cases that are deemed most representative or insightful for the research objectives. The chosen sample size of 66, informed by Saunders, Lewis, and Thornhill's guidelines, is optimized for robust statistical analysis within the confines of a manageable research process. Simultaneously, the adoption of non-probability judgement sampling allows for a focused and insightful exploration of environmental sustainability practices within the Egyptian FMCG industry, with the researcher's expertise guiding the selection of the most pertinent and informative cases for study.

Measurements and Data Collection Process:

The study variables were measured through adapted measurement scales from previous studies as summarized in Table 1:

Table 2 Variables adapted measurement scales.

Construct	Dimension	Source
Perceived Usefulness - Adoption of Environmental Sustainability	1) Adopting environmental sustainability practices in our operations would lead to more efficient resource utilization. 2) The implementation of sustainable practices would improve the overall environmental performance of our company. 3) Integrating environmental sustainability into our business model would be beneficial for our long-term success. 4) Embracing environmental sustainability practices would enhance our company's reputation and brand image.	Yang, Y., & Wang, X. (2019) and Alfadda, H. A., & Mahdi, H. S. (2021)

5) Environmental sustainability adoption would contribute to cost savings and operational efficiency.

6) I believe that incorporating sustainable practices would positively impact the ecological footprint of our organization.

7) The adoption of environmental sustainability practices would provide us with greater control over our impact on the environment.

8) Adopting sustainability practices would be advantageous for our company's alignment with eco-conscious consumers.

9) The utilization of environmental sustainability practices would allow us to better manage our environmental responsibilities.

10) I perceive that the adoption of environmental sustainability practices would be valuable for achieving our environmental goals.

Perceived Ease of Use - Adoption of Environmental Sustainability	1) Learning to adopt environmental sustainability practices is straightforward for me. 2) Engaging in and transitioning to sustainable practices is quick and clear. 3) It's simple to access resources and materials related to adopting environmental sustainability practices. 4) Overall, I find the process of adopting environmental sustainability practices to be user-friendly.	Yang, Y., & Wang, X. (2019) and Alfadda, H. A., & Mahdi, H. S. (2021)
Behavioral Intention - Adoption of Environmental Sustainability	1) I believe adopting environmental sustainability practices is beneficial for our organization. 2) Embracing environmental sustainability practices contributes to the improvement of our company's ecological impact. 3) I feel confident in integrating environmental	Yang, Y., & Wang, X. (2019) and Alfadda, H. A., & Mahdi, H. S. (2021)

sustainability practices to enhance our business operations.

4) The materials and resources related to environmental sustainability practices are valuable for our organization.

5) I think adopting environmental sustainability practices should be a part of our future business strategies.

Elaborated by the researcher.

Moreover, the Interval scale represented in a five-point Likert scale which was ranged from 5= strongly agree to 1= strongly disagree has been utilized to know the degree of respondents' agreement or disagreement with the proposed statements (Saunders, Lewis, & Thornhill, 2009).

Questionnaire Administration

The questionnaire will be administered electronically using an online survey platform. Participants will receive an invitation containing a link to the survey.

Data Collection Timeline

The data collection period is estimated to be four to six weeks, allowing sufficient time for participants to respond.

Data Collection and Analysis

The primary objective of this analysis is to unravel the facts and data, thereby yielding insightful findings that contribute to the understanding of environmental sustainability practices within the industry. The first step in the data analysis process involved ensuring the validity and reliability of the measuring scales used in the study. The use of this statistical test is crucial, as it ensures that the conclusions drawn from the study are based on reliable instruments. The results of the normality test inform the researcher about the appropriate statistical methods to use for further analysis. In the context of this study, multiple regression analysis was employed to investigate the relationships between the various components of the Technology Acceptance Model (TAM) – such as perceived usefulness, perceived ease of use, and behavioral intention – and the adoption of environmental sustainability practices in the FMCG industry. Starting from ensuring the validity and reliability of the measuring instruments to conducting descriptive and inferential statistical analyses, each step has been carried out with meticulous attention to detail.

Demographic analysis

Demographic analysis is a method for measuring racial, ethnic, and age distributions as well as how these characteristics have changed over time as a result of the three main demographic processes: migration, fertility, and mortality (Lucas, D. 2002).

Gender, years of experience in the FMCG business, and company size were the demographic factors measured in this research (Tables 3, 4, 5 & 5 and Figure 3). Gender was classified as either male or female; there were 66 men and 0 females. The respondents were divided into three groups based on their years of experience in the FMCG industry: 1-10, 10-20, and above 20. The frequency of each group was 23, 29,

and 14 accordingly. The corresponding percentages are 34.8%, 43.9%, and 21.2%. There were three groups based on company size: small (4 occurrences), medium (11 occurrences), and big (51 occurrences). The corresponding percentages are 6.1%, 16.7%, and 77.3%.

Table 3 compared statistics. (Elaborated by the researcher based on SPSS results)

Statistics

		Gender	Years of Experience in the FMCG industry	Company Size
N	Valid	66	66	66
	Missing	0	0	0

Table 4 Gender frequency table (Elaborated by the researcher based on SPSS results)

Gender

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	66	100.0	100.0	100.0

Table 5 Years of Experience frequency table (Elaborated by the researcher based on SPSS results)

Years of Experience in the FMCG industry

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1-10	23	34.8	34.8	34.8
	10-20	29	43.9	43.9	78.8
	over 20	14	21.2	21.2	100.0
	Total	66	100.0	100.0	

Table 6 Company Size frequency table (Elaborated by the researcher based on SPSS results)

Company Size

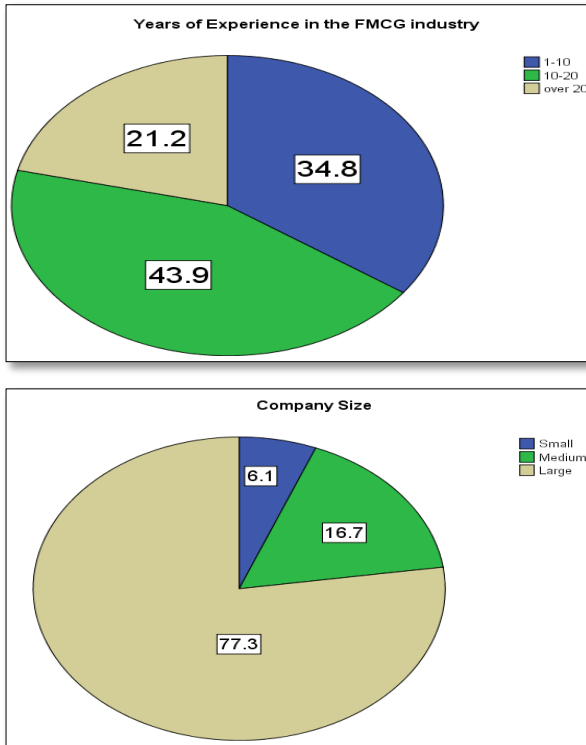|		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Small	4	6.1	6.1	6.1
	Medium	11	16.7	16.7	22.7
	Large	51	77.3	77.3	100.0
	Total	66	100.0	100.0	

Figure 2 years of Experience and Company Size pie charters

Normality Test by Shapiro-Wilk

The Shapiro-Wilk test is a hypothesis test applied to a sample with the null hypothesis that the sample was generated from a normal distribution. If the p-value is low, we can reject this null hypothesis and say that the sample was not generated from a normal distribution.

Table 7 normality test (Elaborated by the researcher based on SPSS results)

Tests of Normality

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Perceived Usefulness	.125	66	.013	.798	66	.000
Perceived Ease of Use	.142	66	.002	.967	66	.080
Behavioral Intention	.181	66	.000	.879	66	.000

a. Lilliefors Significance Correction

Table 7 shows that all of the variables' data substantially differ from a normal distribution, with p-values < 0.05 for every one of them. According to Razali and Wah (2011).

The distribution of the sample means approaches a normal distribution as the sample size rises, according to the Central Limit Theorem, even for a population with any distribution. Using a normal distribution as an approximation works pretty well for samples with an n-size greater than 30. With increasing n, the approximation approaches a normal distribution more closely. We have n = 66 here (Fischer, H. 2011).

Reliability Test

A measuring system's consistency, stability, and reliability may be assessed statistically using reliability analysis.

Table 8 CRONBACH'S ALPHA (Elaborated by the researcher based on SPSS results)

Overall

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.908	.913	19

Variables:

PU

Reliability Statistics

Cronbach's Alpha	N of Items
.891	10

PEOU

Reliability Statistics

Cronbach's Alpha	N of Items
.749	4

BI

Reliability Statistics

Cronbach's Alpha	N of Items
.827	5

Table 8 reveals that the data have high levels of internal consistency dependability, with a total Cronbach's alpha of 0.908. There is strong dependability and internal consistency among the 10 items on Perceived Usefulness, as indicated by Cronbach's alpha score of 0.891. With a Cronbach's alpha of 0.749, the four-question Perceived Ease of Use survey has a satisfactory level of internal consistency reliability. The Behavioral Intention scale has strong reliability and internal consistency with Cronbach's alpha rating of 0.827.

Descriptive Analysis

Descriptive statistics is a subfield of statistics concerned with providing clear and concise summaries, organization, and presentation of data. Without drawing broad inferences about the population as a whole, the emphasis is on characterizing and analyzing the essential characteristics of a dataset. Table 9 measures the central tendency and variance, while Figure 4 shows the normal QQ plot of all variables.

Table 9 descriptive statistics (Elaborated by the researcher based on SPSS results)

Descriptive Statistics

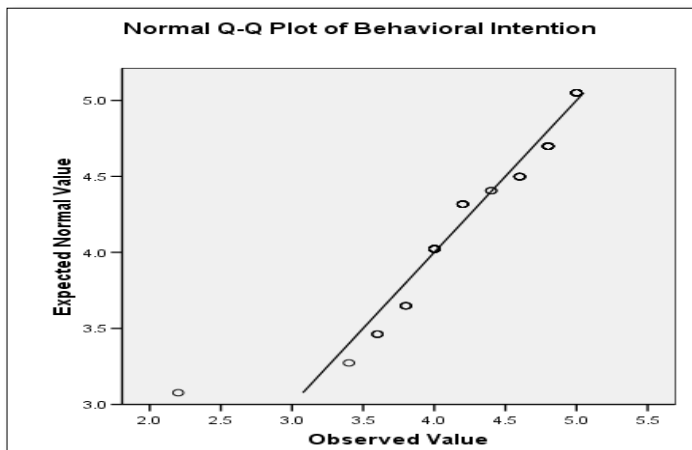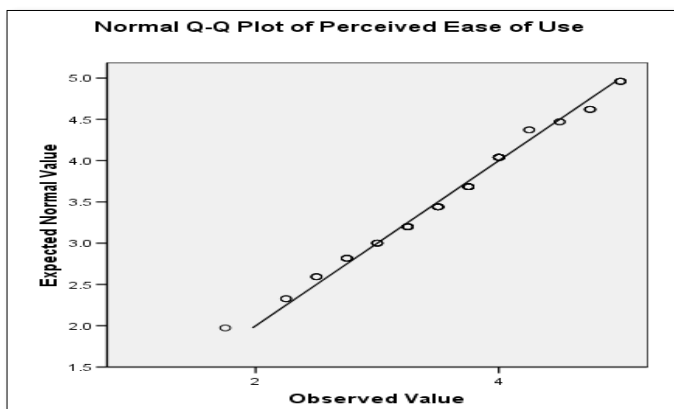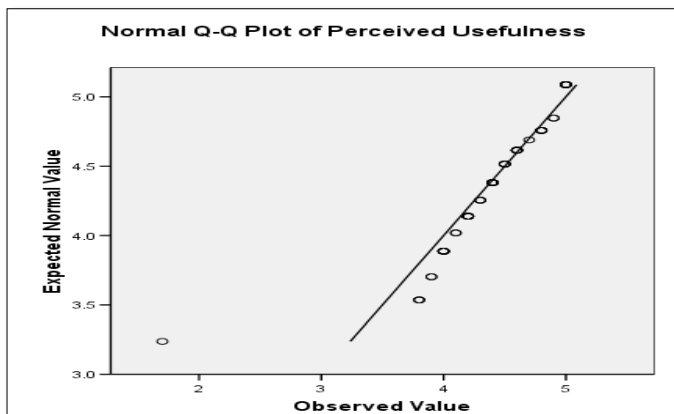|	N	Range	Minimum	Maximum	Mean		Std.	Variance
	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Statistic
Perceived Usefulness	66	3.30	1.70	5.00	4.4197	.06199	.50359	.254
Perceived Ease of Use	66	3.25	1.75	5.00	3.6439	.08755	.71126	.506
Behavioral Intention	66	2.80	2.20	5.00	4.2879	.06349	.51576	.266
Valid N (listwise)	66							

Figure 3 Normal Q-Q Plot

Correlation analysis

A bivariate correlation study was performed on the variables listed in table 10. The Pearson's correlation coefficient (r) was used to quantify the strength of the linear relationship between the two variables, which are quantitative and are paired. A correlation coefficient between 0.90 and 1.00 indicates a very high level of positive correlation, while a correlation between 0.70 and 0.90 indicates a high level of positive correlation, 0.50 to 0.70 indicates a moderate level of positive correlation, and a correlation between 0.30 and 0.50 indicates a low level of positive correlation.

Table 10 correlation analysis

Correlations

		Perceived Usefulness	Perceived Ease of Use	Behavioral Intention
Perceived Usefulness	Pearson Correlation	1	.333**	.798**
	Sig. (1-tailed)		.003	.000
	N	66	66	66
Perceived Ease of Use	Pearson Correlation	.333**	1	.464**
	Sig. (1-tailed)	.003		.000
	N	66	66	66
Behavioral Intention	Pearson Correlation	.798**	.464**	1
	Sig. (1-tailed)	.000	.000	
	N	66	66	66

**. Correlation is significant at the 0.01 level (1-tailed).

Hypothesis 1:

there is a significant positive relationship between perceived usefulness (independent variable) and behavioral intention (dependent variable), the P value explored from the table is {P= .000 < 0.01, r = 0.798}.

Hypothesis 2:

there is a significant positive relationship between perceived ease of use (independent variable) and behavioral intention (dependent variable), the P value explored from the table is {P= .000 < 0.01, r = 0.464}.

Regression Analysis

Linear regression analysis has been conducted for each explanatory or independent variables with the response or dependent variable to analysis and predict the relationship between these two variables. It assumes a linear relationship between the independent variable and the dependent variable and aims to find the best fitting line that describes this relationship. Linear regression shows a linear relationship between the independent (predictor) variable, which represents the x-axis, and the dependent (output) variable, which represents the y-axis. To calculate the line of best fit, linear regression uses the traditional slope-intercept form the equation: ($Y_i = \beta_0 + \beta_1 X_i$) where Y_i = dependent variable, β_0 = constant/origin, β_1 = slope/origin, X_i = independent variable.

Hypothesis 1:

Using data elaborated in the following tables 11, 12, 13. The results of a single regression model confirm that perceived usefulness has positive significant impact on behavioral intention ($\beta = 0.798$, $P < 0.01$). Additionally, it refers that a one unit increase in perceived usefulness will increase behavioral intention by 63.6 %. Moreover, (R^2) is used to evaluate the model fit, generally, the model is considered fit when R^2 equals to 0.10 or higher (Falk & Miller, 1992).
Giving the regression equation ($Y = 0.678 + 0.817\,X$)
where, Y = behavioral intention and X = perceived usefulness. (Figures 5&6) confirm that values of the residuals have a distribution that is approximately normal.

Table 11 regression model summary H1

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.798[a]	.636	.631	.31351	.636	111.915	1	64	.000	2.323

a. Predictors: (Constant), Perceived Usefulness

b. Dependent Variable: Behavioral Intention

Table 12 model ANOVA H1

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	11.000	1	11.000	111.915	.000[a]
	Residual	6.290	64	.098		
	Total	17.290	65			

a. Predictors: (Constant), Perceived Usefulness

b. Dependent Variable: Behavioral Intention

Table 13 coefficients H1

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95% Confidence Interval for B		Collinearity Statistics	
		B	Std. Error	Beta			Lower Bound	Upper Bound	Tolerance	VIF
1	(Constant)	.678	.343		1.973	.053	-.009	1.364		
	Perceived Usefulness	.817	.077	.798	10.579	.000	.663	.971	1.000	1.000

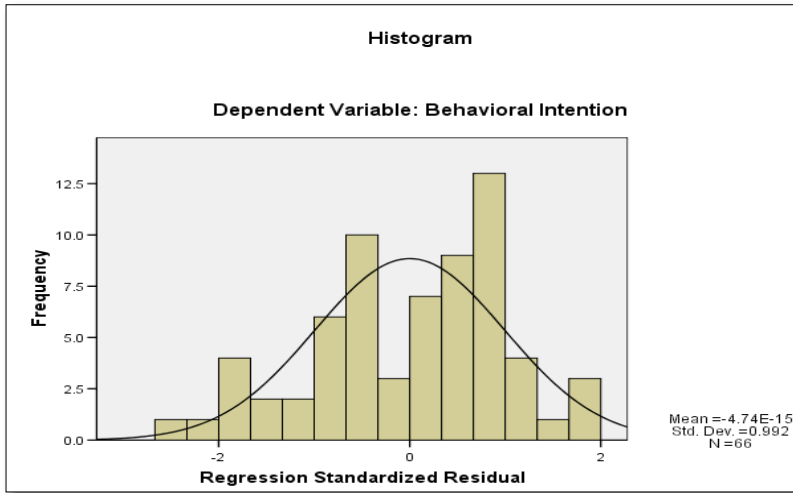a. Dependent Variable: Behavioral Intention
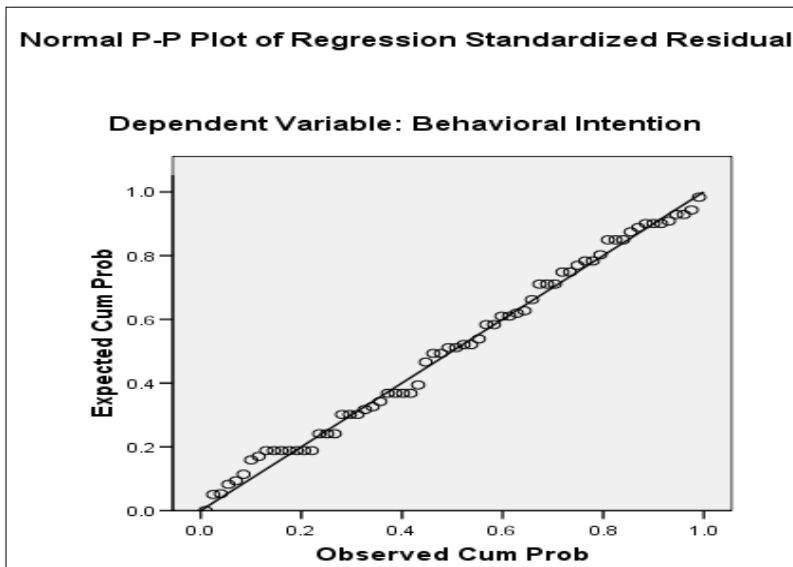
Figure 4 H1 histogram

Figure 5 normal P-P plot H1

Hypothesis 2:

A single regression model's results show that perceived ease of use significantly affects behavioural intention, according to the data shown in tables 14, 15, and 16. β = 0.464, P < 0.01. Furthermore, it states that

a 21.5% increase in behavioural intention occurs for every one-unit rise in perceived usefulness. As an additional metric, (R2) is employed to assess the model's fit; typically, a value of 0.10 or above indicates that the model is fit (Falk & Miller, 1992). With Y standing for behavioral intention and X for perceived ease of use, we get the regression equation (Y = 3.062 + 0.337 X).

Where, Y = behavioral intention and X = perceived ease of use the results show that the residuals follow a distribution that is close to normal (Figures 7 and 8).

Table 14 regression model summary H2

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.464[a]	.215	.203	.46041	.215	17.565	1	64	.000	2.621

a. Predictors: (Constant), Perceived Ease of Use
b. Dependent Variable: Behavioral Intention

Table 15 model ANOVA H2

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	3.723	1	3.723	17.565	.000[a]
	Residual	13.567	64	.212		
	Total	17.290	65			

a. Predictors: (Constant), Perceived Ease of Use
b. Dependent Variable: Behavioral Intention

Table 16 coefficients H2

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95% Confidence Interval for B		Collinearity Statistics	
		B	Std. Error	Beta			Lower Bound	Upper Bound	Tolerance	VIF
1	(Constant)	3.062	.298		10.274	.000	2.466	3.657		
	Perceived Ease of Use	.337	.080	.464	4.191	.000	.176	.497	1.000	1.000

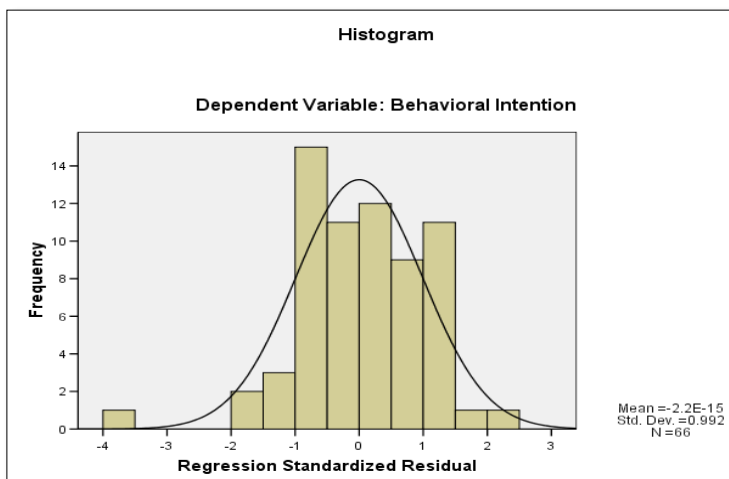a. Dependent Variable: Behavioral Intention
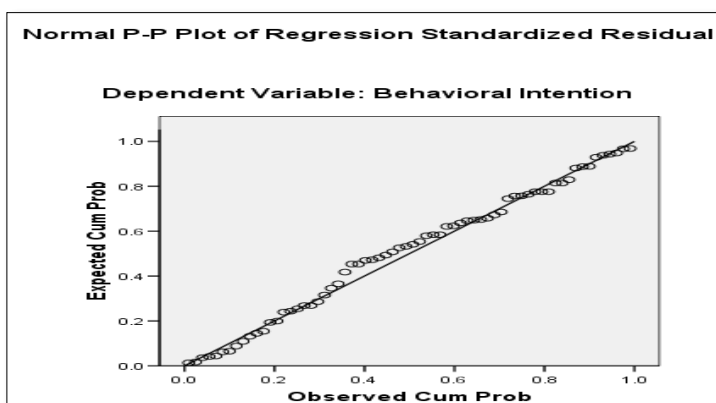

Figure 6 H2 histogram

Figure 7 normal P-P plot H2

Multiple Regression Analysis

Both the perceived usefulness and the perceived ease of use, which are explanatory factors, and the response variable, behavioral intention, are the dependent variable in a multiple regression analysis. Tables 17, 18, and 19 provide the full results of the multiple regression model, which shows that perceived usefulness is the most important variable (63.6% of the total) and that perceived ease of use is the second most important (4.4%). Considering the total R2 value of perceived usefulness and perceived ease of use in model 2 reveals that both have a 68% impact on behavioral intention, indicating the optimal multiple regression model. Perceived usefulness and perceived simplicity of use significantly affect behavioral intention in a favorable way, according to this hypothesis. ($P < 0.01$), with β perceived usefulness = 0.723 and β perceived ease of use = 0.223.

Y = 0.425 + 0.741 X1 + 0.162 X2 is the regression equation that provides the relationship between behavioral intention, perceived usefulness (X1), and perceived ease of use (X2). The results show that the residuals follow a distribution that is close to normal (Figures 9&10).

Table 17 model summary of multiple regression

Model Summary^f

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change	F Change	df1	df2	Sig. F Change	Durbin-Watson
1	.798^a	.636	.631	.31351	.636	111.915	1	64	.000	
2	.825^b	.680	.670	.29619	.044	8.703	1	63	.004	2.533

a. Predictors: (Constant), Perceived Usefulness

b. Predictors: (Constant), Perceived Usefulness, Perceived Ease of Use

c. Dependent Variable: Behavioral Intention

Table 18 multiple regression model ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
ANOVA^c						
1	Regression	11.000	1	11.000	111.915	.000ᵃ
	Residual	6.290	64	.098		
	Total	17.290	65			
2	Regression	11.763	2	5.882	67.044	.000ᵇ
	Residual	5.527	63	.088		
	Total	17.290	65			

a. Predictors: (Constant), Perceived Usefulness

b. Predictors: (Constant), Perceived Usefulness, Perceived Ease of Use

c. Dependent Variable: Behavioral Intention

Table 19 multiple regression model coefficients

Model		Unstandardized Coefficients B	Std. Error	Standardized Coefficients Beta	t	Sig.	95% Confidence Interval for B Lower Bound	Upper Bound	Collinearity Statistics Tolerance	VIF
Coefficients^a										
1	(Constant)	.678	.343		1.973	.053	-.009	1.364		
	Perceived Usefulness	.817	.077	.798	10.579	.000	.663	.971	1.000	1.000
2	(Constant)	.425	.336		1.266	.210	-.246	1.096		
	Perceived Usefulness	.741	.077	.723	9.573	.000	.586	.895	.889	1.125
	Perceived Ease of Use	.162	.055	.223	2.950	.004	.052	.271	.889	1.125

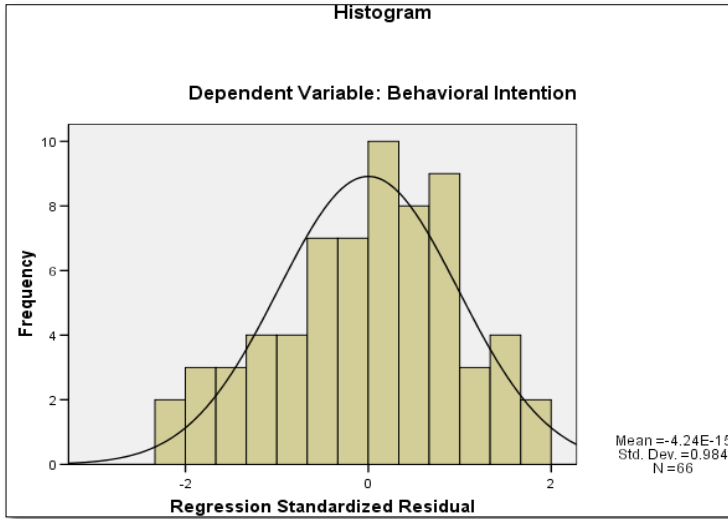a. Dependent Variable: Behavioral Intention
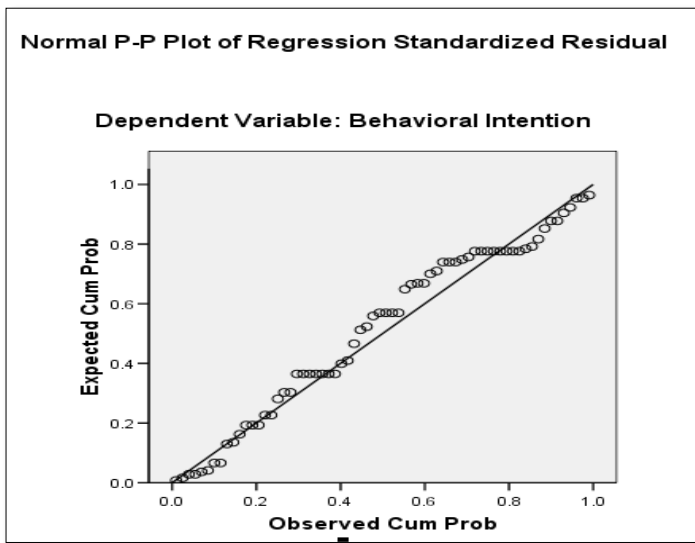
Figure 8 model histogram

Figure 9 model P-P plot

Discussion

The study, grounded in the Technology Acceptance Model (TAM), aims to unravel the intricacies of environmental sustainability practices

within this sector. The subsequent multiple regression analysis, a staple in TAM research, was pivotal in understanding the relationships between the model's components - perceived usefulness, perceived ease of use, and behavioral intention - and the adoption of environmental sustainability practices (Chen, Khan, Shiwakoti, Stasinopoulos, & Aghabayk, 2023). This chapter aims to discuss these findings in depth, linking them to existing literature and theories to provide a comprehensive understanding of the factors influencing environmental sustainability practices in the FMCG sector. The discussion will delve into how these findings align with or diverge from previous studies in similar contexts, such as the acceptance of digital technologies in education (Abubakari, Zakaria, & Musa, 2023) and the adoption of innovative practices in various industries (Ilyas, Uddin, Haleem, & Ahmad, 2023; Aplin-Houtz, Leahy, Willey, Lane, Sharma, & Meriac, 2023). The insights garnered could inform strategies to enhance the adoption of sustainable practices in the industry, contributing to broader environmental and societal goals. This discussion is particularly relevant in the context of emerging trends and challenges in the FMCG sector, where understanding and addressing environmental concerns is becoming increasingly important (Kalinkara & Özdemir, 2023; Febriaryanti, 2023).

Correlation Analysis and Hypotheses Testing

The application of correlation analysis in this research is guided by the Technology Acceptance Model (TAM), which posits that perceived usefulness, perceived ease of use, and behavioral intention are key determinants in the adoption of new technologies or practices.
 The study's hypotheses revolve around the relationships between perceived usefulness, perceived ease of use, and behavioral intention toward adopting sustainability practices. The first hypothesis (H1) postulates a significant positive relationship between perceived

usefulness (independent variable) and behavioral intention (dependent variable).

The correlation analysis, yielding a Pearson's r of 0.798 and a p-value less than 0.01, strongly supports this hypothesis. This finding aligns with the existing literature, where perceived usefulness is consistently shown to be a strong predictor of behavioral intention (Nyimbili & Chalwe, 2023; Andrés-Sánchez & Gené-Albesa, 2023). It suggests that in the Egyptian FMCG industry, the belief that sustainability practices are beneficial is likely to increase the intention to adopt these practices.The second hypothesis (H2) examines the relationship between perceived ease of use (independent variable) and behavioral intention (dependent variable). The correlation analysis reveals a lower, yet significant, positive correlation (Pearson's r = 0.464, p-value < 0.01), indicating that ease of implementing sustainability practices also positively influences behavioral intention, albeit to a lesser extent than perceived usefulness.

Exploring Regression Analysis Results

The analysis confirmed a strong positive impact of perceived usefulness on behavioral intention. This suggests that in the FMCG industry, the more the sustainability practices are perceived as beneficial, the higher the likelihood of these practices being adopted. This finding aligns with existing literature that underscores the importance of perceived usefulness in technology acceptance and behavior change (Nyimbili & Chalwe, 2023; Andrés-Sánchez & Gené-Albesa, 2023).

Moreover, the regression analysis indicated a significant, though comparatively weaker, positive effect of perceived ease of use on behavioral intention. This implies that the ease with which sustainability practices can be implemented also plays a role in their adoption, albeit to a lesser degree than perceived usefulness. The regression coefficients obtained from the analysis offer a quantitative

measure of the impact of each independent variable on the dependent variable. For example, a high regression coefficient for perceived usefulness indicates a strong positive influence on behavioral intention. Similarly, the model fit indices, such as R-squared, provide information on the proportion of variance in the dependent variable that is predictable from the independent variables. A high R-squared value would suggest that the model explains a large portion of the variance in behavioral intention, indicating a good fit.

Multiple Regression Analysis and Model Fit

The results of the multiple regression analysis revealed significant findings. Firstly, the analysis confirmed that both perceived usefulness and perceived ease of use have a significant impact on behavioral intention. This finding is consistent with the principles of TAM, which posits that these two factors are crucial determinants of technology acceptance and usage behavior (Nyimbili & Chalwe, 2023; Andrés-Sánchez & Gené-Albesa, 2023). The strength of these relationships, as quantified by the regression coefficients, provides valuable insights. A higher coefficient for perceived usefulness compared to perceived ease of use suggests that the former has a more substantial influence on the likelihood of adopting sustainability practices within the FMCG industry.

Theoretical Implications

The study's findings enhance the theoretical understanding of TAM, particularly in the context of environmental sustainability. This alignment reaffirms TAM's robustness and applicability in diverse contexts, extending beyond its traditional use in technology acceptance to encompass environmental sustainability practices in the FMCG industry. Additionally, the study enriches TAM by integrating it within the specific context of environmental sustainability.

Practical Implications

For FMCG companies, the findings provide crucial insights for designing strategies to promote environmental sustainability.

Understanding that perceived usefulness is a strong predictor of behavioral intention implies that companies should focus on communicating the tangible benefits of sustainability practices. Additionally, the significance of perceived ease of use suggests that companies should aim to simplify the adoption of sustainability practices. Policymakers could develop incentives for companies that adopt sustainable practices or establish guidelines and standards that encourage the FMCG industry to move towards greater sustainability. Furthermore, the research findings offer valuable insights for marketing and communication strategies within FMCG companies. By understanding the factors that influence employees' and consumers' acceptance of sustainability practices, companies can tailor their communication strategies to address these factors effectively.

Areas for Future Research

Comparative studies across various countries and regions could provide a broader understanding of the factors influencing environmental sustainability practices in the FMCG industry globally. Factors such as organizational culture, leadership styles, external environmental pressures, and consumer preferences could be examined to understand their impact on sustainability adoption in the FMCG industry. Further, exploring other theoretical frameworks or models that could explain sustainability practices in the FMCG industry would also be a valuable area of research.

Conclusions

More specifically, for fast-moving consumer goods (FMCG) companies, the perceived usefulness correlates positively with the behavioral intention to implement environmental sustainability practices (H1). Also, in FMCG companies, the behavioral intention to implement sustainable practices had a positive correlation with perceived ease of use (H2). When studying the implementation of

environmental sustainability practices in the fast-moving consumer goods industry, it is crucial to consider how users perceive the practices' usefulness and ease of use. By establishing the positive impact of perceived ease of use on the behavioral intention to adopt sustainability practices, the study advocates for the inclusion of user-friendly aspects in sustainability frameworks.

The study contributes to a more holistic understanding of sustainability adoption by emphasizing the interplay between perceived usefulness, perceived ease of use, and behavioral intention. The findings of the study align with institutional theory, suggesting that the perceived benefits and ease of adopting sustainability practices contribute to the establishment of norms and expectations within the institutional environment.

The managerial implications of the research findings in the context of Egypt are multifaceted, offering practical guidance for FMCG enterprises operating within the Egyptian business environment. Implication: Managers should invest in strategic communication and training programs to enhance employees' understanding of the benefits of environmental sustainability practices. Rationale: Clear communication and targeted training can increase the perceived usefulness of sustainability initiatives among employees, fostering a positive attitude and intention toward adoption. Implication: Managers should focus on implementing user-friendly strategies for sustainability practices, considering the local context and operational ease.

References

- Abubakari, M., Zakaria, G., and Musa, J., 2023. Digital Learning Acceptance in Islamic Education: Validity and Reliability Testing of the Modified Technology Acceptance Model. *Canadian Journal of Educational and Social Studies*, 3, pp.27-42. DOI: 10.53103/cjess.v6i1.185.
- Alfadda, H.A. and Mahdi, H.S., 2021. Measuring students' use of zoom application in language course based on the technology acceptance model (TAM). Journal of Psycholinguistic Research, 50(4), pp.883-900.
- Andrés-Sánchez, J. and Gené-Albesa, J., 2023. Explaining Policyholders' Chatbot Acceptance with a Unified Technology Acceptance and Use of

Technology-Based Model. Journal of Theoretical and Applied Electronic Commerce Research, 18, pp.1217-1227. DOI: 10.3390/jtaer18030062.

- Bagur-Femenias, L., Llach, J. and del Mar Alonso-Almeida, M., 2013. Is the adoption of environmental practices a strategical decision for small service companies? An empirical approach. Management Decision, 51(1), pp.41-62.

- Çalışkan, G. and Sevim, B., 2023. Use of service robots in hospitality: An observational study in terms of technology acceptance model. Tourism and Hospitality Research, pp.1-13. DOI: 10.1177/14673584231198438.

- Chen, Y. et al., 2023. Analysis of Australian Public Acceptance of Fully Automated Vehicles by Extending Technology Acceptance Model. Case Studies on Transport Policy, 14. DOI: 10.1016/j.cstp.2023.101072.

- Davis, F.D., 1989. Perceived usefulness, perceived ease of use, and user acceptance of information technology. MIS Quarterly, pp.319-340.

- Dwivedi, A. and Paul, S.K., 2022. A framework for digital supply chains in the era of circular economy: Implications on environmental sustainability. Business Strategy and the Environment, 31(4), pp.1249-1274.

- Falk, R.F. and Miller, N.B., 1992. A Primer for Soft Modeling. University of Akron Press.

- Fischer, H., 2011. A History of the Central Limit Theorem: From Classical to Modern Probability Theory (Vol. 4). New York: Springer.

- Hendricks, J. et al., 2023. Workers' Acceptance of Digital Procedures: An Application of the Technology Acceptance Model. IISE Transactions on Occupational Ergonomics and Human Factors, 11, pp.1-21. DOI: 10.1080/24725838.2023.2240342.

- Ilyas, M. et al., 2023. Digital entrepreneurial acceptance: an examination of technology acceptance model and do-it-yourself behavior. Journal of Innovation and Entrepreneurship, 12. DOI: 10.1186/s13731-023-00268-1.

- Kalinkara, Y. and Özdemir, O., 2023. Anatomy in the metaverse: Exploring student technology acceptance through the UTAUT2 model. pp.1-18. DOI: 10.1002/ase.2353.

- Kemp, A., 2023. Design of an Extended Educational Technology Acceptance Model (EETAM). DOI: 10.13140/RG.2.2.21685.45285.

- Kim, N. and Jin, Y.-M., 2023. Effect of Beauty Industry's Blockchain Technology Characteristics on Acceptance Intention Based on Technology Acceptance Model. Journal of the Korean Society of Cosmetology, 29, pp.912-924. DOI: 10.52660/JKSC.2023.29.4.912.

- Kumar, R. et al., 2023. Technology acceptance model and customer engagement: mediating role of customer satisfaction. Journal of Financial Services Marketing. DOI: 10.1057/s41264-023-00256-2.
- Leahy, S. et al., 2023. The Light Side of Technology Acceptance: The Direct Effects of the Light Triad on the Technology Acceptance Model. Journal of Managerial Issues, 35, pp.300-332
- Leelavathi, R., Manjunath, S., and Somasundaram, T., 2023. Customer Acceptance on Usage of Telemedicine Application: Technology Acceptance Model (TAM). DOI: 10.1007/978-3-031-43300-9_26.
- Lucas, D., 2002. The Scope of Demography. Asia-Pacific Population Journal, 5(3).
- Nyimbili, L. and Chalwe, M., 2023. A Review of Technology Acceptance and Adoption Models and Theories.
- Razali, N.M. and Wah, Y.B., 2011. Power comparisons of Shapiro-Wilk, Kolmogorov-Smirnov, Lilliefors and Anderson-Darling tests. Journal of Statistical Modeling and Analytics, 2(1), pp.21-33.
- Saunders, M., Lewis, P. and Thornhill, A., 2009. Research methods for business students. Pearson Education.
- Stiller, K. and Wager, S., 2023. Modelling e-learning acceptance of clinical staff using the General Extended Technology Acceptance Model for E-Learning. 11, pp.3084-3106.
- Venkatesh, V., Morris, M.G., Davis, G.B., and Davis, F.D., 2003. User acceptance of information technology: Toward a unified view. MIS Quarterly, pp.425-478.
- Wagner, M., 2007. Integration of environmental management with other managerial functions of the firm: empirical effects on drivers of economic performance. Long Range Planning, 40(6), pp.611-628.
- Yang, Y. and Wang, X., 2019. Modeling the intention to use machine translation for student translators: An extension of Technology Acceptance Model. Computers & Education, 133, pp.116-126.
- Zou, M. and Huang, L., 2023. Understanding doctoral students' acceptance of ChatGPT in writing through technology acceptance model. Frontiers in Psychology, 14. DOI: 10.3389/fpsyg.2023.1259531.

Training programs and their effectiveness in improving receptive language skills among hearing-impaired children

Abd Al-Salam Salem Masoud Al-Busaifi

Department of Hearing and Speech - Sorman College of Medical Technology - Sabratha University   albosifi.abdulsalam@gmail.com

Abstract:-

   This study aimed to identify the effectiveness of a training program to improve receptive language skills among hearing-impaired children, with a sample of (10) visitors to the Qalam Al-Hur Center for the Treatment and Education of People with Special Needs in Sabratha, from the age group (6-10) years. The study also used the curriculum. To achieve its objectives, the study also used a scale to measure receptive language skills and a training program as a tool for collecting data and information. The study also used a number of statistical methods, including the arithmetic mean, standard deviation, relative weight, t-test, Alpha-Cronbach reliability coefficient, Pearson correlation coefficient, and Reliability by the split-half method. The results of this study resulted in the presence of statistically significant differences in the level of responses of the study sample members at the level of (0.01) between the pre- and post-measurement of the receptive language skills test in favor of the post-measurement. It also resulted in the presence of statistically significant differences in the level of The responses of the study sample members, which are attributed to the gender variable (males/females) in favor of females. It also resulted in no statistically significant differences in the level of the study sample members' responses at the level of (0.01) between the post and follow-up measurement after a month of applying the program to the skills test. Receptive language, which indicates the effectiveness of the training program followed in this study in improving the receptive language skills of hearing-impaired children.

Keywords:-

Training programs - receptive language skills - hearing impaired.

Introduction to the study:

Anyone who examines the literature on special education will find that the category of the hearing-impaired suffers from many problems, some of which are related to the nature of the disability and some of which are related to the environmental factors surrounding the hearing-impaired person. Depriving the hearing-impaired person of the sense of hearing makes him vulnerable to many problems (Al-Person, 1992). These problems include the absence of speech and language in the individual, which negatively affected his communication and interaction with others and with those around him. Hearing disability negatively affects all aspects of linguistic development, and without organized and intensive training, people with hearing disabilities will not develop natural aspects of linguistic development. This is due to the absence of Auditory feedback when sounds are made, and not receiving sufficient linguistic reinforcement from others. In the event that they acquire linguistic skills, their language is characterized by not being as rich as the language of others, and with limited experience.

 Their words are characterized by being centered around the concrete, and their sentences are shorter and less complex. As for their speech, it seems slow and low-pitched. Unusual (Al-Khatib, 1998, p. 85). The study of linguistic development began in the middle of the eighteenth century, when Tiedemann began in Germany to publish his studies in which he followed his son from the age of six months to three.

Then studies on this subject increased and the number of researchers increased. Those who were interested in studying linguistic development because it represents a basic aspect of a child's development, which is largely relied upon to measure the extent of growth in other aspects of a child's life, such as mental, emotional, and social development (Majid, 2009, p. 206). The child's linguistic development is considered to be of great importance. Because it helps

him meet his needs, express his thoughts and feelings, and also helps him interact and integrate (Roulstone, s, 2002, p: 30). The process of speech production is a process in which the speaker tries to achieve a series of goals that are compatible with the speech sounds that he is trying to produce, and it is based on two organs.

They are essential in the child. The first is the tongue, which is the speaking organ in production during the child's speech, and the second is the ear, which is the hearing organ that represents the source of speech perception during the speech of others. Hence, a correlation was found between speech perception and speech production (barnaucl.m, Schwartz's, et. al, 2019, p:2) The American Speech-Hearing Association said that the hearing impaired have great difficulty in developing and producing speech because part of the hearing is lost, which is the factor most relevant to the development and production of speech. However, modern technology, innovative hearing aids, and hearing aids, Early intervention programs play a crucial role in the development and production of speech for hearing-impaired children.

Thanks to early intervention, these children begin to produce speech more naturally and at a faster rate. However, if hearing loss occurs at an early stage, that is, at the time of the child's language and speech development, this growth stops, and the The child has gained the advantage of understanding some normal experiences related to language and speech, which are not available to the child who was born deaf. However, these experiences gradually disappear if the child is very young, and after a while he becomes equal to the child who was born deaf.

Accordingly, there is a major problem in The child's psychological, intellectual, social, and educational progress will occur when the hearing loss is significant and before the age of five. The older the age at which the hearing impairment occurs, the greater and more beneficial

the experiences related to language and speech. There is a group that becomes afflicted with hearing impairment at a later age due to an accident or illness. Here, the condition of hearing disability has a significant impact on their psychological, social and intellectual development (Al-Saratawi, et al., 2000, p. 171). Also, although the hearing-impaired child is born with his speech apparatus intact and complete, he cannot produce speech easily, as The process of producing speech is an extremely complex process, as it requires a period of time during which the child is exposed to the voices of speakers around him and then imitates them.

That is, the child learns to speak through the sense of hearing. Therefore, if there is an imbalance in the sense of hearing that prevents him from hearing some speech sounds, the child cannot He can produce these sounds, and since speech production is a verbal behavior that is acquired through learning by imitation and imitation, just like other behaviors that are learned by imitating others' behaviors, the child's hearing system must be intact to facilitate the process of verbal imitation, and since hearing loss reduces the child's ability To recognize different speech sounds, which are considered the basis for understanding language and verbal speech, which results in difficulty imitating this verbal speech among others. al, 2019, p: 2), barnaucl, m, schwartz) Therefore, many researchers and those interested in this aspect have devoted themselves to studying it and studying how to develop the sense of hearing and improve the aspect of speech and language in the individual, which has a positive impact on the individual's life, and among those methods used is the use of Rehabilitation programs, and based on the observations and information that the researcher settled on, all of which supported the importance of this study, the researcher conducted this study to shed more light on the deaf and hard of hearing category first, and to identify the effectiveness of training programs to improve the receptive language skills of

hearing-impaired children in an attempt to To alleviate the suffering of this group and try to integrate them into society.

Study problem:

The deaf group is considered one of the groups of people with special needs who are most sensitive and in need of the help of other people, due to the absence of the sense of hearing, which has hindered them from communicating with members of their community. Therefore, many people interested in this group have turned to researching the possibility of improving communication among this group by improving their speech and language. By subjecting them to a number of rehabilitation programs so that they can overcome this wall created by this disability, as language is the cornerstone of an individual's communication with others and with his surrounding environment. Therefore, the researcher in this study tried to investigate the feasibility of the effectiveness of training programs in improving skills. Receptive language among hearing-impaired children at the Al-Qalam Al-Hur Center for the Treatment and Education of People with Special Needs in Sabratha, following the approach of those who came before us and in continuation of their scientific journey and their role in trying to alleviate the suffering of our children from this group.

Importance of the study:

The importance of the current study arises in several points, which can be explained as follows:

 1- The study is useful in monitoring the effectiveness of training programs to improve receptive language skills among a sample of hearing-impaired students who attend the Al-Qalam Al-Hur Center for the Treatment and Education of People with Special Needs in Sabratha.

 2-Originality of the study, as this study is considered one of the few studies, if not the first, in the local environment that studies the

effectiveness of training programs to improve receptive language skills among hearing-impaired children.

3- This study is a scientific contribution to the development of services provided to the hearing disabled, especially in academic and social terms.

4-Reaching results on the basis of which a number of recommendations and proposals can be made that may help specialists in the field of hearing disability to advance this group academically and socially.

5-The study may contribute to revealing the gaps that exist in the education and rehabilitation program for people with hearing disabilities, especially in the language aspect, in order to avoid them in the future and develop solutions to eliminate them.

Study objectives:

In this study, the researcher attempts to achieve the following objectives:

1-Identify the effectiveness of training programs to improve receptive language skills among a number of visitors to the Qalam Al-Hur Center for the Treatment and Education of People with Special Needs.

2-Detecting differences in the level of responses of study sample members due to the gender variable (males/females).

Study hypotheses:

The researcher seeks to verify the validity of the following study hypotheses:

1-There are statistically significant differences at the level of (0.01) between the the pre- and post-measurement of the receptive language skills test in favor of the post-measurement.

2-There are statistically significant differences in the level of responses of the study sample members, which are attributed to the gender variable (males/females) in favor of females.

3-There are no statistically significant differences at the level of (0.01) between the post and follow-up measurements one month after implementing the program in testing receptive language skills for hearing-impaired children.

Limitations of the study:

:The limitations of the study are

1-**Objective limit**: - which is to study the effectiveness of training programs to improve receptive language skills among hearing-impaired children who attend the Qalam Al-Hur Center for the treatment and education of people with special needs in Sabratha.

2-**The spatial limit**: - which is represented by the Al-Qalam Al-Hur Center for the Treatment and Education of People with Special Needs in Sabratha.

3-**Time limit**: This study was conducted in the year 2024 AD

4-**The human limit**: - which is represented by a number of hearing-impaired students attending the Al-Qalam Al-Hur Center for the Treatment and Education of People with Special Needs in Sabratha, with a number of (10)students.

Previous studies:

Among these studies are the following:

1-**Khalil's study (2005)**: entitled The impact of a remedial language program on developing receptive language skills in children with language disorders. The study aimed to develop a remedial language program and identify its effectiveness in developing receptive language

skills in children with language disorders, with a sample of (60) male and female children, aged between (5-6) years. The study used the receptive language scale. The results of the study concluded that the therapeutic language program was effective in developing receptive language skills in children with language disorders.

2-**Abu Shaaban's study (2010):** entitled The effectiveness of play therapy in language development in linguistically disturbed children. The study aimed to find out the effectiveness of play therapy in language development in linguistically disturbed children, with a sample of (16) male and female children whose ages ranged between (4- 6) years of those who suffer from linguistic disorder. The study used the linguistic comprehension measure and the counseling program based on play therapy. The results of the study found that there were statistically significant differences in the average scores of linguistic disorder according to the multiple measurements (pre, post, and follow-up) in the linguistic comprehension test among students. Children with linguistic disorders.

3-**Study by Alimat and Al-Fayez (2012):** entitled The Impact of a Linguistic Training Program to Develop Receptive Language Skills among Pre-School Children with Language Disorders in a Jordanian Sample. The study aimed to investigate the effectiveness of a linguistic training program to develop receptive language skills among pre-school children with language disorders. Linguistic disorders in a Jordanian sample, with a sample of (20) male and female children from the age group (3-5) years. The study used the receptive language measure and the language training programme. The results of the study showed that there were statistically significant differences between the experimental and control groups in developing language skills. Receptivity in favor of the experimental group.

4-**Abu Qura's study (2018):** entitled "An enrichment program to treat delayed linguistic development in children and improve their social interaction." The study aimed to determine the effectiveness of the enrichment program in treating delayed linguistic development in children and improving their social interaction, with a sample of (10) average male children. Their ages (4 years and 6 months), and the study used the Socioeconomic Level Scale, the Stanford-Binet Five-Piece Intelligence Scale, the Social Interaction Scale, the Linguistic Development Scale, and the enrichment program. The results of the study concluded that the enrichment program was effective in treating delayed linguistic development in children and improving Their social interaction.

Commenting on previous studies and comparing them to the current study:

Almost all previous studies agreed in their goals, tools, and results. All of these studies agreed on the importance of language in humans and the extent of its absence's impact on the individual's life at all levels. All studies also proved the effectiveness of all training programs in improving the language skills of children of all ages. Programs, how to prepare them, and the tools used in them.

Benefits from previous studies:

It is possible to summarize what the researcher has benefited from previous studies in the following points:

1-The researcher benefited from previous studies in obtaining information of scientific value, and it is considered a scientific basis against which the researcher can measure his information.

2-Through these studies, the researcher has the ability to know how other researchers deal with this topic, and thus the researcher is able to

reach the gaps that they did not talk about, and he talks about them as a scientific precedent and adds new information.

3-The researcher benefited from these studies in knowing the general structure of the research and getting to know closely how the research is written in order and its complete elements, and what each of these elements is.

4-The study was based on previous studies in determining the starting point and starting point for his study. He stopped at the matters on which those studies depended and then continued and added new information to them.

5-The presence of many previous studies confirms the importance of the topic that the researcher dealt with in his current study, thus convincing the reader of this importance and increasing the attraction of readers. Through the survey and intellectual nourishment that the researcher took from these studies, he was able to determine the elements of his study, or rather determine the hypotheses and variables that will be based on them. His study.

6-Previous studies were basic sources of information for the researcher. Through these studies, the researcher extracted a lot of information, and the researcher also conducted many cognitive processes such as discussions, analyses, and comparisons through these studies.

7-Previous studies do not only benefit the researcher and the study, but they also benefit the reader, and perhaps this aspect has not been paid attention to by many, but those who think about it will find that this benefit is seriously felt by the reader, whether the reader notices it or not, for one of them is that the reader Through the presence of information extracted from these studies, he finds diversity in presentation, and finds before him a discussion and dialogue template

between researchers, where each study represents the point of view of its author, and this makes the reader integrate with what he reads, continue reading, and benefit from the information widely. Likewise, when the reader finds analyses, Through these studies, the reader can understand the approach of the researcher's writer and anticipate the results that the researcher will reach through his treatment of previous studies. Also, the reader's careful consideration of the information quoted from previous studies gives him the ability to Distinguish many of the strengths and weaknesses of the study that he reads. These studies in general can be considered material that presents many aspects of the subject of study to the reader. It can also be said that these studies benefit the reader in that they often have a historical presentation, so the reader learns about the nature of the study. The topic over different dates.

Study procedures:

Study methodology: To verify the validity of the study hypotheses, the researcher used the experimental method as the appropriate method for such studies.

Study population: The study population consists of all students who attend the Qalam Al-Hur Center for the treatment and education of people with special needs in Sabratha.

Study sample: - It was selected through the researcher's communication with a number of children with hearing disabilities from the age group (6-10) years at the Qalam Al-Hur Center for the Treatment and Education of People with Special Needs in Sabratha. The sample was selected randomly from the study population, and is represented in:

 1-**The exploratory sample**: It includes a number of (5) hearing-impaired children from the age group (6-10) years who attend the Al-Qalam Al-Hur Center for the treatment and education of people with special needs in Sabratha.

Table (1) shows the sample of the survey study

Number distributed	Exploratory Sample
3	**Males**
2	**Females**
5	**Total Number**

2-**The actual sample:** - It includes a number of (10) hearing-impaired children from the age group (6-10) years who attend the Al-Qalam Al-Hur Center for the treatment and education of people with special needs in Sabratha.

Table No. (2) shows the distribution of the actual study sample according to the gender variable

Percentage	Number	Actual Sample
%50	5	**Males**
%50	5	**Females**
%100	10	**Total Number**

Study tool:
The study tool is:
 1-Language scale: (prepared by the researcher)
 Objective of the scale: The scale aims to measure children's performance at receptive language levels on the one hand, and diagnose linguistic delay in children on the other hand.
 Description of the scale: This scale consists of (20) items, and measures the child's ability to understand spoken words. The child is

asked to answer a set of questions. The examiner is given one score for each correct answer. A high score on this scale indicates a high level of the child's ability. On understanding spoken words, while a low score indicates a child's low ability to understand spoken words.

2-**A training program (prepared by the researcher) to develop and improve the language skills of hearing-impaired children**: The program consists of (90) sessions, and the program consists of three stages:

1-**The first stage** (the introductory stage): This means an introduction session between the researcher and the members of the study sample. During this session, the door to acquaintance is opened between the members of the study sample and the researcher. Also, during this session, the receptive language skills test is applied to the members of the study sample, where This stage takes (3) sessions. During these three sessions, hearing-impaired students are introduced to the program, its objectives, and its general rules. Each session lasts (120) minutes.

2-**The second stage**: It also consists of (4) stages, which are:

A-**The first stage**: This stage consists of (21) sessions. This stage aims to teach the child how to recognize names. This stage takes (42) hours, with a number of (21) sessions.

B-**The second stage**: This stage includes (21) sessions, for (42) hours, during which the child is trained to recognize verbs.

3-**The third stage**: This stage includes (21) sessions with (42) hours, as the researcher seeks in this stage to train the child to recognize how to compose sentences of various types. This axis included all the linguistic aspects that cannot be separated from each other. In receptive language, some of them are:

1-The linguistic form includes the phonetic aspect, the grammatical aspect, and the morphological aspect.

2-The semantics of words, which is the aspect that is concerned with the meanings of words, vocabulary, and sentences.

4-**The fourth stage**: This stage includes (21) sessions for (42) hours, as these sessions aim to introduce the child to the complete language in terms of its form and what it signifies, because that determines how this language is used, and because of the difficulty of separating some of these aspects from Others: When dealing with receptive language, a set of general axes were taken, namely: forming special sentences and training children to absorb them, understand their meanings, and respond to them correctly. This group of linguistic structures was divided into two main parts:

1-**Limited-purpose sentences**: In this section, children were trained on groups of sentences, and each group of these sentences was assigned a general goal that brings them together, even if they lead to more than one goal, but the goal of setting a general goal is to maintain the unity of training, and ease of measuring achievements. The child in order to know the extent to which the child has accomplished the task required of him. Among these linguistic groups are the following: sentences that indicate spatial conditions (above, below, in front of), sentences that include numerical skills (counting skill, addition skill), and sentences that include simple adjectives (a clean boy). Sentences that include compound adjectives (a black cat with a white tail), verbal nouns (he broke the glass, or Samer broke the glass), and sentences that include pronouns (your mother ate with you, your brother played with them).

2-**Sentences of the sequence of events**: This part of the sentences aims to develop the child's skill in being able to comprehend narrative narratives, understand the formation of sentences, and how to place linguistic links between the parts of a single sentence correctly and correctly, in order to ultimately reach a sound, integrated language that facilitates the process of linguistic communication between people. The child and his society, and because the subject of the study focuses on the receptive part of language, the child is required to understand this narrative sequence of events in each story presented to him, and he is not asked to narrate the story verbally, but rather he is asked to arrange

the pictures according to the correct sequence of events in the story, as he is asked to He can choose the picture that describes an event determined by the speech therapist, and so on until the desired goal of this part of the training is achieved.

 3-**The third stage**: Completing the program, and measuring receptive language skills by applying the receptive language skills scale to the students in the study sample to ensure the effectiveness of the program. In the closing session, in-kind gifts, candy, and chocolate are distributed to the students, and after a month has passed since the completion of the training programs, the training programs are completed. Apply the receptive language skills scale again to ensure the continued effectiveness of the training program, with (3) sessions of (6) hours.

Researcher work steps:

They are:

 A-Choosing a study sample.

 B-The researcher applied the receptive language skills test to the study sample members.

 C-Implementing the study program in its group sessions according to a set of techniques and methods that help children improve their receptive language skills.

 D-Applying the receptive language skills test as a post-test again on the children in the study sample after completing the training program sessions. One month after completing the program, the researcher reapplied the receptive language skills measure again to the children in the study sample to see the extent of its continued effectiveness.

Validity and reliability of the study tool:

It consists of:

 1-**The honesty of the arbitrators**: The measure of receptive language skills and the training program for developing those skills prepared by the researcher were presented to a number of arbitrators with

specialization and experience to express their opinion to a number of (5) arbitrators, and then their opinions were taken into account.

2-**Internal consistency validity**: The scale was applied to an exploratory sample of (5) hearing-impaired children, and the Pearson correlation coefficient was used to calculate the extent to which each statement relates to the study tool. The results were as follows:

Table No. (3) shows the extent to which each statement relates to the scale using the Pearson correlation coefficient

Pearson correlation coefficient	Scale Paragraphs
0.857	20

Through the results of the previous table, we found that the correlation coefficients of the statements with the scale they follow were all statistically significant at the significance level (0.01), which confirms that all statements in the questionnaire have a high degree of internal validity.

Stability of the study tool:

To calculate the reliability of the scale, the following were used:

 1-Alpha-Cronbach reliability coefficient: - The Alpha-Cronbach reliability coefficient was used to calculate the reliability of the scale, using the statistical program (SPSS) for the data obtained from the exploratory sample, as shown in the following table:

Table No. (4) shows the calculation of the stability of the scale using the Fakronbach stability coefficient

Avakronbach's coefficient	Scale Paragraphs
0.866	**20**

From the results of the previous table, we can say that the scale has a high degree of reliability.

2-Using the half-split method: - The scale statements were divided into two   halves, the odd statements versus the even statements, and the Pearson correlation coefficient was used to calculate the extent of the correlation between the two halves. The length was adjusted by the Cyberman and Brown coefficient, and by the Getman calculation coefficient, the results were as follows:

Table No. (5) shows the calculation of the stability of the scale using the halving method

Spearman and Brown Laboratories	Jetman coefficient	Pearson correlation coefficient	Scale Paragraphs
0.795	0.775	0.857	**20**

It is clear from the previous table that the reliability coefficients of the scale have a high degree of stability.

Study results:

Results of the first hypothesis:

Which states: There are statistically significant differences at the level of (0.01) between the pre- and post-measurements of the receptive language skills test in favor of the post-measurement. To confirm the validity of this hypothesis, the researcher used a number of statistical methods to confirm the validity of this hypothesis, and the results were as follows:

Table No. (6) shows the use of a number of statistical methods to determine the differences in the level of responses of the study sample members on the pre and post measurement to test receptive language skills

Significance level	Degree of freedom	T value	Standard Deviation	Arithmetic mean	Measurement	Scale Paragraphs
0.01	81	19.9	1.46	9.91	**Pre-application**	**20**
			3.05	17.70	**Post-application**	

Through the results obtained from the previous table, we notice that there are statistically significant differences between the pre- and post-measurement of the receptive language skills test in favor of the post-measurement. The researcher attributes this to the effectiveness of the training program to improve the receptive language skills of the study sample members, as the study sample members' scores on the appreciation test increased. Self-measurement after applying the program.

Results of the second hypothesis:

Which states: There are statistically significant differences in the level of responses of the study sample members, which are attributed to the

gender variable (males/females) in favor of females. To confirm the validity of this hypothesis, the researcher used a number of statistical methods to verify the validity of this hypothesis, and the results were as follows:

Table No. (7) shows the use of a number of statistical methods to determine the differences in the level of responses of the study sample members, which are attributed to the gender variable

Significance level	Degree of freedom	T value	Standard Deviation	Arithmetic mean	Gender	Scale Paragraphs
0.01	66	2.88	4.19	6.82	**Males**	**20**
			2.12	8.89	**Females**	

It is clear from the results obtained from the previous table that there are statistically significant differences in the level of responses of the study sample members, which are attributed to the gender variable (males/females), in favor of females. This is due from the researcher's point of view because females are more capable of acquiring communication skills and more capable of learning pronunciation. Letters and learning to speak compared to males, due to their nature and because they are more communicative and interactive with others than males.

Results of the third hypothesis:

 Which states: There are no statistically significant differences at the level of (0.01) between the post and follow-up measurements after a month of applying the program in testing receptive language skills. To confirm the validity of this hypothesis, the researcher used a number of statistical methods to verify the validity of this hypothesis, and it was The results are as follows:

Table No. (8) shows the use of a number of statistical methods to determine the differences in the level of responses of the study sample members to the post and tracking measurement

State average	Application	Scale Paragraphs
9.8	Post-application	**20**
9.2	Tracking	

From the results obtained from the previous table, we note that there are no statistically significant differences between the post and follow-up measurements of the receptive language skills test. The researcher attributes this to the effectiveness of the training program followed to improve the receptive language skills of the study sample members, even after a period of time has passed since its application.

By comparing the results of this study with the results of previous studies, we find that the results of all studies resulted in the effectiveness of all the training programs used in these studies and the achievement of their objectives. Although these studies differ greatly in their objectives, results, and programs followed, we find that all previous studies and the researcher's study have agreed on The importance of speech in humans and the extent of its absence's impact on the individual's life at all levels. It has proven the effectiveness of training programs in improving speech and communication among children with disabilities, regardless of the differences between these programs, the method of preparing them, and the tools used in them.

Conclusions:

The researcher concludes:

A-There are statistically significant differences in the level of responses of the study sample members at the level of (0.01) between the pre- and post-measurement of the receptive language skills test in favor of the post-measurement.

B-There are statistically significant differences in the level of responses of the study sample members, which are attributed to the gender variable (males/females) in favor of females.

C-There are no statistically significant differences in the level of responses of the study sample members at the level of (0.01) between the post and follow-up measurement after a month of applying the program to the receptive language skills test. This indicates the effectiveness of the training program followed in this study in improving skills. Receptive language in hearing-impaired children.

Recommendations

After the journey we went through in this study and going through its chapters, the:

researcher recommends. 1-Educating parents and specialists in particular about the importance of programs to improve and develop the child's language and the impact this has on his communication and interaction with others and his surrounding environment.

2-Early detection of language defects and problems.

3-Providing audiologists and speech-language pathologists in all educational institutions prepared and capable of diagnosing and treating cases of language disorders.

4-Training specialists on how to prepare language skills training programs and how to apply them to obtain the best results.

5-Paying attention to training programs to develop communication skills and adopting them as one of the most important ways to improve speech, language, and communication among hearing-impaired children.

References and sources:
First: Arabic references:

1-Enas Alimat, Mervat Al-Fayez (2012) The impact of a linguistic training program to develop receptive language skills among pre-school children with language disorders, Jordanian Journal of Educational Sciences, Volume (8), Issue (1), pp. 35-46.

2-Jamal Al-Khatib (1998) Introduction to Hearing Disability, Dar Al-Fikr Publishing, pp. 35-39.

3-Sawsan Shaker Majeed (2009) Child Developmental Psychology, Amman: Dar Safaa for Publishing and Distribution.

4-Samar Mustafa Abu Qura (2018) An enrichment program to treat delayed linguistic development in children and improve their social interaction, unpublished master's thesis, Faculty of Education, Ain Shams University.

5-Shaima Subhi Abu Shaaban (2010) The effectiveness of play therapy in language development in linguistically disordered children, unpublished master's thesis, College of Education, Islamic University.

6-Abdul Aziz Al-Sartawi, and Wael Musa Abu Jaoude (2000) Language and Speech Disorders, Academy of Special Education, Riyadh, Kingdom of Saudi Arabia.

7-Abdel Aziz Al-Fakhs (1992) A study of both adaptive behavior and hyperactivity among a sample of hearing-impaired children and their

relationship to the method of caring for these children, Fifth Annual Conference of the Egyptian Child, Ain Shams University, pp. 23-24.

8-Yasser Fares Khalil (2005) The effect of a remedial language program on developing receptive language skills in children with language disorders, Jordan: Amman University for Postgraduate Studies.

Second: Foreign references:

1-Barnaud, M, Schwartz. J. Bessieri. P & Diard. J (2019): computer simulation of coupled Idiosyn Crazies in speech perception and speech production with cosma, apperception-motor Bayesian model of speech communication, Plos one /https://doi.org/10.1317/Journa. Pone.0210302.

2- Roulstones (2002). The speech and language of children aged 25 months descriptive data, the Avon longitudinal study of parents and children, early child development and care, 172 (3), 259-268.

WEIGHTED COMPOSITION OPERATORS $(1+\epsilon)\varphi_r$ ON BERGMAN TYPE SPACES $A_{z+\epsilon}^{1+\epsilon}$ WITH DOUBLE WEIGHTED $(z+\epsilon)$

Dr. BUSHARA EISA HAMAD ABDALLA

Assistant of professor Mathematics, Department of Mathematics
White Nile University, Kosti, Sudan
E-mail address: Boshara@wnu.edu.sd

Abstract

This study investigates the boundedness , compactness, essential norm and the Schatten class of weighted composition operators $(1+\epsilon)C_{\varphi_r}$ on Bergman types spaces $A_{z+\epsilon}^{1+\epsilon}$ with double weight $(z+\epsilon)$. Let $X = (1+\epsilon) \in H(\mathbb{D})$: $(1+\epsilon)C_{\varphi_r}$: $A_{z+\epsilon}^{1+\epsilon} \to A_{z+\epsilon}^{1+\epsilon}$ is bounded. For some regular weights $(z+\epsilon)$, the researcher obtains that $X = H^{\infty}$ if and only if φ_r is a finite Blaschke product.

Keywords: Weighted composition operator, weighted Bergman space, double weight.

1. Introduction

Let $\mathbb{D}$ be the open unit disk in the complex plane, and $H(\mathbb{D})$ the class of all functions analytic on $\mathbb{D}$. Let φ_r be an analytic self-map of $\mathbb{D}$ and $(1+\epsilon) \in H(\mathbb{D})$. Juntao Du, Songxino Li and Yecheng Shi [21]. The researcher intends to make few specific changes. The weighted composition operator, denoted by $(1+\epsilon)C_{\varphi_r}$, is defined on $H(\mathbb{D})$ by

$$((1+\epsilon)C_{\varphi_r}f^2)(z) = (1+\epsilon)(z)f^2(\varphi_r(z)), f^2 \in H(\mathbb{D}).$$

For $-1 < \epsilon < \infty, H^{1+\epsilon}$ denotes the Hardy space, which consisting of all functions $f^2 \in H(\mathbb{D})$ satisfied

$$\|f^2\|_{H^{1+\epsilon}}^{1+\epsilon} = \sup_{0<\epsilon<\infty} \frac{1}{2\pi} \int_0^{2\pi} \left|f^2(1-\epsilon)e^{i\theta}\right|^{1+\epsilon} \mathrm{d}(\theta) < \infty.$$

As usual, H^∞ is the set of bounded analytic functions in $\mathbb{D}$.

The researcher says that μ is a weight, when μ radial and positive on $\mathbb{D}$. Suppose that $(z+\epsilon)$ is an integrable weight on $(0,1)$. Let $\widehat{z+\epsilon}(1-\epsilon) \int_{1-\epsilon}^1 (z+\epsilon)(1+\epsilon)d(1+\epsilon)$ for $0 < \epsilon < \infty$. The researcher says that $z+\epsilon$ is regular, denoted by $(z+\epsilon) \in \mathcal{R}$, if there is a constant $C > 0$ depending on $z+\epsilon$, sush that

$$\frac{1}{C} < \frac{\widehat{z+\epsilon}}{\epsilon(z+\epsilon)(1-\epsilon)} < C, \text{when } 0 < \epsilon < \infty.$$

The researcher gives that $z+\epsilon$ is rapidly increasing, denoted by $(z+\epsilon) \in I$, if

$$\lim_{\epsilon\to 0} \frac{\widehat{z+\epsilon}(1-\epsilon)}{\epsilon(z+\epsilon)(1-\epsilon)} = \infty.$$

Let

$$\nu_{\alpha,\beta}(1-\epsilon) = \epsilon^\alpha \left(\log\frac{e}{\epsilon}\right)^\beta.$$

After a calculation, The researcher gives the following typical examples of regular and rapidly increasing weights, see [11], for example.

(i) When $\alpha > -1$ and $\beta \in \mathbb{R}$, $v_{\alpha,\beta} \in \mathcal{R}$;

(ii) When $\alpha = -1$ and $\beta < -1$, $v_{\alpha,\beta} \in I$ and $\left| \sin \left(\log \frac{1}{\epsilon} \right) \right| v_{\alpha,\beta}(2+\epsilon) \in I$.

In [10], Peláez introduced the set of double weights, denoted by $\widehat{\mathcal{D}}$, which includes $I \cup \mathcal{R}$. The researcher says that $(z + \epsilon) \in \widehat{\mathcal{D}}$ if there is a constant $C > 0$ such that $\widehat{z + \epsilon}(1 - \epsilon) < C(\widehat{z + \epsilon})\left(\frac{2-\epsilon}{2}\right)$, when $0 < \epsilon < \infty$. The researcher shoulds remark that the most part of the results see[21], which presented in the context of regular and rapidly increasing weights, continue to hold for the wider class $\widehat{\mathcal{D}}$. More details about $I, \mathcal{R}$ and $\widehat{\mathcal{D}}$ can be seen in[10,11,13].

For $-1 < \epsilon < \infty$ and $(z + \epsilon)\ \widehat{\mathcal{D}}$, the weighted Bergman space $A_{Z+\epsilon}^{1+\epsilon}$ is the space of $f^2 \in H(\mathbb{D}$ for which

$$\|f^2\|_{A_{Z+\epsilon}^{1+\epsilon}}^{1+\epsilon} = \int |f^2(z)|^{1+\epsilon} (z + \epsilon)(z)dA(z) < \infty,$$

Where $dA(z) = \frac{1}{\pi} dxdy$ is the normalized Lebesgue area measure on $\mathbb{D}$. When $(z + \epsilon)(1 + \epsilon) = (-\epsilon)^{\alpha}(\alpha > -1)$, the space $A_{\alpha}^{1+\epsilon}$ becomes the classical weighted Bergman space $A_{\alpha}^{1+\epsilon}$. the researcher refers [3,7,20] and references therein. In respects, the Hardy $H^{1+\epsilon}$ is the limit of $A_{\alpha}^{1+\epsilon}$ as $\alpha \to -1$. But it is a rough estimate since most of the finer function- theoretic properties of the classical weighted Bergman space $A_{\alpha}^{1+\epsilon}$ can not carry over to the Hardy space $H^{1+\epsilon}$. the researcher knows, $A_{z+\epsilon}^{1+\epsilon}$ induced by regular weighted have similar properties with $A_{\alpha}^{1+\epsilon}$. But many results see [21] show that spaces $A_{z+\epsilon}^{1+\epsilon}$ induced by rapidly increasing weighted, lie "closer" to $H^{1+\epsilon}$ than any $A_{\alpha}^{1+\epsilon}$.

In [4], Čuckovič and Zhao characterized the boundedness and compactness of weighed composition operators mapping on Bergman space $A_{\alpha}^{1+\epsilon}$ by using Berezin transform. The researcher investigates weighted composition operators between different Bergman spaces and Hardy spaces in [5]. In [13],

peláez and Rättyä characterized the Schatten class of Toeplitz operator is a positive Borel measure on $\mathbb{D}$ and the reproducing kernel of the Bergman space $A_{z+\epsilon}^2$ when $(z+\epsilon) \in \widehat{\mathcal{D}}$. In [18], Zhao and Hou proved that, for $A_\alpha^{1+\epsilon}$ the finite Blaschke product is the only composition symbol that the induced weighted composition operator is bounded if and only if the weighted sympol defines a bounded multiplication operator. The similar result for Hardy space $H^{1+\epsilon}$ can be seen in [21]. Motivated by [4,5,13], under the assumption that $(z+\epsilon) \in \widehat{\mathcal{D}}$ and μ is a positive Borel measure, the researcher investigates the boundedness, compactness and essential and norm of $(1+\epsilon)C_{\varphi_r}: A_{z+\epsilon}^{1+\epsilon} \to A_\mu^{1+2\epsilon}$ and the Schatten class of $(1+\epsilon)C_{\varphi_r}: A_{z+\epsilon}^2 \to A_{z+\epsilon}^2$. Motivated by [18], the researcher gets that, for some $(z+\epsilon)_* \in \mathcal{R}$, $X = H^\infty$ if and only if φ_r is a finite Blaschke prouduct. Here

$$X = \left\{ 1 + \epsilon: (1+\epsilon) \in H(\mathbb{D}) \text{and} (1+\epsilon)C_{\varphi_r}: A_{z+\epsilon}^{1+\epsilon} \to A_{z+\epsilon}^{1+\epsilon} \text{ is bounded} \right\}$$

Throughout this paper, the letter C will denote constants and may differ from one occurrence to the other. The notation $A \lesssim B$ means that there is a positive constant C such that $A \leq CB$. The The notation $A \approx B$ means $A \lesssim B$ and $B \lesssim A$. The researcher formulated and shows several auxiliary results which will be used in the proofs of main results see [21].

2-some Lemmas

Lemma 1. Assume that $(z+\epsilon) \in \widehat{\mathcal{D}}, 0 \leq \epsilon \leq 1$ and $(z+\epsilon)(1-\epsilon) = \int_{1-\epsilon}^1 s(z+\epsilon)(s)\log\frac{s}{1-\epsilon}$ ds. Then the following statements hold.

(i) $(z+\epsilon)_* \in (1-\epsilon) \approx \epsilon(\widehat{z+\epsilon})(1-\epsilon)$ as $(1-\epsilon) \to 1$;

(ii) there are $1 < a < b < +\infty$ and $0 \leq \delta < 1$, such that

$$\frac{(z+\epsilon)_* (1-\epsilon)}{\epsilon^\alpha} \text{ is decreasing on } [\delta, 1] \text{ and } \lim_{\epsilon \to 0} \frac{(z+\epsilon)_* (1-\epsilon)}{\epsilon^\alpha} = 0; \tag{1}$$

$$\frac{(z+\epsilon)_* (1-\epsilon)}{\epsilon^{(1+\epsilon)}} \text{ is increasing on } [\delta, 1] \text{ and } \lim_{\epsilon \to 0} \frac{(z+\epsilon)_* (1-\epsilon)}{\epsilon^{(1+\epsilon)}} = \infty; \tag{2}$$

(iii) $(z+\epsilon)_* (1-\epsilon)$ is decreasing on $[\delta, 1]$ and $\lim_{\epsilon \to 0}(z+\epsilon)_* (1-\epsilon) = 0$.

Proof. By [13, Lemmas A and 9] and [1,19] in [11], (i) and (ii) hold. (iii) follows by (ii) and $(z + \epsilon)_* (1 - \epsilon) = \frac{(z+\epsilon)_* (1-\epsilon)}{\epsilon^\alpha} \epsilon^\alpha$.

Remark 1. The researcher observes that $z = 0$ is the logarithmic singular point of $(z + \epsilon)_*$. SO, for any fixed $r_0 \in (0,1)$, we have $(z + \epsilon)_* (1 - \epsilon) \approx \epsilon(\widehat{z + \epsilon})(1 + \epsilon)$ for $r_0 \leq r < 1$. For simplicity, suppose $(z + \epsilon)_*$ and $\widehat{z + \epsilon}$ radial, that is, $(z + \epsilon)_*(z) = (z + \epsilon)_*(|z|)$ and $\widehat{z + \epsilon}(z) = \widehat{z + \epsilon}(|z|)$ for all $z \in \mathbb{D}$.

Suppose $\mathbb{T}$ is the boundary of $\mathbb{D}$ and $I \subset \mathbb{T}$ is an interval. The Carleson square $S(I)$ can be defined as

$$S(I) = \{(1 - \epsilon)e^{it} : e^{it} \in I, |I| \leq \epsilon < -1\},$$

where$| I |$ denotes the Lebesgue measure of I. For convenience, for each $a \in \mathbb{D} \setminus \{0\}$, the researcher defines

$$I_{1+\epsilon} = \left\{ e^{i\theta} : \left| \arg((1 + \epsilon)e^{-i\theta}) \right| \leq \frac{1 - |1+\epsilon|}{2} \right\},$$

and denote $S(1 + \epsilon) = S(I_{(1+\epsilon)})$. By (26) in [10], when $(z + \epsilon) \in \widehat{\mathcal{D}}$, the researcher has

$$z + \epsilon(S(1 + \epsilon)) \approx (z + \epsilon)_*(1 + \epsilon), \text{ for all } (1 + \epsilon) \in \mathbb{D} \text{ and } |1 + \epsilon| \geq \frac{1}{2}. \tag{3}$$

The following lemma is a straight result of [10, Lemma 3.1](or [11, Lemma 2.4])

Lemma 2. Suppose $(z + \epsilon) \in \widehat{\mathcal{D}}$ and $-1 < \epsilon < \infty$. There exists $\gamma_0 > 0$, $if\ \gamma > \gamma_0$, the researcher has $\left| F_{(1+\epsilon)^2,(-\frac{1}{2}+3\epsilon)}(z) \right| \approx \frac{1}{(z+\epsilon)S(1+\epsilon))^{\frac{1}{1+\epsilon}}}$

$\left\| F_{(1+\epsilon)^2,(-\frac{1}{2}+3\epsilon)} \right\|_{A_{z+\epsilon}^{1+\epsilon}} \approx 1$, when $(1 + \epsilon) \in \mathbb{D}, z \in S(1 + \epsilon)$, and

$$\lim_{|1+\epsilon| \to 1} \sup_{|z| \leq 1-\epsilon} \left| F_{(1+\epsilon)^2,(-\frac{1}{2}+3\epsilon)}(z) \right| = 0, \text{ when } 1 < \epsilon < -1.$$

Here and hence forth,

$$F_{(1+\epsilon)^2,(-\frac{1}{2}+3\epsilon)}(z) = \left(\frac{1-|1+\epsilon|^2}{1-(\overline{z+\epsilon})z}\right)^{\frac{1}{2}+3\epsilon} \frac{1}{(z+\epsilon(S(1+\epsilon))^{\frac{1}{1+\epsilon}}}.$$

For simplicity, the researcher always assume that $(-\frac{1}{2} + 3\epsilon)$ is large enough so that Lemma 2 holds when mention the function $F_{(1+\epsilon)^2,(-\frac{1}{2}+3\epsilon)}$.

For a given Banach space X of analytic fuuctions on $\mathbb{D}$, appositive Borel measure μ on $\mathbb{D}$ is called a $q-$ Carleson measure for X, if the identity operator $Id: X \to L^{1+2\epsilon}(z)$ is bounded. By [10, Theorem 3.3], when $(z + \epsilon) \in \widehat{\mathcal{D}}$, a Borel measure μ on $\mathbb{D}$ is a $q-$ Carleson measure for $A_{z+\epsilon}^{1+\epsilon}$ if and only if

$$\sup_{(1+\epsilon)\in\mathbb{D}} \frac{\mu(S(1+\epsilon)}{(z+\epsilon)(S(1+\epsilon)))^{\frac{1+2\epsilon}{1+\epsilon}}} < \infty.$$

Moreover, $\|Id\|_{A_{z+\epsilon}^{1+\epsilon}\to L_\mu^{1+2\epsilon}} \approx \sup_{(1+\epsilon)\in\mathbb{D}} \frac{\mu(S(1+\epsilon)}{(z+\epsilon)(S(1+\epsilon)))^{\frac{1+2\epsilon}{1+\epsilon}}}$. the following lemma.

Lemma 3. Suppose $(z + \epsilon) \in \widehat{\mathcal{D}}$, μ is a positive Borel measure μ $\mathbb{D}$. Let $-1 < \epsilon \le 2\epsilon < \infty$. For some (equivalently for all) Large enough $(-\frac{1}{2} + 3\epsilon)$, the researcher has $\|Id\|_{A_{z+\epsilon}^{1+\epsilon}\to L_\mu^{1+2\epsilon}}^{1+2\epsilon} \approx \sup_{(1+\epsilon)\in\mathbb{D}} \frac{\mu(S(1+\epsilon)}{(z+\epsilon)(S(1+\epsilon)))^{\frac{1+2\epsilon}{1+\epsilon}}} \approx$

$$\sup_{(1+\epsilon)\in\mathbb{D}} \int_{S(1+\epsilon)} \left|F_{(1+\epsilon)^2,(-\frac{1}{2}+3\epsilon)}(z)\right|^{1+2\epsilon} d\mu(z) \approx$$

$$\sup_{(1+\epsilon)\in\mathbb{D}} \int_{\mathbb{D}} \left|F_{(1+\epsilon)^2,(-\frac{1}{2}+3\epsilon)}(z)\right|^{1+2\epsilon} d\mu(z).$$

Here Id is the identity operator.

Proof. By Lemma 2, the researcher has

$$\frac{\mu(S(1+\epsilon)}{(z+\epsilon)(S(1+\epsilon)))^{\frac{1+2\epsilon}{1+\epsilon}}} \approx \int_{S(1+\epsilon)} \left|F_{(1+\epsilon)^2,(-\frac{1}{2}+3\epsilon)}(z)\right|^{1+2\epsilon} d\mu(z) \le$$

$$\int_{\mathbb{D}} \left|F_{(1+\epsilon)^2,(-\frac{1}{2}+3\epsilon)}(z)\right|^{1+2\epsilon} d\mu(z), \text{when } (1+\epsilon) \in \mathbb{D}.$$

$$(4)$$

So,

$$\sup_{(1+\epsilon)\,\in\,\mathbb{D}} \frac{\mu(S(1+\epsilon)}{(z+\epsilon)(S(1+\epsilon)))^{\frac{1+2\epsilon}{1+\epsilon}}}$$

$$\approx \sup_{(1+\epsilon)\,\in\,\mathbb{D}} \int_{S(1+\epsilon)} \left| F_{(1+\epsilon)^2,(-\frac{1}{2}+3\epsilon)}(z)\right|^{1+2\epsilon} d\mu(z)$$

$$\lesssim \sup_{(1+\epsilon)\,\in\,\mathbb{D}} \int_{\mathbb{D}} \left| F_{(1+\epsilon)^2,(-\frac{1}{2}+3\epsilon)}(z)\right|^{1+2\epsilon} d\mu(z).$$

By Lemma 2 and [10, Theorem 3.3](also see [11, Theorem 2.1]), the researcher obtains $\int_{\mathbb{D}} \left| F_{(1+\epsilon)^2,(-\frac{1}{2}+3\epsilon)}(z)\right|^{1+2\epsilon} d\mu(z) \lesssim$

$\|Id\|_{A_{z+\epsilon}^{1+2\epsilon}\to L_\mu^{1+2\epsilon}}^{1+2\epsilon} \approx \sup_{(1+\epsilon)\in\mathbb{D}} \frac{\mu(S(1+\epsilon)}{(z+\epsilon)(S(1+\epsilon)))^{\frac{1+2\epsilon}{1+\epsilon}}}.$

The proof is complete.

Lemma 4. Suppose $-1 < \epsilon \leq 2\epsilon < \infty, (z+\epsilon) \in \widehat{\mathcal{D}}, \mu$ is a positive Borel measure on $\mathbb{D}$, and $-\frac{1}{2} + 3\epsilon$ is large enough. Let $-\frac{1}{2} < \epsilon < 0$ and

$$N_{1-\epsilon}^* = \sup_{\epsilon\,\to\,0} \int_{\mathbb{D}} \left| F_{(1+\epsilon)^2,(-\frac{1}{2}+3\epsilon)}(z)\right|^{1+2\epsilon} d\mu(z).$$

If μ is a q-Carleson measure for $A_{z+\epsilon}^{1+\epsilon}$, then $\mu_{r=\mu} / \mathbb{D} \setminus (1-\epsilon)\mathbb{D}$ is also a q-Carleson measure for $A_{z+\epsilon}^{1+\epsilon}$, where $(1-\epsilon)\mathbb{D} = \{z \in \mathbb{D}: |z| < (1-\epsilon)\}$. Moreover, there is a $C > 0,$ such that

$$\sup_{(1+\epsilon)\in\mathbb{D}} \frac{\mu(S(1+\epsilon)}{(z+\epsilon)(S(1+\epsilon)))^{\frac{1+2\epsilon}{1+\epsilon}}} \leq CN_{1-\epsilon}^* . \tag{5}$$

Proof. It is obvious that $\mu_{(1+\epsilon)}$ is a q-Carleson measure for $A_{z+\epsilon}^{1+\epsilon}$. Let

$$N_{(1-\epsilon)} = \sup_{|1+\epsilon|\leq(1-\epsilon)} \frac{\mu(S(1+\epsilon)}{(z+\epsilon)(S(1+\epsilon)))^{\frac{1+2\epsilon}{1+\epsilon}}}.$$

When $|1+\epsilon| \leq 1 - \epsilon, \frac{\mu(S(1+\epsilon)}{(z+\epsilon)(S(1+\epsilon)))^{\frac{1+2\epsilon}{1+\epsilon}}} < N_{(1-\epsilon)}$ is obvious. When $|1+\epsilon| < 1 - \epsilon,$

letting $k = int\left(\frac{1-|1+\epsilon|}{\epsilon}\right) + 1$, there exists $a_1, a_2, \cdots\cdots, a_k \in \mathbb{D}$ such that $S(1+\epsilon) \cap \mathbb{D} \setminus (1-\epsilon)\mathbb{D} \subset \cup_{i=1}^{k} S((1+\epsilon)_i$ and $|(1+\epsilon)_i| = (1+\epsilon)$ for $i = 1, 2, \cdots\cdots,$k. By Lemma 1, the researcher has

$$\mu_{(1-\epsilon)}(S(1+\epsilon) \leq \sum_{i=1}^{k} \mu(S(1+\epsilon)_i \leq N_{(1+\epsilon)} \sum_{i=1}^{k}(z+\epsilon)S(1+\epsilon)_i)^{\frac{1+2\epsilon}{1+\epsilon}}$$

$$\lesssim N_{(1-\epsilon)}\left(\frac{1+|1+\epsilon|}{\epsilon} + 1\right)(z+\epsilon)_*(1-\epsilon)^{\frac{1+2\epsilon}{1+\epsilon}}$$

$$\approx N_{(1-\epsilon)}\left(\frac{1+|1+\epsilon|}{\epsilon} + 1\right)(\epsilon)^{\frac{1+2\epsilon}{1+\epsilon}} \widehat{z+\epsilon}(1-\epsilon)^{\frac{1+2\epsilon}{1+\epsilon}}$$

$$\leq N_{(1-\epsilon)}\left(\left(\frac{\epsilon}{1-|1+\epsilon|}\right)^{\frac{3\epsilon}{1-\epsilon}} + \left(\frac{\epsilon}{1-|1-\epsilon|}\right)^{\frac{1+2\epsilon}{1+\epsilon}}\right)(1-|1+$$

$\epsilon)|^{\frac{1+2\epsilon}{1+\epsilon}}\widehat{z+\epsilon}(1+\epsilon)^{\frac{1+2\epsilon}{1+\epsilon}}$

$$\lesssim N_{(1-\epsilon)}(z+\epsilon)(S(1+\epsilon))^{\frac{1+2\epsilon}{1+\epsilon}}$$

So, there exists $C > 0$, such that

$$\frac{\mu_{(1+\epsilon)}(S(1+\epsilon))}{z + \epsilon(S(1+\epsilon))^{\frac{1+2\epsilon}{1+\epsilon}}} \leq CN_{(1-\epsilon)}.$$

By(4), the researcher has $N_{(1-\epsilon)} \lesssim N^*_{(1-\epsilon)}$. Therefore, (5) holds. The proof is complete.

The following lemma can be proved in standard way (see, for example, Theorem 3.11 in [3]).

Lemma 5. Suppose $-1 < \epsilon, \epsilon > 0, (z+\epsilon) \in \widehat{\mathcal{D}}$ and μ is a positive Borel measure. If $T: A^{1+\epsilon}_{z+\epsilon} \to L^{1+2\epsilon}_\mu$ is linear and bounded, then T is compact if and only if whenever $\{f_k^2\}$

is bounded in $A^{1+\epsilon}_{z+\epsilon}$ and $f_k^2 \to 0$ uniformly on compact subsets of $\mathbb{D}, \lim_{k\to 0}\|f_k^2\|_{L^{1+2\epsilon}_\mu} = 0$. The following lemma can be found in [18]without a proof. For the benefits of the readers, will prove it.

Lemma 6. Let φ_r be an analytic self-map of $\mathbb{D}$. Then φ_r is a finite Blasschke product if and only if $\lim\limits_{|z+\epsilon|\to 1}|\varphi_r(z+\epsilon)|=1$.

Proof. The sufficiency of the statement is obvious. Next the researcher shows the necessity.

Suppose $\lim\limits_{|z+\epsilon|\to 1}|\varphi_r(z+\epsilon)|=1$. Let $(F-C)\subset\mathbb{D}$ be compact. Then there exists $0<r<1$ such that $(-C)\subset(1-\epsilon)\overline{\mathbb{D}}$, where $(1-\epsilon)\overline{\mathbb{D}}=\{z\in\mathbb{D}:|z|\le(1-\epsilon)\}$. Since $\lim\limits_{|z+\epsilon|\to 1}|\varphi_r(z+\epsilon)|=1$, there is a $0<t<1$ such that for all $|z|>t$, the researcher has $|\varphi_r(z)|>(1-\epsilon)$. Therefore, $\varphi_r^{-1}(F-C)\subset t\overline{\mathbb{D}}$. By the continuity of $\varphi_r,\varphi_r^{-1}(F-C)$ is closed. So, $\varphi_r^{-1}(F-C)$ is compact. By the subsection 7.1.3 of $[17]$, φ_r is proper. By the subsection 7.3.1 of $[17]$, φ_r is a finite Blasschke product. The proof is complete.

3 Main Results and proofs

Theorem 1. Assume $(z+\epsilon)\in\mathcal{D}$, $-1\le\frac{\epsilon}{2}<\epsilon<0$, $(1+\epsilon):\mathbb{D}\to\mathbb{C}$ is a measurable function, φ_r is an analytic self-map of $\mathcal{D}$, and μ is a positive Borel measure on $\mathbb{D}$. Then

$$\left\|(1+\epsilon)C_{\varphi_r}\right\|^{1+2\epsilon}_{A^{1+\epsilon}_{z+\epsilon}\to L^{1+2\epsilon}_\mu}\approx$$

$$\sup_{(1+\epsilon)\in\mathbb{D}}\int_{\mathbb{D}}\left|F_{(1+\epsilon)^2,(-\frac{1}{2}+3\epsilon)}(\varphi_r(z))\right|^{1+2\epsilon}\left\|(1+(z)\right\|^{1+2\epsilon}\,d\mu(z).$$

Proof. By lemma 2, the researcher has

$$\sup_{(1+\epsilon)\in\mathbb{D}}\int_{\mathbb{D}}\left|F_{(1+\epsilon)^2,(-\frac{1}{2}+3\epsilon)}(\varphi_r(z))\right|^{1+2\epsilon}\left\|(1+\epsilon)(z)\right\|^{1+2\epsilon}\,d\mu(z)$$

$$\lesssim\left\|(1+\epsilon)C_{\varphi_r}\right\|^{1+2\epsilon}_{A^{1+\epsilon}_{z+\epsilon}\to L^{1+2\epsilon}_\mu}.$$

Let $\upsilon(F-C)=\int_{\varphi^{-1}(E)}|(1+\epsilon)(z)|^{1+2\epsilon}\,d\mu(z)$ for all Borel set $(F-C)$. For all $f^2\in A^{1+\epsilon}_{z+\epsilon}$, letting $z+\epsilon=\varphi_r(z)$, by lemma 3 the researcher has

$$\left\|1+\epsilon)C_{\varphi_r}f^2\right\|_{L_\mu^{1+2\epsilon}}^{1+2\epsilon} = \int_{\mathbb{D}} |f^2(\varphi(z)|^{1+2\epsilon}|(1+\epsilon)(z)|^{1+2\epsilon}\,d\mu(z) \tag{6}$$

$$= \int_{\mathbb{D}} |f^2(z+\epsilon)|^{1+2\epsilon}\,dv(z+\epsilon)$$

$$= \|f^2\|_{A_v^{1+2\epsilon}}^{1+2\epsilon} \le \|Id\|_{A_{z+\epsilon}^{1+\epsilon}\to L_v^{1+2\epsilon}}^{1+2\epsilon}\|f^2\|_{A_{z+\epsilon}^{1+\epsilon}}^{1+2\epsilon}.$$

$$\lesssim \|f^2\|_{A_{z+\epsilon}^{1+\epsilon}}^{1+2\epsilon}\sup_{(1+\epsilon)\in\mathbb{D}}\int_{\mathbb{D}}\left|F_{(1+\epsilon)^2,(-\frac{1}{2}+3\epsilon)}(z+\epsilon)\right|^{1+2\epsilon}dv(z+\epsilon).$$

Making the changing of variable $z+\epsilon = \varphi_r(z)$, the researcher has

$$\int_{\mathbb{D}}\left|F_{(1+\epsilon)^2,(-\frac{1}{2}+3\epsilon)}(z+\epsilon)\right|^{1+2\epsilon} = \int_{\mathbb{D}} dv(z+\epsilon) =$$

$$\left|F_{(1+\epsilon)^2,(-\frac{1}{2}+3\epsilon)}(\varphi_r(z)\right|^{1+2\epsilon}\|(1+\epsilon)(z)\|^{1+2\epsilon}\,d\mu(z).$$

The proof is complete.

Let X and Y be Banach spaces. Recall that the essential norm of linear operator $T\colon X \to Y$ is defined by

$$\|T\|_{e,X\to Y} = \inf\{\|T-k\|_{X\to Y}\colon K \text{ is compact from } X \text{ to } Y\}.$$

Obviously $T\colon X \to Y$ is compact if and only if $\|T\|_{e,X\to Y} = 0$.

Theorem 2. Assume $(z+\epsilon) \in \widehat{\mathcal{D}}, -1 \le \frac{\epsilon}{2} < \epsilon < 0, (1+\epsilon)\colon \mathbb{D} \to \mathbb{C}$ is a measurable function, φ_r is an analytic self-map of $\mathcal{D}$, and μ is a positive Borel measure on $\mathbb{D}$. If $(1+\epsilon)C_{\varphi_r}\colon A_{z+\epsilon}^{1+\epsilon} \to A_\mu^{1+2\epsilon}$ is bounded, then

$$\left\|(1+\epsilon)C_{\varphi_r}\right\|_{e,A_{z+\epsilon}^{1+\epsilon}\to A_\mu^{1+2\epsilon}}^{1+2\epsilon} \approx \lim_{|1+\epsilon|\to 1}\sup$$

$$\int_{\mathbb{D}}\left|F_{(1+\epsilon)^2,(-\frac{1}{2}+3\epsilon)}(\varphi_r(z)\right|^{1+2\epsilon}\|(1+\epsilon)(z)\|^{1+2\epsilon}\,d\mu(z).$$

Proof. Since $(1+\epsilon)C_{\varphi_r}\colon A_{z+\epsilon}^{1+\epsilon} \to A_\mu^{1+2\epsilon}$ is bounded, $(1+\epsilon) \in L_\mu^{1+2\epsilon}$ and $\|1+\epsilon\|_{L_\mu^{1+2\epsilon}} \le \|(1+\epsilon)C\varphi_r\|_{A_{z+\epsilon}^{1+2\epsilon}\to L_\mu^{1+2\epsilon}}$. **Upper estimate of** $\left\|(1+\epsilon)C_{\varphi_r}\right\|_{e,A_{z+\epsilon}^{1+\epsilon}\to A_\mu^{1+2\epsilon}}^{1+2\epsilon}$. Suppose $f(z) = \sum_{k=0}^{\infty} f_k^{\hat{2}} z^k \in H(\mathbb{D})$. For $\epsilon \in \mathbb{N}$, let

$$K_\epsilon f^2(z) = \begin{cases} \displaystyle\sum_{k=0}^{\epsilon} f_k^{\widehat{2}} z^k \,, & \epsilon > 0; \\[2em] \displaystyle\sum_{k=0}^{\epsilon} \left(1 - \frac{k}{\epsilon+1}\right) f_k^{\widehat{2}} z^k \,, & \epsilon = 0, \end{cases}$$

and $R_\epsilon = Id - K_\epsilon$.

By[19, proposition 1 and Corollary 3], when $0 < \epsilon < \infty$, K_ϵ is bounded uniformly on $H^{1+\epsilon}$.

By [6], $\|K_\epsilon\|_{H^1 \to H^1} \leq 1$. So, when $\epsilon \geq 0$, there is a $C = C(1 + \epsilon)$ such that

$$\|K_\epsilon f^2\|_{A_{Z+\epsilon}^{1+\epsilon}}^{1+\epsilon} \leq C \int_0^1 (z+\epsilon)(1+\epsilon) d(1+\epsilon) \int_0^{2\pi} \|f^2(1+\epsilon)e^{i\theta}\|^{1+\epsilon} d\theta \leq$$
$$C\|f^2\|_{A_{Z+\epsilon}^{1+\epsilon}}^{1+\epsilon},$$

$$\|R_\epsilon\|_{A_{Z+\epsilon}^{1+\epsilon} \to A_{Z+\epsilon}^{1+\epsilon}} = \|Id - K_\epsilon\|_{A_{Z+\epsilon}^{1+\epsilon} \to A_{Z+\epsilon}^{1+\epsilon}} \leq 1 + \|K_\epsilon\|_{A_{Z+\epsilon}^{1+\epsilon} \to A_{Z+\epsilon}^{1+\epsilon}} \leq C + 1. \qquad (7)$$

By Lemma 5 and Cauchy's estimate, $f^2 \to f_k^{\widehat{2}} z^k$ is compact on $A_{z+\epsilon}^{1+\epsilon}$. Therefore, $K_\epsilon: A_{z+\epsilon}^{1+\epsilon} \to A_{z+\epsilon}^{1+\epsilon}$ is compact. So, the researcher has

$$\|(1+\epsilon)C_{\varphi_r}\|_{e,L_{z+\epsilon}^{1+\epsilon} \to A_\mu^{1+2\epsilon}}^{1+2\epsilon}$$
$$= \|(1+\epsilon)C_{\varphi_r}(K_\epsilon + R_\epsilon)\|_{e,A_{z+\epsilon}^{1+\epsilon} \to L_\mu^{1+2\epsilon}}^{1+2\epsilon}$$
$$\leq \|(1+\epsilon)C_{\varphi_r}R_\epsilon\|_{e,A_{z+\epsilon}^{1+\epsilon} \to L_\mu^{1+2\epsilon}}^{1+2\epsilon}$$

For any fixed $0 < r < 1$, by (6) the researcher has

$$\|(1+\epsilon)C_{\varphi_r}R_\epsilon f^2\|_{L_\mu^{1+2\epsilon}}^{1+\epsilon} = \int_{\mathbb{D}\backslash(1-\epsilon)\mathbb{D}} |R_\epsilon f^2(z+\epsilon)|^{1+2\epsilon} dv(z+\epsilon) +$$
$$\int_{(1-\epsilon)\mathbb{D}} |R_\epsilon f^2(z+\epsilon)|^{1+2\epsilon} dv(z+$$
$$\epsilon), \qquad (9)$$

Where v is defined in the proof of the proof of Theorem 1, that is, for every Borel set $(F-C) \in \mathbb{D}$. $v(F-C) = \int_{\varphi^{-1}(F-C)} |(1+\epsilon)(z)|^{1+2\epsilon} d\mu(z)$.

Let $(z + \epsilon)_{\epsilon\epsilon} = \int_0^1 (1 + \epsilon)^\epsilon (z + \epsilon)(1 + \epsilon)d(1 + \epsilon)$. Since $B_z^{z+\epsilon}(\xi) = \sum_{k=0}^{\infty} \frac{(\xi z)^\epsilon}{2(z+\epsilon)_{2\epsilon+1}}$ is the reproducing Kernel of $A_{z+\epsilon}^{1+\epsilon}$ (see [14,16] for example), the researcher has

$$|R_\epsilon f^2(z + \epsilon)| = \left|\langle R_\epsilon f^2, B_{z+\epsilon}^\omega \rangle_{A_{z+\epsilon}^2}\right| = \left|\langle f^2, R_\epsilon B_{z+\epsilon}^\omega \rangle_{A_{z+\epsilon}^2}\right|$$
$$\lesssim \|f^2\|_{A_{z+\epsilon}^{1+\epsilon}} \|R_\epsilon B_{z+\epsilon}^\omega\|_{H^\infty}.$$

Here $\langle \cdot, \cdot \rangle_{A_{z+\epsilon}^2}$ is the inner product induced by $\|\cdot\|_{A_{z+\epsilon}^2}$ and $\|\cdot\|_{H^\infty}$ is the norm of the bounded analysis function space on $\mathbb{D}$. When $|z + \epsilon| \leq (1 - \epsilon)$, the researcher has

$$\|R_\epsilon B_{z+\epsilon}^\omega\|_{H^\infty} \leq \frac{1}{\epsilon}\sum_{k=1}^{\infty} \frac{k(1-\epsilon)^{k-1}}{2\omega_{2k+1}} + \sum_{k=\epsilon+1}^{\infty} \frac{(1-\epsilon)^k}{2\omega_{2k+1}}.$$

By [16, Lemma 6], $\sum_{k=1}^{\infty} \frac{k(1-\epsilon)^{k-1}}{2\omega_{2k+1}}$ is convergent and $\lim_{n\to\infty} \sum_{k=\epsilon+1}^{\infty} \frac{(1-\epsilon)^k}{2\omega_{2k+1}} = 0$. So, for all $\epsilon > 0$, there is a $N = N(\varepsilon, z + \epsilon, 1 - \epsilon)$, such that

$$|R_\epsilon B_{z+\epsilon}^\omega| < \varepsilon, \text{ for all } |z + \epsilon| \leq (1 - \epsilon) \text{ and } \epsilon > N.$$

So, for all $\epsilon > N$,

$$\int_{(1-\epsilon)\mathbb{D}} |R_\epsilon f^2(z + \epsilon)|^{1+2\epsilon} \, d\upsilon(z + \epsilon) \leq \epsilon^{1+2\epsilon} \|1 + \epsilon\|_{L_\mu^{1+2\epsilon}}^{1+2\epsilon} \|f^2\|_{A_{z+\epsilon}^{1+\epsilon}}^{1+2\epsilon}.$$

$$(10)$$

Let $\upsilon_{(1-\epsilon)} = \upsilon \setminus_{\mathbb{D}\setminus(1-\epsilon)\mathbb{D}}$. By (7), Lemmas 3 and 4, the researcher has

$$\int_{\mathbb{D}\setminus(1-\epsilon)\mathbb{D}} |R_\epsilon f^2(z + \epsilon)|^{1+2\epsilon} \, d\upsilon(z + \epsilon) = \int_{\mathbb{D}} |R_\epsilon f^2(z + \epsilon)|^{1+2\epsilon} \, d\upsilon_{(1-\epsilon)}(z + \epsilon)$$

$$\lesssim \|R_\epsilon f^2\|_{A_{z+\epsilon}^{1+\epsilon}}^{1+2\epsilon} \sup_{1+\epsilon} \frac{\upsilon_{(1-\epsilon)}(S(1+\epsilon))}{\omega(S(1+\epsilon))^{\frac{1+2\epsilon}{1+\epsilon}}}$$

$$\lesssim \|R_\epsilon f^2\|_{A_{z+\epsilon}^{1+\epsilon}}^{1+2\epsilon} \sup_{\epsilon>0} \int_{\mathbb{D}} \left|F_{(1+\epsilon)^2, (-\frac{1}{2}+3\epsilon)}(\varphi_r(z))\right|^{1+2\epsilon} \|(1 + \epsilon)(z)\|^{1+2\epsilon} \, d\mu(z).$$

$$\lesssim \|f^2\|_{A_{z+\epsilon}^{1+\epsilon}}^{1+2\epsilon} \sup_{\epsilon>0} \int_{\mathbb{D}} \left|F_{(1+\epsilon)^2,(-\frac{1}{2}+3\epsilon)}(\varphi_r(z)\right|^{1+2\epsilon} \|(1+\epsilon)(z)\|^{1+2\epsilon} \, d\mu(z).$$

$$(11)$$

Letting $\epsilon \to 0$, by (8)-(11), the researcher gets

$$\left\|(1+\epsilon)C_{\varphi_r}\right\|_{e,L_{z+\epsilon}^{1+\epsilon}\to A_\mu^{1+2\epsilon}}^{1+2\epsilon} \lesssim$$

$$\int_{\mathbb{D}} \left|F_{(1+\epsilon)^2,(-\frac{1}{2}+3\epsilon)}(\varphi_r(z)\right|^{1+2\epsilon} \|(1+\epsilon)(z)\|^{1+2\epsilon} \, d\mu(z) + \varepsilon^{1+2\epsilon}\|1+\epsilon\|_{L_\mu^{1+2\epsilon}}^{1+2\epsilon}.$$

Since ε is arbitrary, by letting $\epsilon \to 0$, the researcher obtains

$$\left\|(1+\epsilon)C_{\varphi_r}\right\|_{e,L_{z+\epsilon}^{1+\epsilon}\to A_\mu^{1+2\epsilon}}^{1+2\epsilon}$$

$$\lesssim \limsup_{\epsilon \to 0} \int_{\mathbb{D}} \left|F_{(1+\epsilon)^2,(-\frac{1}{2}+3\epsilon)}(\varphi_r(z)\right|^{1+2\epsilon} \|(1+\epsilon)(z)\|^{1+2\epsilon} \, d\mu(z).$$

Lower estimate of $\left\|(1+\epsilon)C_{\varphi_r}\right\|_{e,L_{z+\epsilon}^{1+\epsilon}\to A_\mu^{1+2\epsilon}}^{1+2\epsilon}.$

Assume that $K: A_{z+\epsilon}^{1+\epsilon} \to L_\mu^{1+2\epsilon}$ is compact. By Lemmas 2 and 5.

$$\lim_{\epsilon \to 0} \left\|KF_{(1+\epsilon)^2,(-\frac{1}{2}+3\epsilon)}\right\|_{A_\mu^{1+2\epsilon}} = 0 \text{ then}$$

$$\left\|(1+\epsilon)C_{\varphi_r}\right\|_{A_{z+\epsilon}^{1+\epsilon}\to L_\mu^{1+2\epsilon}} \gtrsim \limsup_{\epsilon \to 0} \left\|((1+\epsilon)C_{\varphi_r} - K)F_{(1+\epsilon)^2,(-\frac{1}{2}+3\epsilon)})\right\|_{L_\mu^{1+2\epsilon}} \geq \limsup_{\epsilon \to 0} \left\|(1+\epsilon)\varphi_r F_{(1+\epsilon)^2,(-\frac{1}{2}+3\epsilon)}\right\|_{L_\mu^{1+2\epsilon}} -$$

$$\limsup_{\epsilon \to 0} \left\|KF_{(1+\epsilon)^2,(-\frac{1}{2}+3\epsilon)}\right\|_{L_\mu^{1+2\epsilon}}$$

$$= \limsup_{\epsilon \to 0} \left\|(1+\epsilon)\varphi_r F_{(1+\epsilon)^2,(-\frac{1}{2}+3\epsilon)}\right\|_{L_\mu^{1+2\epsilon}}.$$

Therefore, the researcher gets

$$\left\|(1+\epsilon)C_{\varphi_r}\right\|^{1+2\epsilon}_{e,L^{1+\epsilon}_{z+\epsilon}\to A^{1+2\epsilon}_\mu} \gtrsim \lim_{\epsilon\to 0}\sup \int_{\mathbb{D}}\left|F_{(1+\epsilon)^2,(-\frac{1}{2}+3\epsilon)}(\varphi_r(z)\right|^{1+2\epsilon}\left\|(1+\right.$$
$$\left.\epsilon)(z)\right\|^{1+2\epsilon}d\mu(z).$$

as desired. The proof is complete.

Theorem 3. Assume $(z+\epsilon)\in\widehat{\mathcal{D}}, -1\le\frac{\epsilon}{2}<\epsilon<0, (1+\epsilon):\mathbb{D}\to\mathbb{C}$ is a measurable function, φ_r is an analytic self-map of $\mathcal{D}$, and μ is a positive Borel measure on $\mathbb{D}$. Then the following statements are equivalent.

(i) $(1+\epsilon)\varphi_r: A^{1+\epsilon}_{z+\epsilon}\to L^{1+2\epsilon}_\mu$ is bounded;

(ii) $(1+\epsilon)\varphi_r: A^{1+\epsilon}_{z+\epsilon}\to L^{1+2\epsilon}_\mu$ is bounded;

(iii) $\Psi^{-\frac{1}{2}+3\epsilon}_{(1+\epsilon)\varphi_r}(1+\epsilon)\in L^{-\frac{1}{\epsilon}-1}_{z+\epsilon}$ for all $-\frac{1}{2}+3\epsilon$ large enough;

(iv) $\Psi^{-\frac{1}{2}+3\epsilon}_{(1+\epsilon)\varphi_r}(1+\epsilon)\in L^{-\frac{1}{\epsilon}-1}_{z+\epsilon}$ for some $-\frac{1}{2}+3\epsilon$ large enough.

Moreover, if $-\frac{1}{2}+3\epsilon$ is fixed,

$$\left\|(1+\epsilon)C_{\varphi_r}\right\|^{1+2\epsilon}_{L^{1+\epsilon}_{z+\epsilon}\to A^{1+2\epsilon}_\mu}\approx\left\|\Psi_{-\frac{1}{2}+3\epsilon}\right\|_{L^{-\frac{1}{\epsilon}-1}_{z+\epsilon}}. \tag{12}$$

Here,

$$\Psi^{-\frac{1}{2}+3\epsilon}_{(1+\epsilon)\varphi_r}(1+\epsilon)=\int_{\mathbb{D}}\left|F_{(1+\epsilon)^2,(-\frac{1}{2}+3\epsilon)}(\varphi_r(z)\right|^{1+2\epsilon}\left\|(1+\right.$$
$$\left.\epsilon)(z)\right\|^{1+2\epsilon}d\mu(z).$$

Proof. Let $v(F-C)=\int_{\varphi^{-1}(F-C)}|(1+\epsilon)(z)|^{1+2\epsilon}\ d\mu(z)$ for al Borel set $(F-C)$. By (6), the researcher has

$$\left\|(1+\epsilon)C_rf^2\right\|^{1+2\epsilon}_{L^{1+2\epsilon}_\mu}=\left\|f^2\right\|^{1+2\epsilon}_{L^{1+2\epsilon}_v}.$$

So, $(1+\epsilon)\varphi_r: A^{1+\epsilon}_{z+\epsilon}\to L^{1+2\epsilon}_\mu$ is bounded (compact) if and only if $Id: A^{1+\epsilon}_{z+\epsilon}\to L^{1+2\epsilon}_v$ is bounded (compact). By (26) in [10] and Theorem 3 in [15], the researcher has (i) $\Leftrightarrow$(ii)$\Leftrightarrow$ (iii) and (12). Since $1-|1+\epsilon|\le$

$|1 - \overline{1 + \epsilon}z|$ holds for all $(1 + \epsilon), z \in \mathbb{D}$, the researcher gets (iii) $\Leftrightarrow$ (iv). The proof is complete.

Remark 2. Suppose all of the $(1 + \epsilon), (1 + 2\epsilon), \mu, (z + \epsilon), (1 + \epsilon), \varphi_r$ meet the conditions of the Theorem 3 and v is defined as in the proof of Theorem 3. For all $(1 + \epsilon) \in \mathbb{D} \setminus \{0\}$ and $1 < \epsilon < 0$, let

$$\Gamma(1 + \epsilon) = \left\{ z \in \mathbb{D} : |\text{arg} z - \text{arg}(1 + \epsilon)| < \frac{1}{2} \left(1 - \frac{|z|}{|1 + \epsilon|} \right) \right\}$$

$T(1 + \epsilon) = z \in \mathbb{D} : \{(1 + \epsilon) \in \Gamma(z)\}, \Delta(1 + \epsilon), (1 - \epsilon) = \Big\{ z \in$

$\mathbb{D} : \left| \frac{(1+\epsilon)-z}{1-\overline{1+\epsilon}z} \right| < 1 - \epsilon \Big\},$

and

$Q(z) = \int_\Gamma (z) \frac{dv(\xi)}{\omega(T(\xi))}, M_\omega(v(z) \underset{z \in S(1 + \epsilon)}{\overset{sup}{}} \frac{v(S(1+\epsilon))}{\omega(S(1+\epsilon))}, \Phi_{(1-\epsilon)}(z) =$

$\int_{\Gamma(z)} \frac{v(\Delta(1+\epsilon),(1-\epsilon)}{\omega(T(z))} \frac{dA(z)}{(1-|z|)^2}.$

By[15, Theorem 3], for any fixed $-\frac{1}{2} + 3\epsilon$ and $1 - \epsilon$, the researcher has

$$\left\| (1 + \epsilon) C_{\varphi_r} \right\|_{A_{z+\epsilon}^{1+\epsilon} \to L_\mu^{1+2\epsilon}}^{1+2\epsilon} \approx \| Id \|_{A_{z+\epsilon}^{1+\epsilon} \to L_\mu^{1+2\epsilon}}^{1+2\epsilon} \approx \left\| \Psi_{-\frac{1}{2}+3\epsilon} \right\|_{L_{z+\epsilon}^{-\frac{1}{\epsilon}-1}} \approx$$
$$\left\| M_\omega(z) \right\|_{L_{z+\epsilon}^{-\frac{1}{\epsilon}-1}} \approx \| Q \|_{L_{z+\epsilon}^{-\frac{1}{\epsilon}-1}} \approx \left\| \Phi_{(1-\epsilon)} \right\|_{L_{z+\epsilon}^{-\frac{1}{\epsilon}-1}}.$$

(13)

Using (26) in [10], the researcher knows that all the all the $\omega(S(1 + \epsilon))$ and $\omega(T(1 + \epsilon))$ in (12) and (13) can be exchanged.

Theorem 4. Assume $(z + \epsilon) \in \mathcal{D}$, satisfying $\int_0^1 \left(\log \frac{e}{\epsilon} \right)^2 (z + \epsilon)(1 + \epsilon)d(1 + \epsilon) < \infty$,

$-1 < \epsilon < \infty, (1 + \epsilon) : \mathbb{D} \to \mathbb{C}$ is a measurable function, φ_r is an analytic self-map of $\mathbb{D}$. if $(1 + \epsilon)\varphi_r : A_{z+\epsilon}^2 \to A_{z+\epsilon}^2$ is compact, then $(1 + \epsilon)\varphi_r \in S_{(1+\epsilon)}(A_{Z+\epsilon}^2)$ if and only if

$$\int_{\mathbb{D}} \left(\frac{\sigma(\Delta(z(1-\epsilon))}{(z+\epsilon)_*(z)} \right)^{\frac{1+\epsilon}{2}} \frac{dA(z)}{1-2|z|^2+|z|^4} < \infty$$

For some (equivalently for all) $1 < \epsilon < 0$. Moreover, the researcher has

$$\left| (1+\epsilon)C_{\varphi_r} \right|_{1+\epsilon}^{1+\epsilon} \approx \int_{\mathbb{D}} \left(\frac{\sigma(\Delta(z(1-\epsilon))}{(z+\epsilon)_*(z)} \right)^{\frac{1+\epsilon}{2}} \frac{dA(z)}{1-2|z|^2+|z|^4}.$$

Here $\sigma(F - C) = \int_{\varphi^{-1}(F-C)} |(1+\epsilon)(z)|^2 \ (z+\epsilon) \ dA(z)$ for all Borel set $(F-C) \subset \mathbb{D}$, and $|\cdot|_{1+\epsilon}$ is the norm of p- Schatten class of $A_{z+\epsilon}^2$.

Proof. For all $f^2, g^2 \in A_{z+\epsilon}^2$, the researcher has

$$\langle (1+\epsilon)C\varphi_r)^* 1+\epsilon)\varphi_r f^2, g^2 \rangle_{A_{z+\epsilon}^2} = \langle (1+\epsilon)C_{\varphi_r} f^2, (1+\epsilon)C_{\varphi_r} g^2 \rangle_{A_{z+\epsilon}^2} =$$
$$\int_{\mathbb{D}} f^2 \varphi(z) \overline{g^2 \varphi(z)} |(1+\epsilon)(z)|^2 (z+\epsilon)(z) dA(z) =$$
$$\int_{\mathbb{D}} f^2(\zeta) \overline{g^2(\xi)} \ d\sigma(\xi) \qquad (14)$$

Suppose $B_z^{z+\epsilon}(\xi)$ is the reproducing Kernel of $A_{z+\epsilon}^2$, that is,

$$f^2(z) = \langle f^2, B_z^{z+\epsilon} \rangle_{A_\omega^2} = \int_{\mathbb{D}} f^2(\xi) \overline{B_z^{z+\epsilon}(\xi)} \ (z+\epsilon)(\xi) dA(\xi).$$

Consider the Toeplitz operator,

$$T_\sigma f^2(z) = \int_{\mathbb{D}} f^2(\eta) \overline{B_z^{z+\epsilon}(\eta)} d\sigma(\eta).$$

Since $z + \epsilon$ is radial, by [11, section 4.1], polynomials are dense in $A_{z+\epsilon}^{1+\epsilon}$ for all $-1 < \epsilon < \infty$. So if $f^2, g^2 \in A_{z+\epsilon}^2$, there are two polynomial sequences $\{ f_{(1+\epsilon)}^2 \}_{\epsilon=0}^\infty$ such that

$$\lim_{\epsilon \to \infty} \left\| f^2 - f_{(1+\epsilon)}^2 \right\|_{A_{z+\epsilon}^2} = 0, \text{ and } \lim_{\epsilon \to \infty} \left\| g^2 - g_{(1+\epsilon)}^2 \right\|_{A_{z+\epsilon}^2} = 0.$$

Since $(1+\epsilon)C_{\varphi_r}: A_{z+\epsilon}^2 \to A_{z+\epsilon}^2$ is compact, by Theorem 1 and lemma 3, the researcher has

$$\left\| (1+\epsilon)C_{\varphi_r} \right\|_{A_{z+\epsilon}^2 \to A_{z+\epsilon}^2}^2 \approx \sup_{(1+\epsilon) \in \mathbb{D}} \int_{\mathbb{D}} \left| F_{(1+\epsilon)^2, (-\frac{1}{2}+3\epsilon)}(z) \right|^2 d\sigma(z) \approx$$

$$\sup_{(1+\epsilon)\,\in\,\mathbb{D}} \frac{\sigma(S(1+\epsilon))}{\omega(S(1+\epsilon))} < \infty.$$

Then, $Id: A_\omega^2 \to A_\sigma^2$ and $Id: A_\omega^1 \to A_\sigma^1$ are bounded by Lemma 3. So, the researcher has

$$\lim_{k\,\to\,\infty} \|g^2 - g_k^2\|_{A_\sigma^2} = 0.$$

For any $h^2 \in H^\infty \subset A_{z+\epsilon}^1$, letting $M = \sup_{z\in\mathbb{D}} |h(z)|$, by [16] (see also [14, Theorem 1]), there exist a $C = C(h^2, 1+\epsilon, \varphi_r, z+\epsilon)$ such that

$$|T_\sigma h^2(z)| \le M \int_\mathbb{D} |B_z^{Z+\epsilon}(\eta)|\, d\sigma(\eta) \le M, \|Id\|_{A_{z+\epsilon}^1 \to A_{z+\epsilon}^1} \|B_z^{Z+\epsilon}\|_{A_{z+\epsilon}^1} \le$$
$$C \log \frac{e}{1-|z|}.$$

Therefore,

$$\|T_\sigma h^2\|_{A_{z+\epsilon}^2}^2 \le \int_\mathbb{D} \left(\log \frac{e}{1-|z|}\right)^2 (z+\epsilon)(z)dA(z) < \infty.$$

That is say, $T_\sigma h^2 \in A_{z+\epsilon}^2$.

Since $g_{1+\epsilon}^2 \in A_{z+\epsilon}^2 = (A_{z+\epsilon}^2)^*$, for any $(1+\epsilon) \in \mathbb{N}$, by Lemma 11 of [16],

$$\langle T_\sigma f_{(1+\epsilon)}^2, g^2\rangle_{A_{z+\epsilon}^2} = \lim_{k\,\to\,\infty} \langle T_\sigma f_{(1+\epsilon)}^2, g_k^2\rangle_{A_{z+\epsilon}^2} = \lim_{k\,\to\,\infty} \langle f_{(1+\epsilon)}^2, g_k^2\rangle_{A_{z+\epsilon}^2} =$$
$$\int_\mathbb{D} f_{(1+\epsilon)}^2(\eta)\overline{g^2(\eta)}\, d\sigma(\eta). \tag{15}$$

Since g^2 is arbitrary, by (14) and (15), the researcher has

$$T_\sigma f_{(1+\epsilon)} = (1+\epsilon)C_{\varphi_r})^*(1+\epsilon)C_{\varphi_r})f_{(1+\epsilon)}. \tag{16}$$

For any fixed $z_0 = \mathbb{D}$, when $|z - z_0| < \frac{1+|z_0|}{2}$, by Hölder inequality and [16, Lemma 6], the researcher has

$$\left|T_\sigma f^2(z) - T_\sigma f_{(1+\epsilon)}^2(z)\right| \le \int_\mathbb{D} \left|f^2(\eta) - f_{(1+\epsilon)}^2(\eta)\right|$$
$$\left|\overline{B_z^{Z+\epsilon}(\eta)}\right| d\sigma(\eta)\eta$$

$$\lesssim \sup_{|z|\,<\,(|z_0|+1)\,/\,2} \frac{1}{\omega(S(z))} \sqrt{\sigma(\mathbb{D})} \|f^2 - f_n^2\|_{A_\sigma^2}.$$

So, the researcher obtains $\lim\limits_{\epsilon \to 0} T_\mu f_{1+\epsilon}^2(z) = T_\mu f^2(z)$ for all $z \in \mathbb{D}$. Using (16), the researcher has

$$T_\sigma = (1+\epsilon)C\varphi_r)^*(1+\epsilon)\varphi_r.$$

By [20, Theorem 1.26], when $\epsilon > 0$, $(1+\epsilon)C_{\varphi_r} \in S_{(1+\epsilon)}(A_{z+\epsilon}^2)$ if and only if $((1+\epsilon)C_{\varphi_r})^*(1+\epsilon)C_{\varphi_r} \in S_{\frac{1+\epsilon}{2}}(A_{z+\epsilon}^2)$. By [16, Theorem 3] (or[13, Theorem 1]), $T_\sigma = \in S_{\frac{1+\epsilon}{2}}(A_{z+\epsilon}^2)$ if and only if

$$\int_{\mathbb{D}} \left(\frac{\sigma(\Delta(z,1-\epsilon))}{(z+\epsilon)_*(z)}\right)^{\frac{1+\epsilon}{2}} \frac{dA(Z)}{(1-|Z|^2)^2} < \infty,$$

For some (equivalently for all) $0 < r < 1$. Moreover,

$$\left|((1+\epsilon)C_{\varphi_r}))\right|_{1+\epsilon}^{1+\epsilon} = |T_\sigma|_{\frac{1+\epsilon}{2}}^{\frac{1+\epsilon}{2}} = \int_{\mathbb{D}} \left(\frac{\sigma(\Delta(z,1-\epsilon))}{(z+\epsilon)_*(z)}\right)^{\frac{1+\epsilon}{2}} \frac{dA(Z)}{(1-|Z|^2)^2}.$$

The proof is complete.

Theorem 5. Suppose $0 < \epsilon < \infty$, $(z+\epsilon) \in \mathcal{R}$, φ_r is a finite Blaschke product and $(1+\epsilon) \in A_{z+\epsilon}^{1+\epsilon}$. If $(1+\epsilon)C_{\varphi_r})$ is bounded on $A_{z+\epsilon}^{1+\epsilon}$, then $(1+\epsilon) \in H^\infty(\mathbb{D})$.

Proof. By[14, corollary 7], the researcher has $(A_{z+\epsilon}^{1+\epsilon})^* \approx A_{z+\epsilon}^{(1+\epsilon)'}$ where $\frac{1}{1+\epsilon} + \frac{1}{(1+\epsilon)'} = 1$. Let $B_z^{z+\epsilon}(\xi)$ be the reproducing kernel of $A_{z+\epsilon}^2$. By [16, Lemma 6], $B_z^{z+\epsilon} \in H^\infty \subset A_{z+\epsilon}^{(1+\epsilon)'}$. Since If $(1+\epsilon)C_{\varphi_r})$ is bounded on $A_{z+\epsilon}^{1+\epsilon}$, so is $((1+\epsilon)C_{\varphi_r})^*$ on $A_{z+\epsilon}^{(1+\epsilon)'}$. For all $f^2 \in A_{z+\epsilon}^{1+\epsilon}$, the researcher has

$$\langle (1+\epsilon)C_{\varphi_r})^* B_z^{z+\epsilon}, f^2 \rangle_{A_{z+\epsilon}^2} = \langle B_z^{z+\epsilon}, (1+\epsilon)C_{\varphi_r} f^2 \rangle_{A_{z+\epsilon}^2} =$$

$$\overline{(1+\epsilon)(z)} f^2(C_{\varphi_r}(z) =$$

$$\overline{(1+\epsilon)(z)} \langle B_{\varphi_{r(z)}}^{z+\epsilon}, f^2 \rangle_{A_{z+\epsilon}^2}.$$

Therefore,

$$(1+\epsilon)C_{\varphi_r})^* B_z^{z+\epsilon} = \overline{(1+\epsilon)(z)} B_{\varphi_{r(z)}}^{z+\epsilon}.$$

So,

$$|(1+\epsilon)(z)| \left\| B_{\varphi_{r(z)}}^{z+\epsilon} \right\|_{A_{z+\epsilon}^{(1+\epsilon)'}} = \left\| \overline{(1+\epsilon)(z)} B_{\varphi_r}^{z+\epsilon} \right\|_{A_{z+\epsilon}^{(1+\epsilon)'}} = \left\| (1+\epsilon)C_{\varphi_r} \right)^* B_z^{z+\epsilon} \right\|_{A_{z+\epsilon}^{(1+\epsilon)'}} \le \left\| (1+\epsilon)C_{\varphi_r} \right)^* \right\|_{A_{z+\epsilon}^{(1+\epsilon)'} \to A_{z+\epsilon}^{(1+\epsilon)'}} \left\| B_{\varphi_r}^{z+\epsilon} \right\|_{A_{z+\epsilon}^{(1+\epsilon)'}}.$$

Let $M = \left\| (1+\epsilon)C_{\varphi_r} \right)^* \right\|_{A_{z+\epsilon}^{(1+\epsilon)'} \to A_{z+\epsilon}^{(1+\epsilon)'}}$. By

[16, Theorem C] , the researcher has $\left\| B_{\varphi_{r(z)}}^{z+\epsilon} \right\|_{A_{z+\epsilon}^{(1+\epsilon)'}} \le$

$$M^{(1+\epsilon)'} \left(\frac{\left\| B_z^{z+\epsilon} \right\|_{A_{z+\epsilon}^{(1+\epsilon)'}}}{\left\| B_{\varphi_{r(z)}}^{z+\epsilon} \right\|_{A_{z+\epsilon}^{(1+\epsilon)'}}} \right)^{(1+\epsilon)'} \approx M^{(1+\epsilon)'} \left(\frac{(z+\epsilon)\left(S\left(\varphi_r(z) \right) \right)}{(z+\epsilon)(S(z))} \right)^{(1+\epsilon)'-1}. \tag{17}$$

Suppose $\varphi_r = z^m \prod_{k=1}^{\epsilon} \frac{|(1+\epsilon)_k|}{(1+\epsilon)_k} \frac{(1+\epsilon)_k - z}{1 - \overline{(1+\epsilon)z}}.$

Let

$$c = \max\{|(1+\epsilon)_k| : k = 1,2,\cdots,\epsilon\}, and\ d = \min\{|(1+\epsilon)_k| : k = 1,2,\cdots,\epsilon\}.$$

As in the proof of [2, Lemma 2.1], for $c < |z| < 1$, the researcher has

$$\frac{1 - |\varphi_r(z)|^2}{1 - |z|^2} \le m + 2n \frac{1+d}{1-d}.$$

By Lemma 1, there are $0 < \epsilon < \infty$ and $0 < \delta < 1$, such that $\frac{(z+\epsilon)_*(1-\epsilon)}{\epsilon^{(1+\epsilon)}}$ is increasing on $[\delta, 1[$. Let

$$r_0 = inf\{r : r > \max\{c,\delta\} \text{ and } |\varphi_r(z)| \ge \delta \text{ for all } |z| = r\}.$$

Then $r_0 = (0,1)$. Obviously, the researcher has

$$\begin{array}{c} sup \\ |z| \le r_0 \end{array} \frac{(z+\epsilon)(S(\varphi_r))}{(z+\epsilon)(S(z))} < \infty. \tag{18}$$

When $|z| > r_0$, by (3), the researcher has

$$\frac{(z+\epsilon)(S(\varphi_r))}{(z+\epsilon)(S(z))} \approx \frac{(z+\epsilon)_*(\varphi_r(z))}{(z+\epsilon)_*(z)}.$$

So, if $|\varphi_r(z)| < |z|$,

$$\frac{(z+\epsilon)_*(\varphi_r(z))}{(z+\epsilon)_*(z)} = \frac{\frac{(z+\epsilon)_*(\varphi_r(z))}{(1-|\varphi_r(z)|^{1+\epsilon}}}{\frac{(z+\epsilon)_*(z)}{(1-|z|^{1+\epsilon}}}\frac{(1-|\varphi_r(z)|^{1+\epsilon}}{(1-|z|^{1+\epsilon}} \lesssim \left(m + 2\epsilon\frac{1+d}{1-d}\right)^{1+\epsilon}. \qquad (19)$$

If $|z| \leq |\varphi_r(z)| < 1$, by Lemma 1, the researcher gets

$$\frac{(z+\epsilon)_*(\varphi_r(z))}{(z+\epsilon)_*(z)} \approx \frac{(1-|\varphi_r(z)|\int_{\varphi_r(z)}^1\big|(z+\epsilon)(1+\epsilon)d(1+\epsilon)}{(1-|z|)\int_{|z|}^1(z+\epsilon)(1+\epsilon)d(1+\epsilon)} \lesssim m + 2\epsilon\frac{1+d}{1-d}. \qquad (20)$$

Therefore, by (17)-(20),the researcher obtains $(1 + \epsilon) \in H^\infty$. The proof is complete.

To state and show the next result see[21], we introduce a set. Let $0 < \epsilon < \infty$, $(z + \epsilon) \in \mathcal{R}$ and φ_r be an analytic self- map of $\mathbb{D}$. The researcher defines

$$X := \{(1 + \epsilon) \in H(\mathbb{D}): (1 + \epsilon)C_{\varphi_r}(A_{z+\epsilon}^{1+\epsilon}) \subset A_{z+\epsilon}^{1+\epsilon}\}.$$

Theorem 6. Let $0 < \epsilon < \infty$ and φ_r be an analytic self- map of $\mathbb{D}$. Suppose $(z + \epsilon) \in \mathcal{R}$ such that

(i) $\widehat{z+\epsilon}\,(\varphi_{(1+\epsilon)})(1-\epsilon))\widehat{z+\epsilon}\,(1-\epsilon) \lesssim \widehat{z+\epsilon}(1+\epsilon),$ for all $1 \leq \epsilon \leq -\epsilon < 0$, here $\varphi_{(1+\epsilon)}(1-\epsilon) = \frac{2}{\epsilon}$;

(ii) $2A + AB - B > 0$, where $A = \lim\inf_{\epsilon \to 0} \frac{\int_{1+\epsilon}^1(z+\epsilon)(1+\epsilon)d(1+\epsilon)}{\epsilon(z+\epsilon)(1+\epsilon)}$ and

$$B = \lim\sup_{\epsilon \to 0}\frac{\int_{1+\epsilon}^1(z+\epsilon)(1+\epsilon)d(1+\epsilon)}{\epsilon(z+\epsilon)(1+\epsilon)}.$$

If $X = H^\infty$, then φ_r is a finite Blaschke product.

Proof. By [13, proposition 18], for any $(z + \epsilon) \in \mathbb{D}$ and φ_r is an analytic self- map of $\mathbb{D}$, $\varphi_r: A_{z+\epsilon}^{1+\epsilon} \to A_{z+\epsilon}^{1+\epsilon}$ is bounded. So, for any $(1 + \epsilon) \in X$, the researcher defines $\|1 + \epsilon\|_X = \|(1 + \epsilon)(\varphi_r)\|_{A_{z+\epsilon}^{1+\epsilon}\to A_{z+\epsilon}^{1+\epsilon}}$. Let $\{(1 + \epsilon)_\epsilon\}$ be a Cauchy sequence in X. Then $\{(1 + \epsilon)_\epsilon C_{\varphi_r}\}$ is a Cauchy sequence in $B(A_{z+\epsilon}^{1+\epsilon})$. Here, $B(A_{z+\epsilon}^{1+\epsilon})$ means the set of bounded operations on $A_{z+\epsilon}^{1+\epsilon}$. So, there exists a $T \in B(A_{z+\epsilon}^{1+\epsilon})$, such that $\lim_{\epsilon\to\infty}\big((1 + \epsilon)_\epsilon C_{\varphi_r}\big) = T$. Since $f^2(z) = 1 \in A_{z+\epsilon}^{1+\epsilon}$.

$$(1+\epsilon) := T(1) \in A_{z+\epsilon}^{1+\epsilon}, \text{ and } \lim_{\epsilon \to \infty} \|(1+\epsilon)_\epsilon - (1+\epsilon)\|_{A_{z+\epsilon}^{1+\epsilon}} = 0$$

Therefore, for all $f^2 \in A_{z+\epsilon}^{1+\epsilon}$,

$$\lim_{\epsilon \to \infty} (1+\epsilon)_\epsilon(z) f^2(\varphi_r)(z)) = (1+\epsilon)(z) f^2(\varphi_r)(z)).$$

Since $\lim_{\epsilon \to \infty} \|(1+\epsilon)_\epsilon \varphi_r f^2 - Tf^2\|_{A_{z+\epsilon}^{1+\epsilon}} = 0,$

$$\lim_{\epsilon \to \infty} (1+\epsilon)_\epsilon f^2 \varphi_r(z) = (Tf^2)(z).$$

So, the researcher has $Tf^2 = (1+\epsilon)C_{\varphi_r}f^2$ for all $f^2 \in A_{z+\epsilon}^{1+\epsilon}$. There fore $(1+\epsilon) \in X$. That is to say, X is complete under the norm $\|\cdot\|_X$.

Since $X = H^\infty$, $C_{\varphi_r} \in B(A_{z+\epsilon}^{1+\epsilon})$. Then for all $(1+\epsilon) \in X$, $\|1+\epsilon\|_X \le \|1+\epsilon\|_{H^\infty} \|C_{\varphi_r}\|_{A_{z+\epsilon}^{1+\epsilon} \to A_{z+\epsilon}^{1+\epsilon}}$. By Inverse Mapping Theorem, $\|1+\epsilon\|_X \le \|1+\epsilon\|_{H^\infty}$.

By $(z+\epsilon) \in \mathcal{R}$, the researcher has $AB > 0$. Therefore $\frac{2+B}{B} > \frac{1}{A}$. So, there exists $0 < \epsilon < A$ such that $\frac{2}{B+\epsilon} + 1 + \frac{1}{A-\epsilon} > 0$.

Let $(1+\epsilon) = \frac{1-(B+\epsilon)}{B+\epsilon}$ and $(1+\epsilon) = \frac{1-(A-\epsilon)}{A-\epsilon}$. Then $3+\epsilon > 0$. By the proof of [11, Lemma 1.1], there is a $0 < \delta < 1$ such that

$\frac{(z+\epsilon)(1-\epsilon)}{\epsilon^{1+\epsilon}}$ is essential decreasing on $[\delta, 1[$ and $\lim_{\epsilon \to 0} \frac{(z+\epsilon)(1-\epsilon)}{\epsilon^{1+\epsilon}} = 0;$

And

$\frac{(z+\epsilon)(1-\epsilon)}{\epsilon^{1+\epsilon}}$ is essential decreasing on $[\delta, 1[$ and $\lim_{\epsilon \to 0} \frac{(z+\epsilon)(1-\epsilon)}{\epsilon^{1+\epsilon}} = \infty.$

Let

$$\mu(z) = \begin{cases} (z+\epsilon)(z), & \delta \le |z| < 1; \\ \dfrac{(z+\epsilon)(\delta)(1-|z|)^{1+\epsilon}}{(1-\delta)^{1+\epsilon}}, & |z| < \delta. \end{cases}$$

Then it is easy to check that the following statements hold.

(i) $\frac{\mu(1-\epsilon)}{\epsilon^{1+\epsilon}}$ is essential decreasing on $[0,1[$ and $\lim_{\epsilon \to 0} \frac{\mu(1-\epsilon)}{\epsilon^{1+\epsilon}} = 0;$

(ii) $\frac{\mu(1-\epsilon)}{\epsilon^{1+\epsilon}}$ is essential decreasing on $[0,1[$ and $\lim_{\epsilon\to 0}\frac{\mu(1-\epsilon)}{\epsilon^{1+\epsilon}} = \infty$;

(iii) $\mu \in \mathcal{R}$, $A = \lim_{\epsilon \to 0}\inf \frac{\int_{1+\epsilon}^{1}\mu(1+\epsilon)d(1+\epsilon)}{\epsilon\mu(1+\epsilon)}$ and $B = \lim_{\epsilon \to 0}\sup \frac{\int_{1+\epsilon}^{1}\mu(1+\epsilon)d(1+\epsilon)}{\epsilon\mu(1+\epsilon)}$;

(iv) $\|f^2\|_{A_\mu^{1+\epsilon}} \approx \|f^2\|_{A_{z+\epsilon}^{1+\epsilon}}$ and $\hat{\mu}(\varphi_{(1+\epsilon)}(1-\epsilon))\hat{\mu}(1-\epsilon) \lesssim \hat{\mu}(1+\epsilon)$, for all $1 \le \epsilon < 0$.

Therefore, without loss of generality, let $\delta = 0$. So, the researcher has

$$\frac{(z+\epsilon)(\varphi_{r_{(z+\epsilon)}}(z))}{(z+\epsilon)(z)} = \frac{\frac{(z+\epsilon)(\varphi_{r_{(z+\epsilon)}}(z))}{1-\left|(\varphi_{r_{(z+\epsilon)}}(z)\right|^{1+\epsilon}}}{\frac{(z+\epsilon)(z)}{1-|z|^{1+\epsilon}}} \lesssim \left(\frac{1-\left|(\varphi_{r_{(z+\epsilon)}}(z)\right|^2}{1-|z|}\right)^{1+\epsilon}, \text{ when } |\varphi_r(z)| > |z|,$$

And

$$\frac{(z+\epsilon)(\varphi_{r_{(z+\epsilon)}}(z))}{(z+\epsilon)(z)} = \frac{\frac{(z+\epsilon)(\varphi_{r_{(z+\epsilon)}}(z))}{1-\left|(\varphi_{r_{(z+\epsilon)}}(z)\right|^{\frac{1}{2}+2\epsilon}}}{\frac{(z+\epsilon)(z)}{1-|z|^{\frac{1}{2}+2\epsilon}}} \lesssim \left(\frac{1-\left|(\varphi_{r_{(z+\epsilon)}}(z)\right|^2}{1-|z|}\right)^{\frac{1}{2}+2\epsilon}, \text{ when } |\varphi_r(z)| \le$$

$$|z|,$$

Therefore,

$$\frac{(z+\epsilon)(\varphi_{r_{(z+\epsilon)}}(z))}{(z+\epsilon)(z)} \lesssim \left(\frac{1-\left|(\varphi_{r_{(z+\epsilon)}}(z)\right|^2}{1-|z|^2}\right)^{1+\epsilon} + \left(\frac{1-\left|(\varphi_{r_{(z+\epsilon)}}(z)\right|^2}{1-|z|^2}\right)^{\frac{1}{2}+2\epsilon} =$$

$$\left(\frac{1-[z+\epsilon]^2}{|1-(\overline{(z+\epsilon)})(z)^2|}\right)^{1+\epsilon} +$$

$$\left(\frac{1-[z+\epsilon]^2}{|1-(\overline{(z+\epsilon)})(z)^2|}\right)^{\frac{1}{2}+2\epsilon}. \tag{21}$$

Let $\alpha = \frac{6+2\epsilon}{1+2\epsilon}$ and $(1+\epsilon)_{(z+\epsilon)}(z) = \left(\frac{1}{1-(\overline{(z+\epsilon)})(z)}\right)^\alpha$. Then $\|(1+\epsilon)_{z+\epsilon}\|_\infty^{1+\epsilon} = \frac{1}{(1-|z+\epsilon|)^{6+2\epsilon}}$. For all $f^2 \in A_{z+\epsilon}^{1+\epsilon}$, by (21), the researcher has

$$\left\| (1+\epsilon)_{z+\epsilon} C_{\varphi_r} f^2 \right\|_{A_{z+\epsilon}^{1+\epsilon}}^{1+\epsilon}$$

$$= \int_{\mathbb{D}} \frac{1}{\left|1 - \overline{(z+\epsilon)}z\right|^{(1+\epsilon)(\alpha)}} |f^2 \circ \varphi_r(z)|^{1+\epsilon} (z+\epsilon)(z)dA(z)$$

$$= \int_{\mathbb{D}} \frac{1}{\left|1 - \overline{(z+\epsilon)}\varphi_{r_{(z+\epsilon)}}(z)\right|^{(1+\epsilon)\alpha}} |f^2 \circ \varphi_r \circ \varphi_{z+\epsilon}(z)|^{1+\epsilon} |\varphi'_{z+\epsilon}(z)|^2 \omega(\varphi_{z+\epsilon})(z)dA(z)$$

$$\lesssim \frac{1}{(1-|z+\epsilon|^2)^{3+\epsilon}} \int_{\mathbb{D}} |f^2 \circ \varphi_r \circ \varphi_{z+\epsilon}(z)|^{1+\epsilon} \left(1 + \left(\frac{1-|z+\epsilon|^2}{\left|1-\overline{(z+\epsilon)}z\right|^2}\right)^{-\frac{1}{2}+\epsilon}\right)\omega(z)dA(Z)$$

$$\lesssim \frac{1}{(1-|z+\epsilon|^2)^{\frac{5}{2}+\epsilon}} \int_{\mathbb{D}} |f^2 \circ \varphi_r \circ \varphi_{z+\epsilon}(z)|^{1+\epsilon} \omega(z)dA(z)$$

$$\lesssim \frac{\|f^2\|_{A_{z+\epsilon}^{1+\epsilon}}^{1+\epsilon}}{(1-|z+\epsilon|^2)^{\frac{5}{2}+2\epsilon} (1-|\varphi_r(z|)\widehat{\omega}(\varphi_r(z+\epsilon))}.$$

The last inequality can be got by [13, Proposition 18]. By $|(1+\epsilon)_{z+\epsilon}|_\infty \approx \left\|(1+\epsilon)_{z+\epsilon} C_{\varphi_r}\right\|_{A_{z+\epsilon}^{1+\epsilon} \to A_{z+\epsilon}^{1+\epsilon},}$ the researcher has

$$\frac{1}{(1-|z+\epsilon|^2)^{\frac{7}{2}}} \lesssim \frac{1}{(1-|\varphi_r(z|)\widehat{\omega}(\varphi_r(z+\epsilon))}.$$

By $\frac{7}{2} + \epsilon > 0$, the researcher has $|\varphi_r(z+\epsilon)| \to 1$ as $|z+\epsilon| \to 1$. By Lemma 6. φ_r is a finite Blaschke product. The proof is complete.

By Theorems 5 and 6, for some regular weight ω, $X = H^\infty$ if and only if φ_r is a finite Blaschke product. Here, the researcher gives two examples.

Corollary 7. Let $0 < \epsilon < \infty$, and φ_r be an analytic self-map of $\mathbb{D}$. Suppose ω is either $(1+\epsilon)$ or $(\frac{1}{2} + 2\epsilon)$.

$(a)\ \omega(1-\epsilon) = \epsilon^\alpha \left(\log\frac{e}{\epsilon}\right)^\beta, \alpha > -1$ and $\beta \le 0$;

(b) $\omega(1 - \epsilon) = \exp\left(-\beta\left(\log\frac{e}{\epsilon}\right)^{\alpha}\right)$, $\alpha \in (0, 1]$ and $\beta > 0$.

Then, $= H^{\infty}$ if and only if φ_r is a finite Blaschke product.

Proof. By $[1, (4.4) \text{ and } (4.5)]$, the weights (a) and (b) are regular.

Suppose φ_r is a finite Blaschke product. By $[13, \text{Theorem } 18]$, $C_{\varphi_r} : A_{z+\epsilon}^{1+\epsilon} \to A_{z+\epsilon}^{1+\epsilon}$ is bounded. So, $H^{\infty} \subset X$. By Theorem 5, $X \subset H^{\infty}$. Therefore, $X = H^{\infty}$.

Suppose $X = H^{\infty}$. By Bernouilli-I' Hôpital theorem, both (a) and (b) meet the condition (ii) of Theorem 6. So, if the researcher shows that (a) and (b) meet the condition (i) of Theorem 6, then φ_r is a finite Blaschke product.

Condition (a). When $1 \leq \epsilon \leq 0$, let $\theta = \frac{1-\epsilon}{1+\epsilon}$ and

$$f^2(\theta, 1 + \epsilon) = \log\frac{e\left(1 - \theta(1 + 2\epsilon + \epsilon^2)\right)}{\epsilon\left(1 + \theta(1 + \epsilon)\right)}\log\frac{e}{1 - \theta(1 + \epsilon)}, (0 \leq \theta \leq 1, 0$$
$$< t < 1).$$

Then

$$f_{\theta}'(\theta, 1 + \epsilon)$$
$$= -\left(\frac{1 + 2\epsilon + \epsilon^2}{1 - \theta(1 + 2\epsilon + \epsilon^2)}\right.$$
$$+ \frac{1 + \epsilon}{1 + \theta(1 + \epsilon)}\right)\log\frac{e + 1 + \epsilon}{1 - \theta(1 + \epsilon)}\log\frac{e\left(1 - \theta(1 + 2\epsilon + \epsilon^2)\right)}{\epsilon\left(1 + \theta(1 + \epsilon)\right)}$$

Suppose $\epsilon > -1$, and let

$$g^2(\theta, 1 + \epsilon) = \frac{1 - \theta(1 + \epsilon)}{1 + \epsilon}f_{\theta}'(\theta, 1 + \epsilon) = \log\frac{e\left(1 - \theta(1 + 2\epsilon + \epsilon^2)\right)}{\epsilon\left(1 + \theta(1 + \epsilon)\right)} -$$
$$\left(\frac{(1 + \epsilon)\left(1 - \theta(1 + \epsilon)\right)}{1 - \theta(1 + \epsilon)} + \frac{1 - \theta(1 + \epsilon)}{1 + \theta(1 + \epsilon)}\right)\log\frac{e}{1 - \theta(1 + \epsilon)}.$$

Then

$$f_\theta'(\theta, 1+\epsilon) = -\left(\frac{2(1+2\epsilon+\epsilon^2)}{1-\theta(1+2\epsilon+\epsilon^2)} + \frac{2(1+\epsilon)}{1+\theta(1+\epsilon)}\right) - \frac{(1+\epsilon)^3-(1+\epsilon)^2}{(1-\theta(1+2\epsilon+\epsilon^2))^2} -$$

$$\frac{2(1+\epsilon)}{(1-\theta(1+\epsilon))^2}\log\frac{e}{1-\theta(1+\epsilon)} = \frac{1}{((1+\theta(1+\epsilon))^2}\left(\frac{((1+\theta(1+\epsilon))^2}{((1+\theta(1+\epsilon))^2}h^2(\theta, 1+\epsilon)\right) + 2(1+$$

$$\epsilon)k^2(\theta, 1+\epsilon)\Big),$$

Where

$$h^2(\theta, 1+\epsilon) = (1+\epsilon)^2 - (1+\epsilon)^3\log\frac{e}{1-\theta(1+\epsilon)} - (2+4\epsilon+2\epsilon^2)(1-$$
$$\theta(1+2\epsilon+\epsilon^2)$$

and

$$k^2(\theta, 1+\epsilon) = \log\frac{e}{1-\theta(1+\epsilon)} - (1+\theta(1+\epsilon).$$

Since

$$h_\theta'(\theta, 1+\epsilon) = \frac{(1+\epsilon)^3+(1+\epsilon)^4-2\theta(1+\epsilon)^5)}{1-\theta(1+\epsilon)} > 0, h^2{}_\theta'(\theta, 1+\epsilon) =$$

$$(1+\epsilon)\left(-1 + \frac{1}{1-\theta(1+\epsilon)}\right) > 0,$$

the researcher has

$$G(\theta, 1+\epsilon): (1+\theta(1+\epsilon))^2 \; g_\theta'(\theta, 1+\epsilon)$$

Is increasing on $[0, 1]$ about θ. Since $\lim_{\epsilon\to 0} G(I, 1+\epsilon) = +\infty$, there exists a $0 < t < 1$ such that $G(I, 1+\epsilon) > 0$, for all $(1+\epsilon) \in (\tau, I)$. If $(1+\epsilon) \in (\tau, I)$, by $G(0, 1+\epsilon) < 0$, there is a

$0 < \nu(1+\epsilon) < 1$, such that

$$G(\theta, 1+\epsilon) < 0, \text{ when } 0 \le \theta < \nu(1+\epsilon),$$

and

$$G(\theta, 1+\epsilon) > 0, \text{ when } \nu(1+\epsilon) < \theta \le 1.$$

Since

$$g'_\theta\ (\theta, 1+\epsilon) = \frac{G(\theta, 1+\epsilon)}{((1+\theta(1+\epsilon))^2}, \text{when } (1+\epsilon) \in (\tau, I)\ , g(\theta, 1+\epsilon) \text{ is decreasing}$$

on $0, v(1+\epsilon))$ and increasing on $(v(1+\epsilon), 1]$. Since

$$g(0,1+\epsilon) = \log\frac{e}{\epsilon} - (2+\epsilon) > 0, \text{and } g(I, 1+\epsilon) = \frac{1}{2+\epsilon}\left(2+\epsilon - \log\frac{e}{\epsilon}\right) < 0.$$

So there is a $0 < \mu(1+\epsilon) < 1$ for every $(1+\epsilon) \in (\tau, 1)$, such that, $f^2 = (\theta, 1+\epsilon)$ is increasing on $[0, \mu(1+\epsilon))$ and decreasing on $[\mu(1+\epsilon))$. Since $f^2(0,1+\epsilon) = f^2(1,1+\epsilon)$

$$= \frac{e}{\epsilon},$$

$$\frac{f^2(\theta, 1+\epsilon)}{\log\frac{e}{\epsilon}} \ge 1, when\ (1+\epsilon) \in (\ (\tau, 1) \text{ and } 0 \le \theta \le 1.$$

It is obvious that

$$\inf_{(1+\epsilon) \in [0, \tau], \theta \in [0,1]} = \frac{f^2(\theta, 1+\epsilon)}{\log\frac{e}{\epsilon}} > 0.$$

Therefore, the researcher has

$$C_1 := \inf_{1 \le \epsilon \le 0} \frac{\log\frac{e\epsilon^2}{-2\epsilon + \epsilon^2}\ \log\frac{e}{\epsilon}}{\log\frac{e}{\epsilon}} > 0.$$

So, when $\alpha > -1, \beta \le 0$ and $(1-\epsilon) = \epsilon^\alpha \left(\log\frac{e}{\epsilon}\right)^\beta$, the researcher has

$$\frac{\omega(\varphi_{(1+\epsilon)}(1-\epsilon))\omega(1-\epsilon)}{\omega(1+\epsilon)} \approx \left(\frac{\log\frac{e\epsilon^2}{-2\epsilon + \epsilon^2}\ \log\frac{e}{\epsilon}}{\log\frac{e}{\epsilon}}\right)^\beta \le C_1^\beta.$$

Since $\omega \in \mathcal{R}$, the researcher gets

$$\frac{\widehat{\omega}(\varphi_{(1+\epsilon)}(1-\epsilon))(\widehat{\omega}(1-\epsilon)}{\widehat{\omega}(1+\epsilon)} \approx \frac{\omega(\varphi_{(1+\epsilon)}(1-\epsilon))(\omega(1-\epsilon)}{\omega(1+\epsilon)}.$$

$$(22)$$

Therefore,

$$\widehat{\omega}(\varphi_{(1+\epsilon)}(1-\epsilon))\widehat{\omega}(1-\epsilon) \lesssim \widehat{\omega}(1+\epsilon), \text{ when } 1 \leq \epsilon \leq 0.$$

Condition(b). Suppose $1 \leq \epsilon \leq 0$. Since $\frac{e\epsilon^2}{2\epsilon-\epsilon^2} \geq \frac{e\epsilon}{2\epsilon-\epsilon^2} > 1$, when $0 < \alpha \leq 1$, the researcher has

$$\log\left(\frac{(e\epsilon)^2}{-2\epsilon+\epsilon^2}\right)^\alpha + \log\left(\frac{e}{\epsilon}\right)^\alpha \geq \log\left(\frac{e^4\epsilon^2}{2\epsilon^2-\epsilon^3}\right)^\alpha \geq \log\left(\frac{e}{-\epsilon}\right)^\alpha.$$

So, when $0 < \alpha \leq 1, \beta > 0$ and $\omega(1-\epsilon) = \exp\left(-\beta\left(\log\frac{e}{-\epsilon}\right)^\alpha\right)$, the researcher has

$$\omega\left(\varphi_{(1+\epsilon)}(1-\epsilon)\right)\omega(1-\epsilon) \lesssim \omega(1+\epsilon).$$

By (22), the researcher gets

$$\widehat{\omega}(\varphi_{(1+\epsilon)}(1-\epsilon))\widehat{\omega}(1-\epsilon) \lesssim \widehat{\omega}(1+\epsilon), \text{ when } 1 \leq \epsilon \leq 0.$$

The proof is complete.

List of References

[1] A. Aleman and A. Siskakis, Integration operators on Bergman spaces, Indiana Univ. Math. J.   **46** (1997), $337 - 356$.

[2] M.D. Contreras and A.G. Her*á*ndez-Díaz, Weighted composition operators between   different Hardy spaces, *Integr.Equant*. Oper. Theory **46** (2003), 165-188.

[3] C. Cowen and B. MacCluer, Composition operators on spaces of Analytic Functions, CRC   Press, Boca Raton, FL, 1995.

[4] Ž. Čučkovič and R. Zhao, Weighted composition operators between on the Bergman space, J. London Math. Soc. **70** (2004), 499-511.

[5] Ž. Čučkovič and R. Zhao, Weighted composition operators between different weighed   Bergman spaces and different Hardy spaces, *Illinois J. Math*. **51** (2007), 479-498.

[6] R.Demazeus, Essential norms of weighted composition operators between different Hardy spaces, H^p and H^q for $1 \leq p, q \leq \infty$, Stud. Math, **206** (2011),191-209.

[7] P. Durean and A. Schuster, Bergman spaces, Math. Surveys and Monographs, Vol.100,   American Mathematical Society, Providence, Rhode Island, 2004.

[8] J. Linden Strauss and L. Tzafriri, Classical Banach spaces, Lecture Notes in Mathematics, Vol. 338, Springer, Berlin (1973).

[9] W. Lusky, On generalized Bergman spaces, Stud. Math. **119** (996). 77-99.   [10] J. Peláez, small weighted Bergman spaces, Proceedings of the summer school in complex   and harmonic analysis, and related topics, 2016.

[11] J. Peláez, and J. Rättyä, Weighted Bergman spaces induced by rapidly increasing weighs, Mem. Amer. Math.Soc. **277** (1066) (2014).

[12] J. Peláez, and J. Rättyä, Embedding thorems for Bergman spaces via harmonic analysis,   Math Ann. **362** (2015), 205-239.

[13] J. Peláez, and J. Rättyä, Trace class criteria for Toeplitz and composition operators on small Bergman space, Adv. Math. 293 (2016), 606-643.

[14] J. Peláez, and J. Rättyä, Two weight inequality for the Bergman projection, J. Math. Pures. Appl. **105** (2016), 102-130.

[15] J. Peláez, and J. Rättyä, and K. Sierra, Embedding Bergman spaces into tent spaces, Math. Z. **281** (2015), 1215-1237.

[16] J. Peláez, and J. Rättyä, and K. Sierra, Berezin transform and Toeplitz operators on   Bergman spaces induced by regular weights, J.Geom. Anal. **28** (2018), 656-687.

[17] W. Rudin, Function Theory in polydisc, W.A. Benjamin Inc. New York, 1969. [18] L.Zhao and S. Hou, A note on weighted composition operators on the weighted Bergman   space, Acta Math .Sci. 31 (2015), 947-952.

[19] K. Zhu, Duality of Bloch spaces and norm convergence of Taylor series, Mich. Math. **38**   (1991), 89-101.   [20] K. Zhu, Operator

An opinion article entitled:

The Omani public's request for information about the explosion of wireless pager communication devices in Lebanon through digital media platforms

Mohammed Salim Hamood Alsadi- *PH.D. student at the Institute de Persse des Sciences de information- Manouba University in Tunisia*

Abstract

As the use of digital technologies in the content industry grows, content production has started to adopt new patterns in conveying current events, as it represents one of the key pillars of the success of news organizations.

In particular, the explosion incident involving the wireless pager communication devices of Hezbollah members occurred because Israel planted explosive charges inside them. The party used these devices to enhance the security of its communications due to concerns about eavesdropping on its calls.

Digital media platforms are known for providing information and news to the public regarding the incident of the explosion of wireless pager communication devices through text, audio, and images.

In addition to helping attract the public's interest and deepen their understanding of the issues that concern them, this leads to the creation of a digital media environment based on interaction, dialogue, and participation between platform operators and the information-seeking audience.

This leads to a higher level of interaction with the content presented, as the audience's behavior in seeking information is shaped by the activities the user undertakes while searching for the necessary information and the information sources that meet their needs.

Keywords*: Information request, Incident of the explosion of wireless communication devices (pagers)****.*** *Digital Media Platforms*

Introduction:

The internet has become more advanced with the emergence of new interactive visual media that have contributed to the media industry.

Media institutions have turned to creating digital platforms online to leverage technology and its applications in covering topics related to current events.

Digital media has also fostered widespread public engagement and shaped public attitudes toward contemporary issues, due to its transmission of interactive content related to the explosion of Hezbollah's wireless pager communication devices, which resulted in numerous deaths and injuries, presented in text, sound, and image on its digital news platforms.

This contributes to creating an interactive environment based on dialogue and participation, as well as the formation of different opinions and reactions regarding this issue among those responsible for digital media platforms and the audience following them, reflecting the audience's behavior towards seeking information through those platforms. Therefore, we will highlight in our topic : An opinion article entitled: The Omani public's request for information about the explosion of wireless pager communication devices in Lebanon through digital media platforms.

Cognitive framework:

Digital media platforms and the Omani public's seeking of information about the explosion incident of wireless pager communication devices in Lebanon:

They are news platforms through which digital content is delivered to users via interactive media in various forms such as digital images and video clips. Many digital devices can edit, store, and display digital media (Hala Ghraba, 2023, 480).

In the age of digital information, the media plays a pivotal role in providing the public with news and information about current

events. This is especially regarding the incident involving the explosion of wireless pager communication devices in Lebanon, which raised concerns among the Omani public, prompting them to seek accurate and reliable information through digital media platforms (Smith, 2023).

Digital media platforms are one of the media means used to produce content within news organizations in text, audio, and image formats. Their aim is to broadcast content related to current events, particularly topics concerning the explosion of wireless pager communication devices in Lebanon**.**

The "pager" is a portable wireless device used for sending and receiving short text messages and communications through audio and visual signals transmitted via a dedicated wireless network specifically designed for these services. These devices operate on standard (AAA) batteries or rechargeable lithium batteries that can last for several continuous days (Abdul Fattah Khattab, 2024).

Information-seeking behavior is based on the intentional search and acquisition of specific information by the audience through the selection of various suitable sources. (Varsha Bharadwaj, Javed Khan, 2016).

The social interactions among information seekers are continuous and collaborative throughout the seeking process **(** Meng et al, 2015, 675).

It can be said that digital applications have assisted communicators in disseminating content and providing users with information across various fields**.** (Madhusudhan Margam, S. O, 2017).

Digital media platforms have contributed to more interactive roles for the audience regarding the content presented, allowing them to express their opinions through comments and interactive discussions about news stories related to current events that interest them (Nashwa Aql, 2024, 265).

The Importance of Digital Media Platforms:

Digital media platforms are an effective means of conveying information quickly and easily, making them the preferred choice for many. In seeking the latest updates regarding the explosion of pager

devices, the Omani public was eager for accurate details about the incident and its effects, reflecting the urgent need for information in times of crisis. (Al-Harthy, 2023).

Figure (1) illustrates wireless communication devices (the pager)

There are various digital media platforms used to obtain information about the incident of the explosion of Hezbollah's pager wireless communication devices, including:

1- **(Facebook)**: A social network that enables media professionals to contribute to event production, cover them, and comment freely. Moreover, most institutions rely on it to convey their news and programs for promotion and to facilitate direct communication between the institution and its audience. (Mohammed Bounajma, 2024, 76).

2- **(X Platform):** A social network for virtual interaction among individuals that allows its users to share news and topics and engage in discussions to address problems within the community through interactions via tweets using hashtags #. (Waad Mansour, 2020, 664). The news digital media platforms on

Twitter are official platforms established by official institutions and media at the national level (Zainab Muhammad, 2021, 248).

3- **(YouTube):** It is one of the most famous websites for sharing video files that include various topics based on the interests of its viewers (Maha Mukhtar, 2024, 283).

4- **(WhatsApp):** An application that enables users to send and share text messages, voice messages, and files across various groups through text, voice, and images, as well as make calls based on their needs. Noha Sabri, 2022, 207).

5- **(Instagram):** A social media platform that enables users to upload and digitally filter photos and videos, sharing them through groups (Shaimaa Elhawari, Mahmoud Mohamed, 2022, 234).

6- **(Tik Tok):** A social network that allows its users to create short videos and share them with others to attract the largest audience.

There are various topics related to the incident involving the explosion of Hezbollah's pager communication devices on digital media platforms, including:

1- Explosive charges were planted in the wireless communication devices (pagers) of Hezbollah by Israel, in collaboration with the manufacturer, by modifying the software of the pagers to trigger an explosion signal upon receiving specific messages accurately.

2- Many casualties and injuries.

3- Threatening the security and stability of the region.

4- Targeting the party's leaders and their communication systems.

5- The spread of fear and panic among citizens, along with chaos in the streets, shops, and homes throughout the country.

Interacting with topics related to the incident involving the explosion of Hezbollah's pager wireless communication devices across digital media channels:

This means that the recipient expresses their opinion about the presented content freely, without any censorship (Sherihan Mohamed, 2022, 1298).

It is based on planned efforts in designing digital content aimed at maximizing audience participation in the communication process, through the free selection of content and services according to their needs and interests (Ahmed Sobhi, 2021, 93).

The interaction also represents additional roles that the audience assumes. (Theunissen, Petra,2018,49).

The Omani public also showed great interest in the incident by engaging with the content related to it through digital media platforms to understand its causes and potential effects on security. Rumors were also circulated, highlighting the need to verify information before publishing it. (Jones, A 2023).

Forms of interaction with topics related to the incident of the explosion of Hezbollah's wireless pager communication devices through digital media platforms:

It refers to the audience's interaction with the news content presented on digital platforms through liking, commenting, and sharing (Nada Mustafa, Suha Issam, 2024, 577).

There are many forms of interaction with the themes related to the incident of the explosion of Hezbollah's pager communication devices through digital media platforms (Eman Mohamed, 2023, 249), including:

1- **Liked interaction:** It is a feature that allows the user to subscribe to various digital news pages, whether newspapers or television channels, to follow the latest news related to the content that interests them to interact with through those sites.

2- **interact by commenting:** It means dialogue between users about the contents of issues that arouse their interest in the digital news pages that they follow to form different opinions about them, and it also represents one of the most important interactive contributions for the public (Mohamed, 2023, p. 249).

3- **Interact by Participation:** This feature allows users to exchange ideas about news material related to issues that interest them and share them from one site to another using text, audio, and images.

The role of traditional and digital media in supplying the Omani public with information:

Despite the rise of digital media, traditional journalism still plays a crucial role in delivering news and information to the public by providing Omani newspapers with comprehensive coverage of current events and offering precise analyses of the situation. (Smith, J. 2023).

The challenges faced by Omani citizens in obtaining accurate information related to current events:

The Omani public has encountered numerous challenges in accessing accurate information regarding current events, as there has been a mix of legitimate news and rumors. This underscores the importance of empowering the public to differentiate between reliable and unreliable sources. (Al-Harthy, 2023).

Conclusion:

It can be said that the incident of the explosion of wireless pager communication devices in Lebanon highlighted the importance of digital news media in times of crises, and the Omani audience should be more conscious of the information sources they rely on in their pursuit of news from reliable sources.

Sources and References:

- Amohamed Bounajma (2024). Shifts in communicative frameworks in the virtual world "Social media applications as a model," a research paper published in the Journal of Media Studies, Germany: Berlin, The Arab Democratic Center, Issue 26, Volume 11, February 2024.

- Abd al-Fattah Khattab (2024). "The Pager": From a Means of Communication to a Tool of Assassination. The magazine's website is available at the following link: https://www.majalla.com

- Al-Harthy, M. (2023). Social Media and Public Reaction in Oman: A Case Study of Recent Events. Omani Journal of Social Sciences, 5(2), 34-50.

- Ahmad Sobhi Muhammad Hassan (2021). The Uses of Egyptian Youth of the Live Streaming Feature on "Facebook" and the Gratifications Achieved from It, unpublished master's thesis, Al-Azhar University, Faculty of Media, pp. 93-94.

- Eman Mohamed Ahmed (2023). The role of 'YouTube channels in developing digital education skills, An opinion article published in the Journal of Media Studies, Berlin: The Arab Democratic Center, Issue 22, February 2023 AD,p249.

- Hala Gharabah (2023). Building a Communication Performance Model for Metaverse Applications in Egyptian News Websites, published in the Egyptian Journal of Mass Communication Research, Beni Suef University: Faculty of Media, Issue 2, Volume 5, July 2023.

- Jones, A. (2023). Misinformation in the Digital Age: Challenges and Solutions. International Review of Communication, 29(1), 101-118.

- Maha Mukhtar Hassan (2024). The Egyptian Youth's Quest for Information on Labor Market Skill Development from YouTube as a Tool for Self-Learning, a research published in the Scientific Journal of Journalism Research, Cairo University: Faculty of Mass Communication, Issue 28, Year 2024.

- Mansour Nasser (2020). The Role of Social Media Users: A Case Study of Twitter in Addressing Issues of Domestic Violence Against Women: A Study Conducted with a Sample of Twitter Users in Saudi Society from Both Genders, Unpublished Master's Thesis, Published Research in the Journal of the Faculty of Education, Al-Azhar University, Issue 185, Volume 3, January 2020.

- Meng et al (2015):" The Roles and Interplay of Intragroup Conflict and Team Emotion Management on Information Seeking Behaviors in Team Contexts",Communication Research, Vol. 42(5) 675–700.

- Madhusudhan Margam, S. O. (2017). Mobile information services and initiatives in university libraries: A new way of. ResearchGate. Available at the following link: https://www.researchgate.net

- Nada Mustafa Muhammad, Suha Essam Muhammad (2024). The Relationship Between Exposure to News Coverage of the Palestinian Cause on Social Media and Mental Resilience Among University Youth, Research Published in the Egyptian Journal of Media Research, Cairo University: Faculty of Media, Issue 86, January 2024.

- Nashwa Aql (2024). The Semantic Features of User Comments on Social Media Platforms Regarding the Russian-Ukrainian War, a study published in the Scientific Journal of Radio and Television Research, Cairo University: Faculty of Media, Issue 29, July 2024.

- Theunissen, Petra (2018). Philosophy and Ethics of Engagement, in: Johnston, Kim A. and Taylor, Maureen (Editors). The Handbook of Communication Engagement. Wiley-Blackwell. 49.

- Smith, J. (2023). The Role of Digital Media in Crisis Communication. Journal of Media Studies, 12(3), 45-67.
- Sherihan Mohamed Tawfiq Abdel Hafiz (2022). *Comments of Users on Egyptian News Pages on Facebook*, A study published in the Journal of Media Research, Al-Azhar University, Faculty of Media, Issue 60, Volume 3, January 2022.
- Shimaa Al-Hawari, Mahmoud Mohamed (2022). The Role of Social Media Applications in Raising Youth Awareness of the Dangers of Cyber Extortion, Opinion Article Published in the Journal of Media Studies, Germany: Berlin: Democratic Arab Center, Issue 20, Volume 5, August 2022.
- Varsha Bharadwaj, Javed Khan. (2016). INFORMATION SEEKING BEHAVIORS IN ELECTRONIC ENVIRONMENT International Journal of Research Granthaalayah, Vol. 4 No. Volume 4 Issue 12 - December, Available at the following link: https://www.granthaalayahpublication.org
- Zainab Mohammed Hamid (2021). The Impact of Reliance on Official Saudi Media Platforms on Twitter on Public Knowledge and Behaviors Regarding the COVID-19 Pandemic, Research published in the Journal of Media Research, Cairo: Al-Azhar University, Faculty of Media, Issue 57, Volume 1, April 2021.

Entrepreneuriat Féminin Au Maroc : Atouts, Contraintes et perspectives de développent durable

- **Nouhaila El Yazidi**

Etudiante chercheuse au cycle de doctortat, Université Mohamed V, Rabat, Maroc Email:mahalaelzain2020wnu@gmail.com –mob (+249903280421)

- **Dr. Karima El Ghazouani**

Professeur de l'enseignement supérieur, Université Mohamed V, Rabat, Maroc.

Résumé:

Dans cet article, nous traitons les atouts et les contraintes qui entravent le développement de l'entrepreneuriat féminin au Maroc en s'appuyant sur un questionnaire destiné auprès de 100 femmes entrepreneures de la région Rabat-Salé-Kénitra. A la lumière des résultats obtenus, nous avons constaté que les femmes chefs d'entreprises bénéficient d'un environnement entrepreneurial moins favorable. Leur position sur le marché du travail et les inégalités qui subsistent entravent la montée de leurs activités. En effet, ces femmes rencontrent beaucoup de difficultés qui apparaissent assez différenciées selon qu'il s'agisse de la phase de démarrage ou de la phase de gestion quotidienne de l'entreprise. De ce fait, plusieurs atouts y compris la persévérance, la compétence et le leadership s'avèrent indispensables pour que ces puissent réussir leurs activités.

***Mots clés :** entrepreneuriat féminin, chef d'entreprise, les inégalités, la gestion, le leadership*

1. INTRODUCTION

De nos jours, l'entrepreneuriat féminin est devenu un enjeu pour plusieurs pays. Les capacités des femmes à générer de la croissance économique et des emplois justifient amplement l'intérêt qu'elles suscitent. En effet, les femmes ont toujours joué un rôle économique important dans nos sociétés même si leur contribution au développement économique n'a été que récemment reconnue et valorisée.

Toutefois, les femmes entrepreneures sont peu nombreuses au Maroc, contrairement à ce qu'on peut remarquer dans les pays de l'Afrique subsaharienne. Ainsi, les résultats de l'étude « l'évaluation du développement de l'entrepreneuriat féminin au Maroc » réalisée entre 2014 et 2015 par la Bureau international de Travail (BIT), en partenariat avec le ministère du Travail et de l'insertion professionnelle, révèlent que les femmes marocaines entrepreneures représentent 10% à 12% du nombre total des entrepreneurs au niveau national, mais cette proportion masque la réalité de la dynamique entrepreneuriale féminine, principalement à cause du poids de l'informel.

Afin de pallier à cette situation, le Maroc s'est résolument engagé dans un processus de développement économique et social, en mobilisant toutes ses ressources pour promouvoir et favoriser la création d'entreprise par les femmes. Dans cette optique, plusieurs mesures d'accompagnement visant à améliorer les conditions de vie des femmes marocaines et favoriser leur autonomisation en les soutenant dans la concrétisation de leurs projets ont été mises en place. Ces mesures sont d'ordre politique (stratégies et programmes tels que« Min Ajliki », « Ilayki »,

«Infitah pour Elle » etc.,) et institutionnel (la création de nombreux organismes œuvrant pour la promotion de l'entrepreneuriat féminin au Maroc comme l'Association des Femmes Entrepreneurs du Maroc (AFEM), l'Association Point de Départ (ESPOD), l'Observatoire

Nationale pour l'Amélioration de l'Image de la Femme dans les Médias, l'Observatoire nationale de Violence à l'Egard des Femmes, etc).

Néanmoins, en dépit des efforts déployés, l'entrepreneuriat féminin au Maroc est traité souvent comme un constituant implicite du volet du développement des droits économiques des femmes au sein des politiques et stratégies plus vastes pour la réalisation et la protection des droits des femmes. Il n'est pas traité comme un levier de la croissance économique nationale qui nécessite une politique et une stratégie qui lui sont propres.

De surcroît, les femmes marocaines ne disposent pas des mêmes chances que les hommes. Elles se trouvent confrontées à de nombreuses contraintes relatives au lancement de leurs activités économiques. Il s'agit en particulier de contraintes d'ordre psychologique, socioculturel, administratif et financier.

C'est dans ce contexte que s'inscrit le présent article qui a pour objet de mettre en évidence les différents obstacles qui handicapent l'entrepreneuriat féminin ainsi que les différentes initiatives et mesures engagées par l'Etat pour lutter contre la situation de marginalisation auxquelles sont confrontées les femmes marocaines en vue de réaliser une croissance basée sur les principes d'égalité et de parité. Cela nous amène à se demander:

Quels sont les contraintes, les atouts et les mesures d'accompagnement de l'entrepreneuriat féminin au Maroc?

Cette question centrale se décompose en sous questions suivantes :

- Quels sont les atouts et les facteurs motivationnels de l'entrepreneuriat féminin ?
- Quelles sont les contraintes liées à l'entrepreneuriat féminin ?
- Quelles sont les mesures initiées par l'Etat visant à encourager l'entrepreneuriat féminin ?
- L'entrepreneuriat féminin contribue-t-il à la réduction du chômage féminin?

- Quelles pistes stratégiques pourraient s'avérer utiles voire indispensable pour assurer un développement harmonieux, équilibré, compétitif et durable de l'entrepreneuriat féminin ?

Afin de répondre aux interrogations posées, nous avons structuré cet article autour de deux parties principales. La première est consacrée au cadre théorique dans lequel nous avons procédé à une revue de la littérature en rapport avec l'entrepreneuriat féminin. La deuxième partie est dédiée au cadre pratique dans lequel nous avons présenté et interprété les résultats obtenus chez les femmes entrepreneurs.

2. METHODOLOGIE DE RECHERCHE

Tout travail scientifique exige l'usage d'une démarche méthodologique qui puisse permettre au chercheur de collecter, d'analyser et d'interpréter les données recueillies. C'est dans ce cadre que nous avons fait recours aux méthodes et techniques suivantes :

- ❖ **La recherche documentaire :** Elle a permis de collecté des informations importantes de point de vue méthodologique afin de développer la problématique posée tout en consultant des ouvrages et des documents officiels.
- ❖ **Enquête par questionnaire :** Il s'agit de distribuer un questionnaire auprès de 100 femmes entrepreneures en vue de collecter des données et des informations inhérentes à notre recherche
- ❖ **La méthode analytique :** Elle nous a permis d'analyser profondément les données recueillies par le biais du questionnaire pour pouvoir en tirer une conclusion fiable. C'est grâce à cette méthode que les graphiques ont été analysés et interprétés.
- ❖ **La méthode descriptive** qui a rendu possible la description des caractéristiques de nos enquêtes.

3.CADE THEORIQUE

Toute problématique de recherche doit d'abord s'inscrire dans une perspective théorique globale à partir de laquelle un cadre théorique spécifique relatif à l'objet d'étude sera conçu. Dans ce sens, il est judicieux d'expliciter, à la lumière de la littérature disponible, les théories qui se rapportent à notre sujet.

3.1. DEFINITION DE L'ENTREPRENEURIAT FEMININ

La définition de l'entrepreneuriat féminin n'est pas une chose facile étant donné que les définitions sortent de diverses écoles de pensées ainsi que de différents domaines de recherche permettent difficilement un accord définitif sur une définition distincte de la femme entrepreneure.

Dans ce sens, plusieurs définitions de la femme entrepreneure ont été élaborées. Selon Belcourt, Burke et Lee-Goselin, l'entrepreneure est «cette femme qui recherche l'épanouissement personnel, l'autonomie financière et la maitrise de son existence grâce au lancement et à la gestion de sa propre entreprise » [1]. C'est pour cela que Chalal la qualifie d'une « personne qui déplace des ressources économiques d'un niveau de productivité et de rendement donné à un niveau supérieur lui permettant au moins de se maintenir mais surtout de se développer sur le plan économique et social» [2].

Au Maroc, l'Association des femmes chefs d'entreprises (AFEM), en tant que première instance associative marocaine qui s'intéresse et encourage l'entrepreneuriat féminin, définit la femme chef d'entreprise comme étant « une femme occupant l'une des fonctions suivantes: président directeur général, vice-président directeur général, président du conseil de surveillance, président ou membre du directoire, administrateur directeur général, directeur général, directeur général adjoint, gérant ou cogérant».

L'entrepreneuriat féminin au Maroc est également entendu comme l'acte de création ou de développement des entreprises par les femmes dans le cadre de la politique de l'égalité [3] menée par le ministère de la Solidarité, de la Femme, de la Famille et du Développement social. Cette vision de l'entrepreneuriat féminin est stimulée par quatre logiques différentes:

- La volonté de l'intégration de l'entreprise féminine dans le circuit économique (secteur formel ou secteur informel).
- Le choix délibéré du statut d'entrepreneur (employeur ou indépendant).
- Une trajectoire transmissible de l'entrepreneuriat dans le cadre familial.
- La nécessité de satisfaire les besoins personnels ou familiaux, ou la recherche de l'aboutissement d'un cursus d'éducation et de formation, ou encore un besoin d'accomplissement sur le plan personnel.

3.2. APPROCHES DE L'ENTREPRENEURIAT FEMININ

Trois grands courants de pensée féministe ont permis l'éclosion d'une connaissance de l'entrepreneuriat féminin [4], à savoir :

- ❖ **L'approche fonctionnaliste :** Elle est appelée aussi l'approche radicale, différentialiste ou essentialiste, cette approche se base sur une vision naturaliste des rôles sexués : Il existe des différences entre les hommes et les femmes, qu'il convient d'explorer [5]. Des différences psychologiques et émotionnelles ancrées dans le rôle de la reproduction de l'espèce humaine. En effet, l'expérience physique de la conception, de la grossesse, de l'accouchement et de l'allaitement procure aux femmes une grande sensibilité et moins de raisonnement, ce qui constitue la fondation de l'oppression des femmes, et l'individualisme des hommes. Ainsi, les femmes a priori, seraient moins capables ou moins compétentes que les hommes pour l'entrepreneuriat, a priori perçu et a fortiori construit

comme une activité masculine [6].Toutefois, cette approche a fait l'objet de nombreuses critiques notamment celles relatives à l'utilisation d'instruments de mesure dits «masculins» pour évaluer les traits psychologiques, la personnalité et les valeurs individuelles et une définition de la réussite entrepreneuriale à partir de critères essentiellement masculins.

❖ **Les approches féministes :** Dans cette approche, on distingue le féminisme libéral et le féminisme social :

✓ **Le féminisme libéral :** Il est basé sur le postulat que les hommes et les femmes sont égaux et qu'ils sont des êtres rationnels capables de faire des choix raisonnés. En effet, les femmes qui sont aussi capables que les hommes de réussir dans les activités entrepreneuriales, font l'objet de discriminations et sont désavantagées en matière d'accès aux ressources (financement, formation, réseaux, etc.) et d'opportunités, ce qui explique les différences en matière de performance. La principale critique de cette approche est qu'elle néglige sciemment « la sphère familiale », qui est un élément fondamental explicatif des différences.

✓ **Le féminisme social :** Il est inspiré des nouvelles approches par le genre, ce courant part du principe que les femmes entrepreneures possèdent des attributs uniques et précieux pour le monde de l'entrepreneuriat, identifiés comme des ressources plutôt que comme des freins. Cette approche étudie les différences hommes-femmes comme des constructions sociales et culturelles [7] en se basant sur l'observation et l'analyse des processus de socialisation, d'où un intérêt à se focaliser sur le style de gestion de chaque groupe sans préjuger de la supériorité d'un groupe par rapport à l'autre.

❖ **Le féminisme socioconstructiviste ou poste structuraliste :** Il est impulsé par la volonté de dépasser une démarche ontologique et un positionnement positiviste, qui ont marqué la recherche sur

l'entrepreneuriat féminin. Le courant socioconstructiviste vient défendre un nouveau paradigme où la norme masculine est mise en évidence et dénoncée [8], tout en s'inscrivant dans la même logique que le féminisme social, à travers l'analyse des conditions et des pratiques qui produisent le genre. Ainsi, le chercheur interroge les facteurs historiques, culturels, législatifs et institutionnels dans la recherche sur l'entrepreneuriat féminin. Le genre est appréhendé comme un « concept relationnel », il peut se réaliser de diverses manières en fonction du contexte [9], Certes cette approche considère le phénomène en profondeur, mais elle ne demeure pas sans limites. En réalité, ce courant repose sur l'hypothèse que les femmes entrepreneures constituent un groupe homogène ignorant ainsi certains groupes distincts socialement par des facteurs tels que le statut social, l'âge, l'origine ethnique ou l'orientation sexuelle [10].

3.3. LE MODELE 5M DE L'ENTREPRENEURIAT FEMININ

La littérature récente plaide pour un design de recherche multidimensionnel qui englobe l'ensemble des variables exerçant une influence sur la pratique entrepreneuriale chez les femmes. A cet égard, plusieurs chercheuses se sont penchées sur l'élaboration d'une grille d'analyse pour mieux comprendre l'entrepreneuriat féminin. Dans cette optique, Brush, De Bruin et Welter ont élaboré la théorie des 5M.

Inspiré du modèle des 3M de Timothy Bates et de la théorie institutionnelle, avancé comme essentiel pour le lancement et le succès des entreprises, Brush, De Bruin et Welter proposent un nouveau modèle qui appréhende le phénomène entrepreneurial féminin de façon holistique. En partant du postulat que l'entrepreneure est socialement encastrée, il convient donc de mettre les normes, les valeurs et les attentes externes au cœur de leur compréhension du phénomène. Non seulement, ils proposent une adaptation des 3M, à savoir Monnaie (Money), Marché (Market) et M (Management), à la singularité de

l'entrepreneuriat féminin mais proposent une extension du modèle à 5M en introduisant les «Maternité» et « Méso/Macro environnement » (fig 1).

Fig 1 : Le modèle « 5m » de l'entrepreneuriat féminin

La Maternité renvoie à une métaphore représentant la famille,
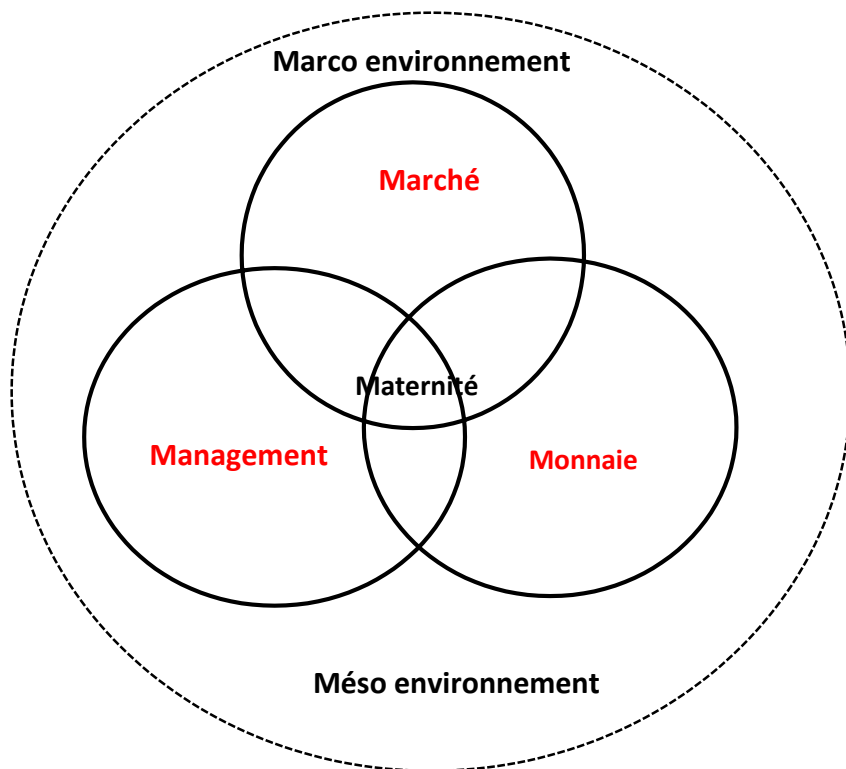
attirant ainsi l'attention sur le fait que la famille pourrait avoir un impact plus important sur les femmes que les hommes. Toutefois, le Méso-Macro environnement est une composante qui intègre, au-delà du marché et des institutions, les attentes de la société, les normes culturelles et les structures. Le macro environnement comprend généralement les politiques nationales, les stratégies, les influences culturelles et économiques ; tandis que le Méso environnement reflète les spécificités régionales, politiques, économiques et parfois même culturelles.

4. ANALYSE ET SYNTHESE DES RESULTATS

Les résultats bruts d'une recherche, en eux-mêmes, n'ont pas d'utilité pour le lecteur étant donné que leur valeur réside dans leur analyse et leur interprétation. C'est dans cette optique que cette partie va porter sur la présentation et l'analyse des résultats des réponses des femmes entrepreneures qui ont accepté de répondre à notre questionnaire.

❖ **Avez-vous été à l'origine de la création de votre entreprise ?**
L'analyse du graphique ci-dessus révèle que les femmes
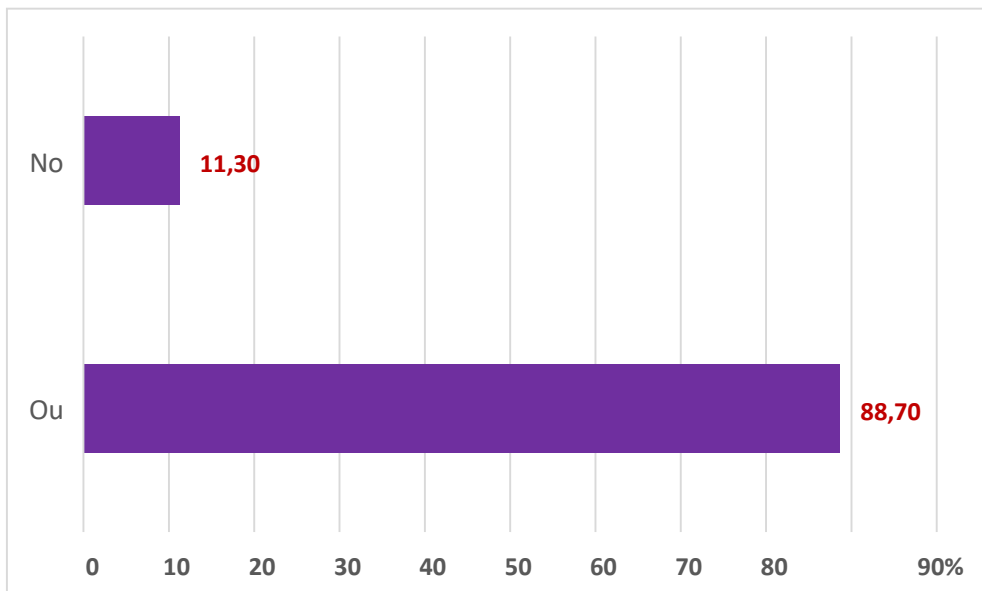
entrepreneures enquêtées ont été à l'origine de la création de leur entreprise dans 88,70% des cas.

❖ **Si Non, Avez-vous un lien de parenté avec la personne qui a créé cette entreprise ?**
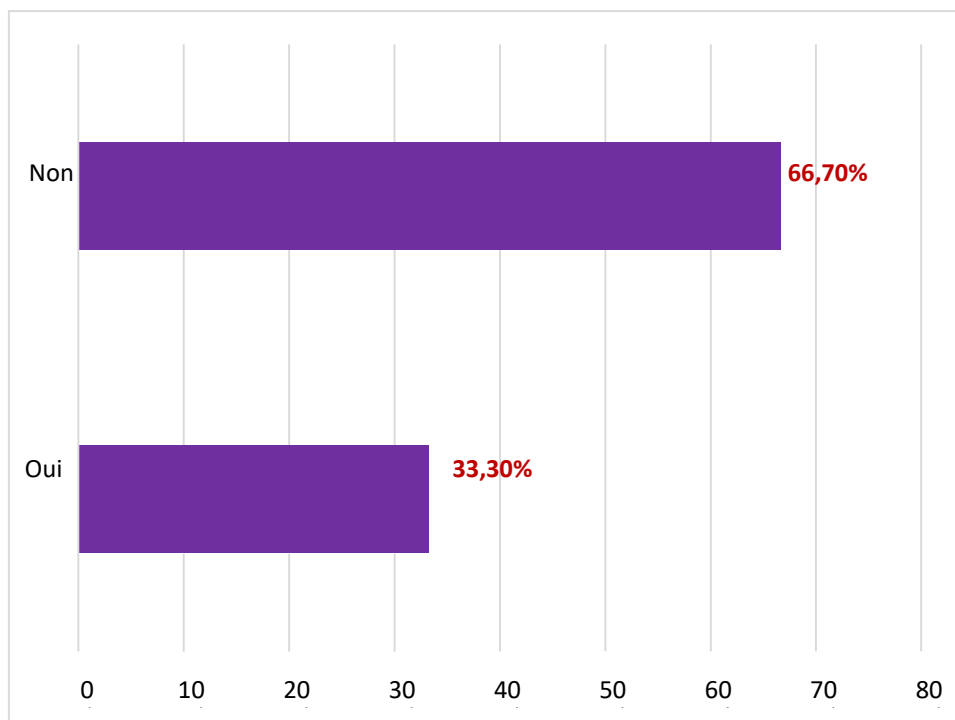
L'analyse du graphique ci-dessus fait ressortir que parmi les femmes entrepreneures qui n'ont pas créés elles-mêmes leur entreprise, 33,30% déclarent avoir un lien de parenté avec le fondateur.

❖ **Qu'est-ce qui vous a incité à créer votre propre entreprise ?**
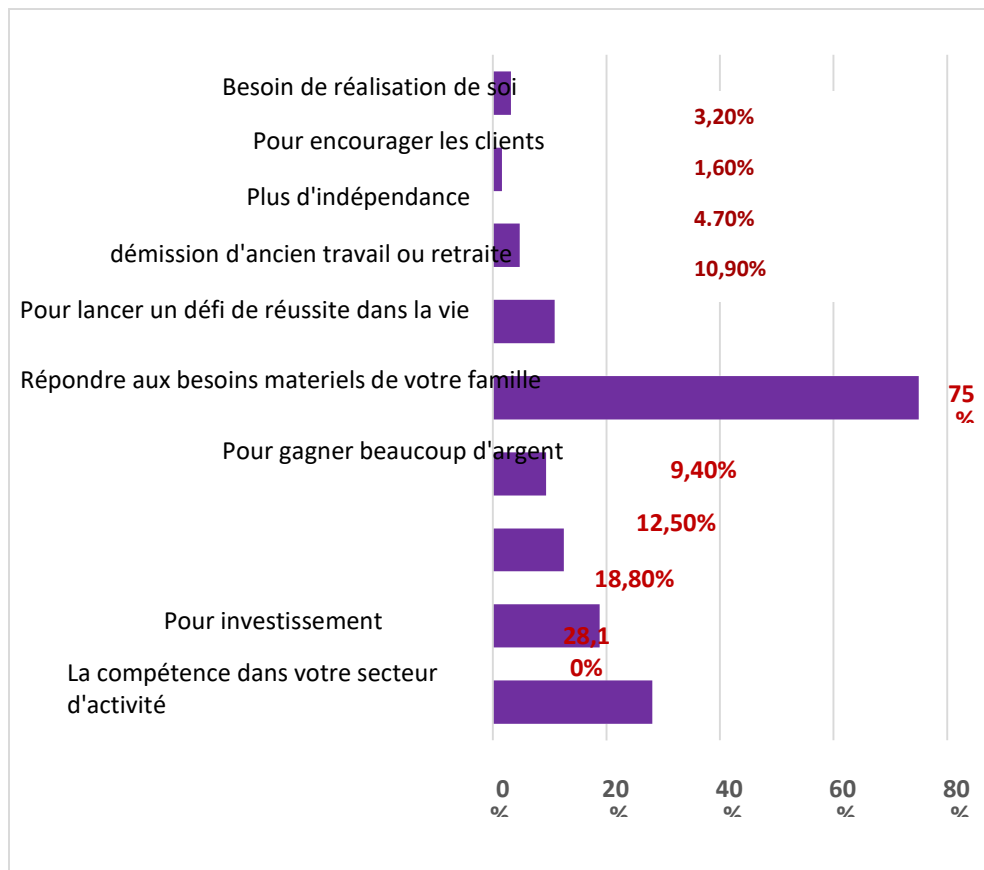
L'analyse du graphique ci-dessus montre que les facteurs qui incitent les femmes entrepreneures à créer leurs propres entreprises sont nombreux. Il s'agit essentiellement du désir de lancer le défi de réussite dans la vie (cité par 75% des enquêtées). En revanche, les autres facteurs sont la compétence dans le secteur d'activité (28,10%), l'investissement (18,80%), gagner beaucoup d'argent (12,50%), la démission d'ancien travail ou retraite (10,90%) ainsi que répondre aux besoins matériels de la famille (9,40%).

❖ **Quel est le secteur d'activité de votre entreprise ?**
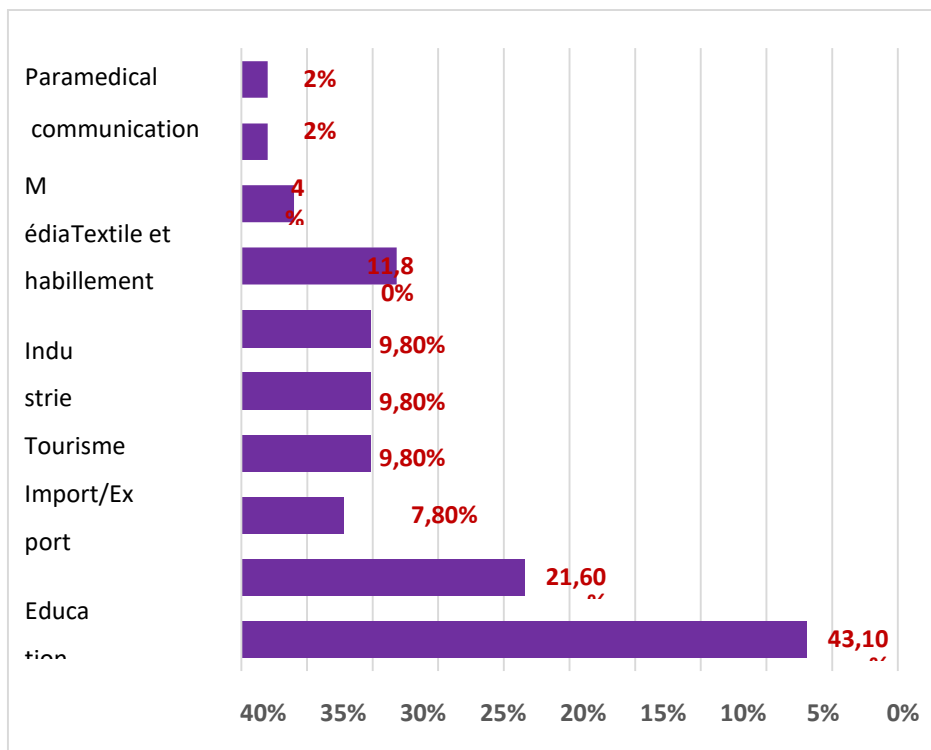
L'analyse du graphique ci-dessus révèle que 43,10% des femmes entrepreneures enquêtées exerce leurs activités dans le secteur des services alors que 21.6% d'entre elles sont au commerce, 11 .8% au secteur du textile et habillement, 9,80% au tourisme, import/export et l'industrie et 8% sont au secteur de l'éducation.

❖ **Quelle forme juridique avez-vous choisi pour votre entreprise**
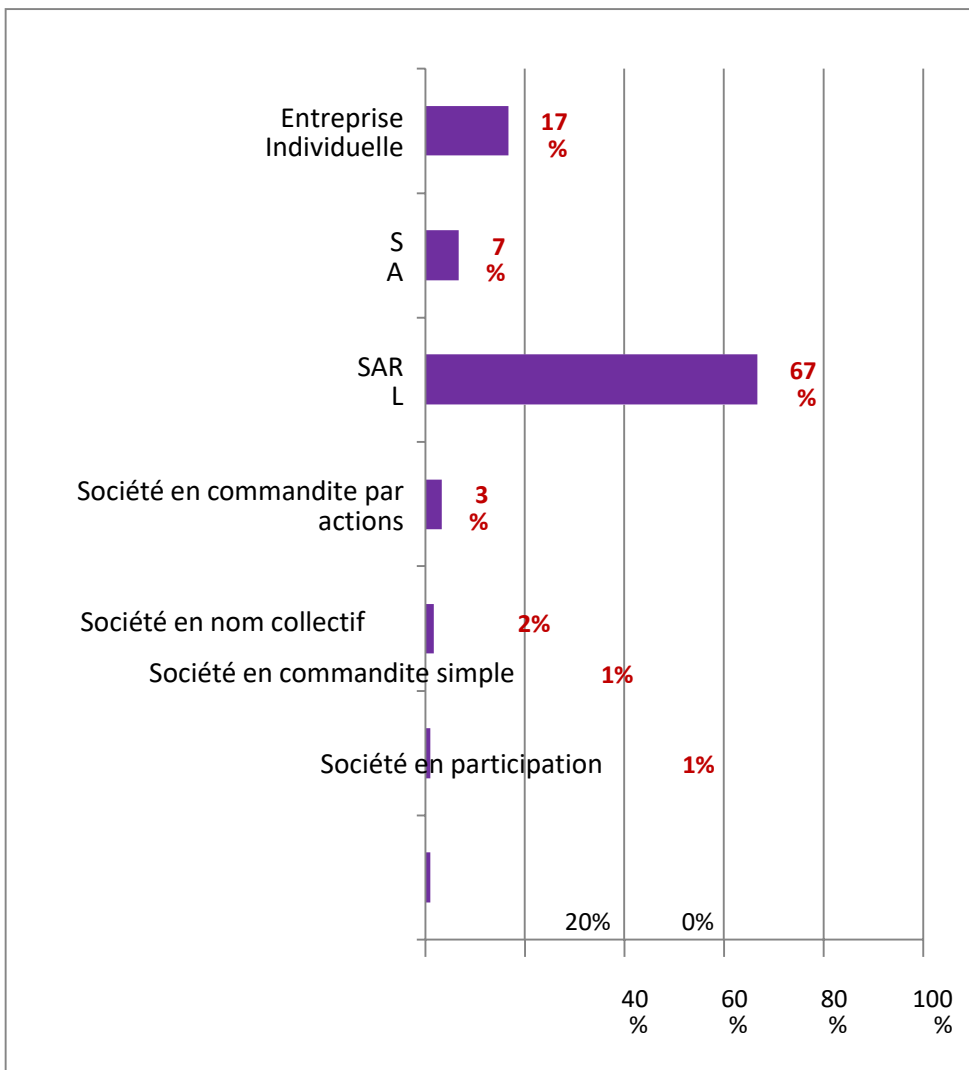
L'analyse du graphique ci-dessus révèle que plus de la moitié de notre échantillon (67%) révèlent que la forme juridique choisie pour leur entreprise est SARL, tandis que 17% déclarent qu'ils ont une entreprise individuelle. Seul 7% des femmes entrepreneures affirment qu'elles ont opté pour la SA comme forme juridique pour leur entreprise

❖ **Avez-vous rencontré des obstacles lors de la création de votre projet ?**

L'analyse du graphique ci-dessus révèle que 71% de notre échantillon ont rencontré des obstacles lors de la création de leur entreprise.

❖ **Si oui, quels types d'obstacles avez- vous rencontré en tant que femme ?**
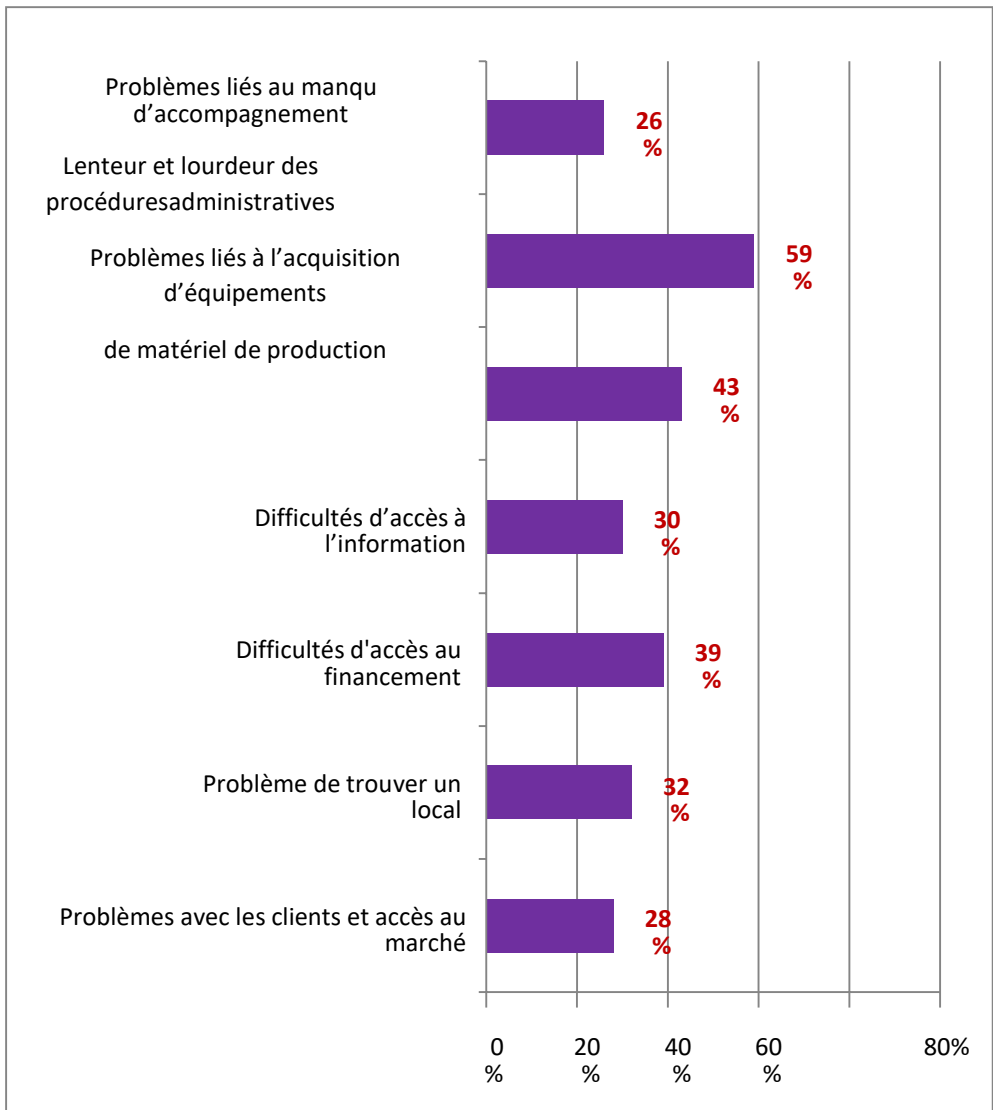
L'analyse du graphique ci-dessous fait ressortir que 59% des femmes entrepreneures enquêtées révèlent que la lenteur et lourdeur de procédures administratives constituent le principal obstacle rencontré, suivie par les problèmes liés à l'acquisition d'équipements de matériel de production (43%), l'accès au financement (39%) et au marché (28%). De même, les problèmes de trouver un local et le manque d'accompagnement sont présents respectivement par 32% et 26% de notre échantillon.

❖ **Quels sont selon vous les trois atouts indispensables d'un chef d'entreprise ?**
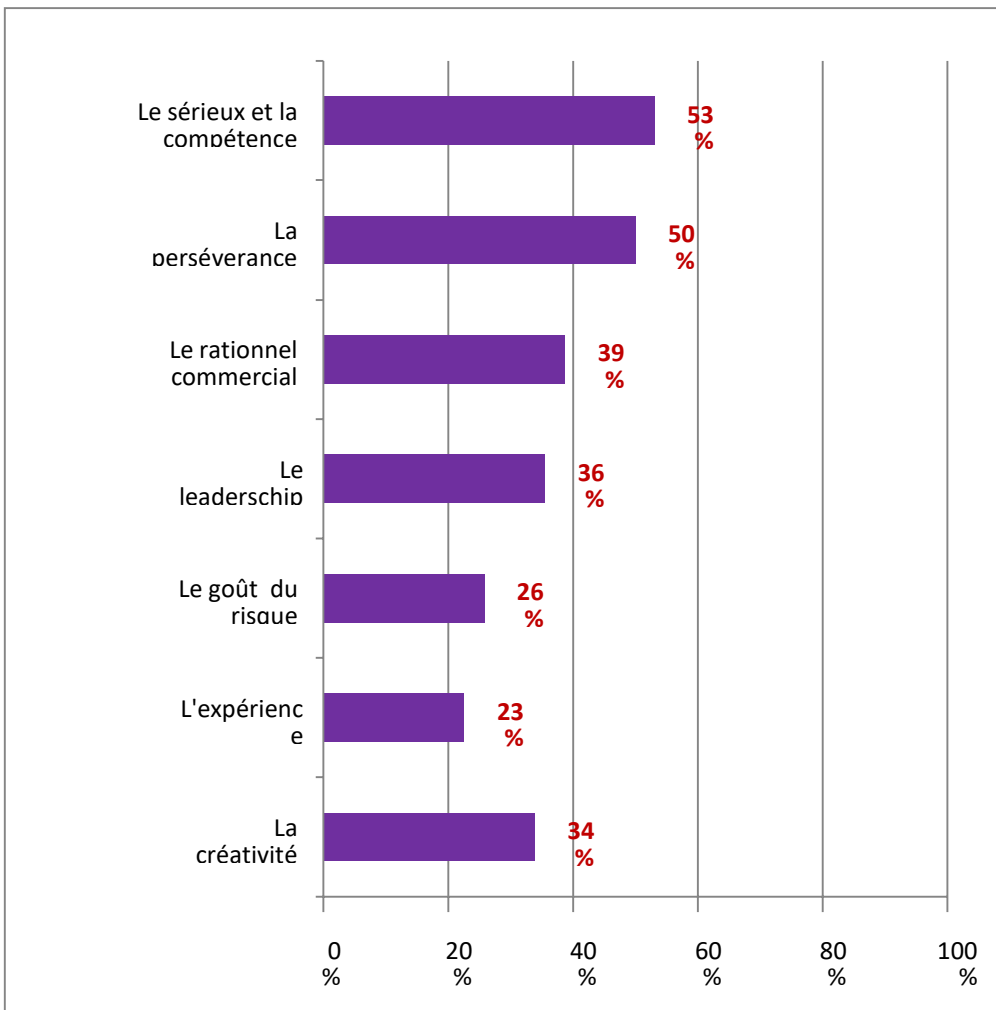
L'analyse du graphique ci-dessous fait ressortir que 53% des femmes entrepreneures sondées révèlent que le sérieux et la compétence sont les atouts indispensables d'un chef d'entreprise. De même, 50% affirment que la persévérance est le facteur clé du succès. En revanche, le relationnel commercial (39%), le leadership (36%), la créativité (34%), le goût du risque (26%) et l'expérience (23 %) demeurent également parmi les atouts nécessaires de la femme entrepreneure.

❖ **Estimez-vous que votre activité est rentable actuellement ?**
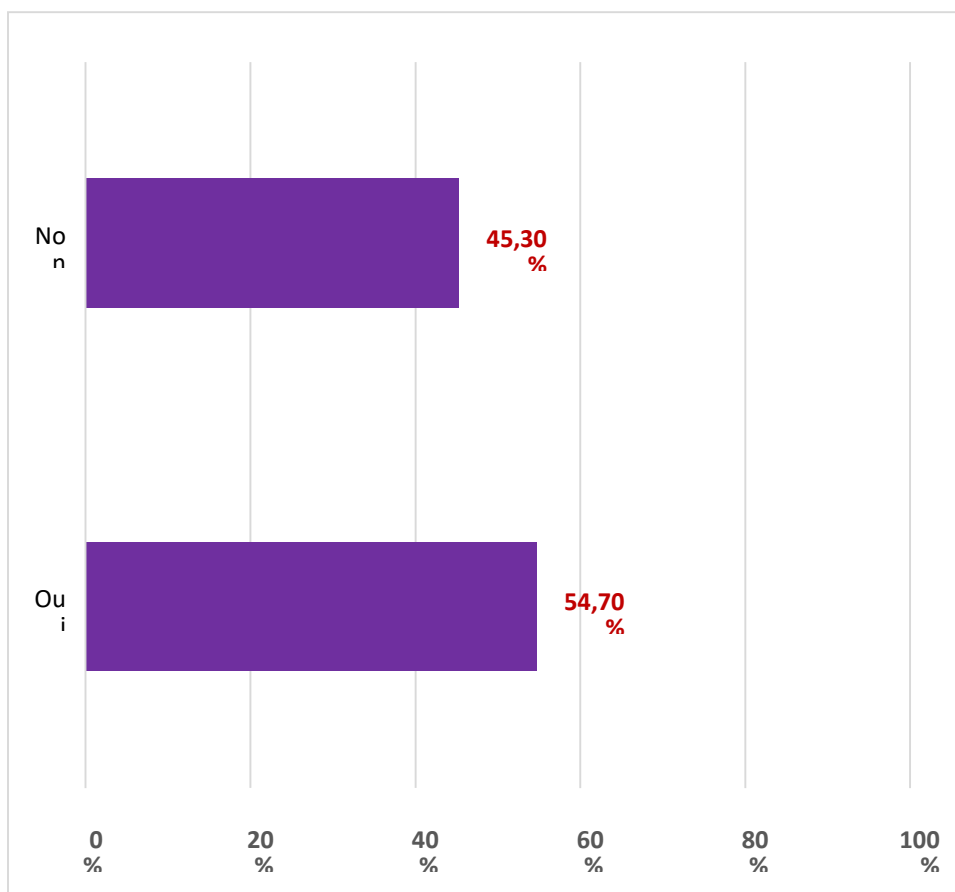
L'analyse du graphique ci-dessous montre que 54,70% des entrepreneures enquêtées affirment que leur activité est rentable actuellement contre 45,30%.

❖ **Si oui, quels sont les facteurs qui ont accéléré la dynamique de rentabilité ?**
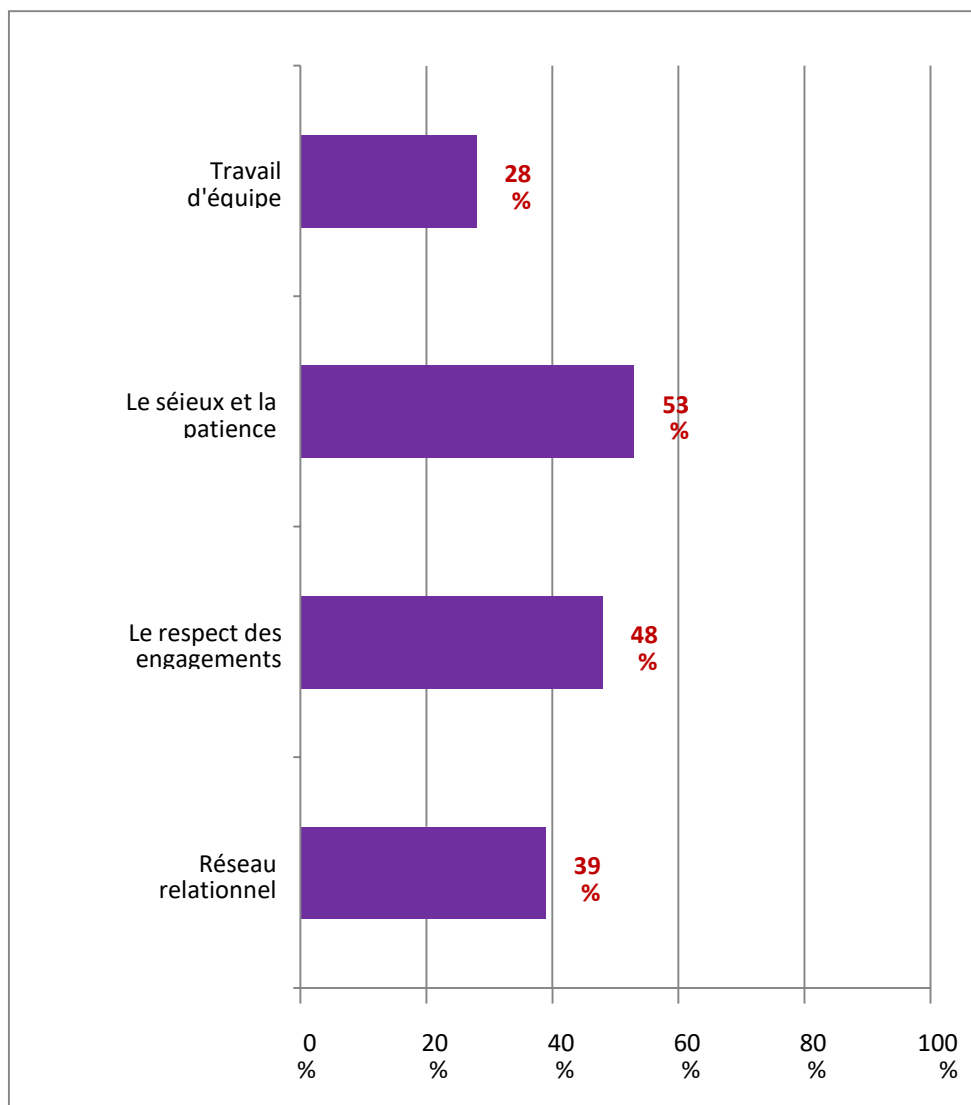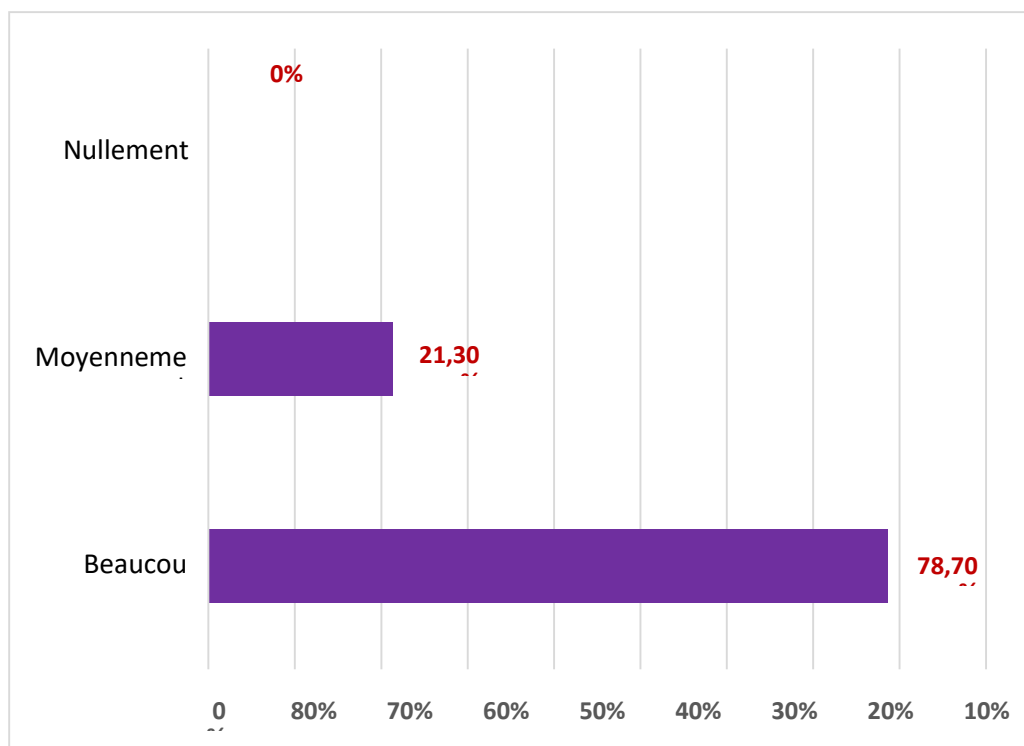
L'analyse du graphique ci-dessus révèle que 53% des femmes entrepreneures qui ont affirmé que leur activité est rentable actuellement évoquent que le sérieux et la patience constituent le facteur principal de cette rentabilité. De même, le respect des engagements (48%), le réseau relationnel (39%) et le travail d'équipe (28%) semblent être des facteurs de la rentabilité des activités des femmes entrepreneures enquêtées.

❖ **Si non, quels sont les causes de blocage et de défaillance ou au moins les limites ?**
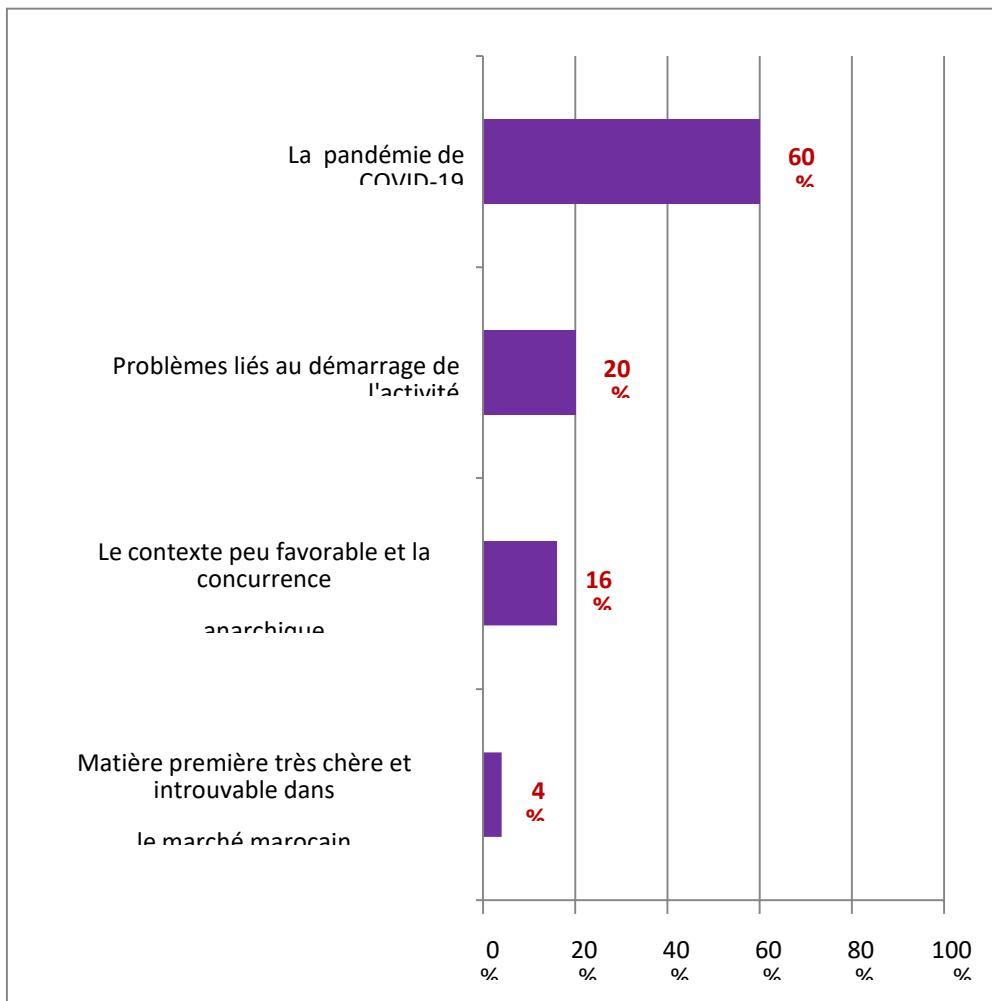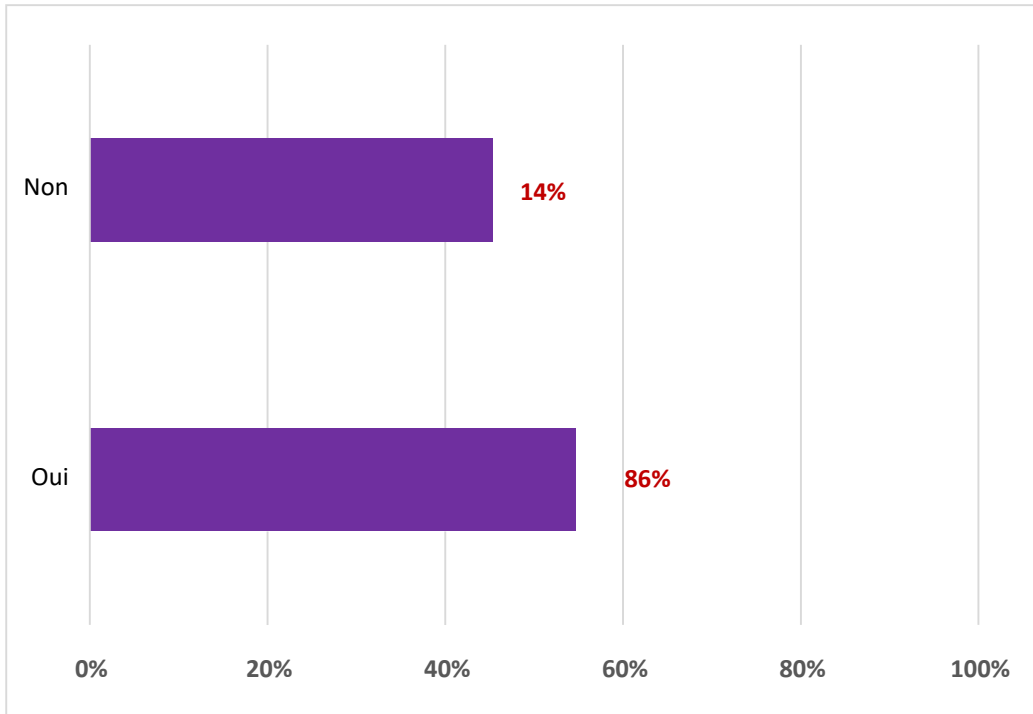
L'analyse du graphique ci-dessus montre que 60% des femmes entrepreneures enquêtées révèlent que la propagation de la pandémie COVID-19 constitue la cause principale de blocage et de défaillance de leurs activités. En revanche, d'autres causes sont évoqués notamment les problèmes liés au démarrage de l'activité (20%), le contexte peu favorable et concurrence anarchique (16%) ainsi que la hausse de prix et la rareté des matières premières dans le marché marocain (4%).

❖ **Etes-vous satisfaite de votre statut en qualité femme entrepreneure ?**

L'analyse du graphique ci-dessus montre que 78,70% des femmes entrepreneures sondées sont satisfaites de leur statut en qualité de femme entrepreneure alors que 21,30 d'entre elles sont moyennement satisfaites de leur statut entrepreneurial.

❖ **Pensez-vous avoir réussi dans votre projet ?**

L'analyse du graphique ci-dessus montre que 86%des femmes entrepreneures enquêtées affirment qu'elles ont réussi dans leurs projets.

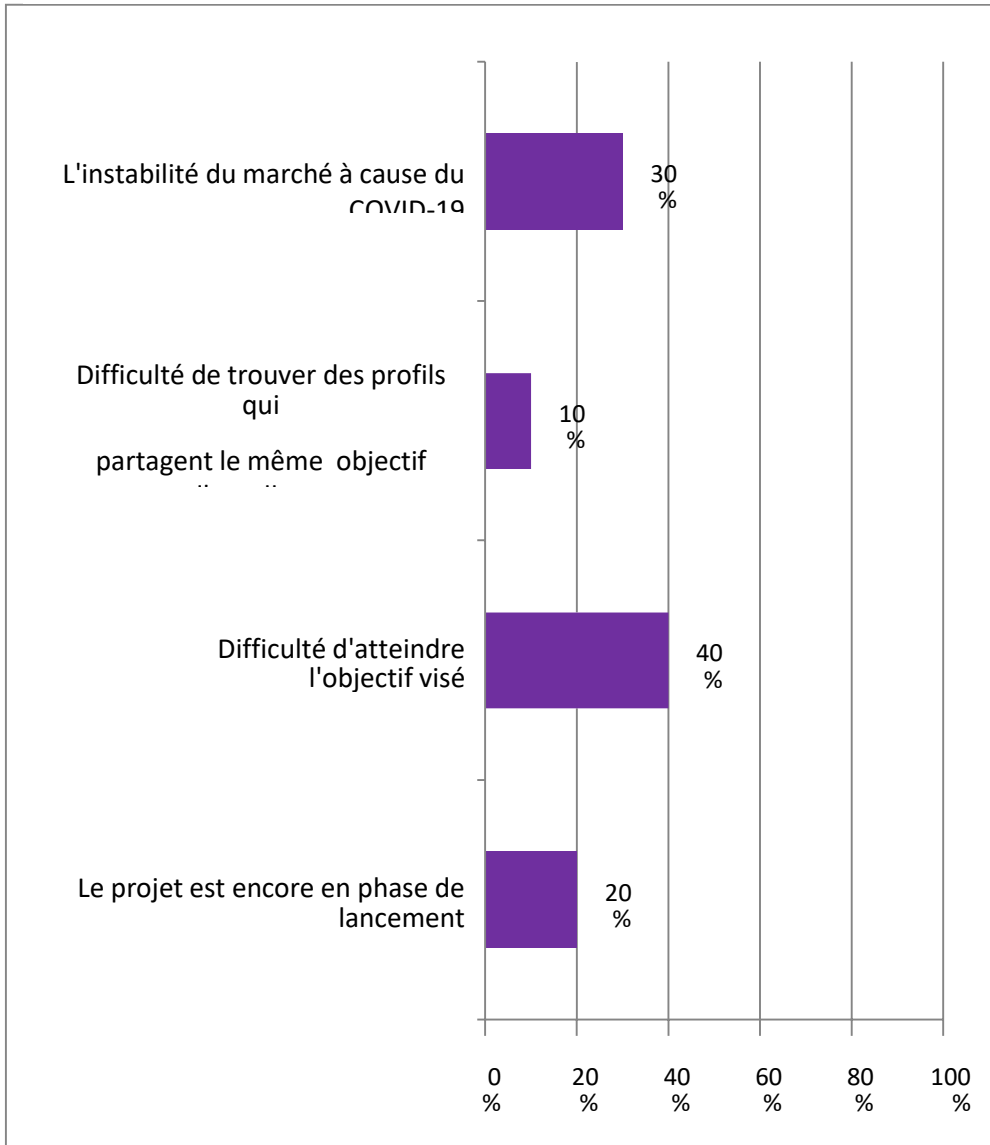❖ **Si oui, quelles sont les réelles et principales raisons de la réussite ?**

L'analyse du graphique ci-dessous fait ressortir que les raisons de réussite des femmes entrepreneures enquêtés dans leurs activités sont nombreuses. En effet, 44% révèlent que la persévérance et la rigueur constituent les principales et les réelles raisons de leur réussite, 18% affirment que le sérieux et la compétence, 13% indiquent que la confiance en soi et 10% dévoile que la volonté tandis que 13% évoquent respectivement que l'autonomie (6%), la créativité (4%), la
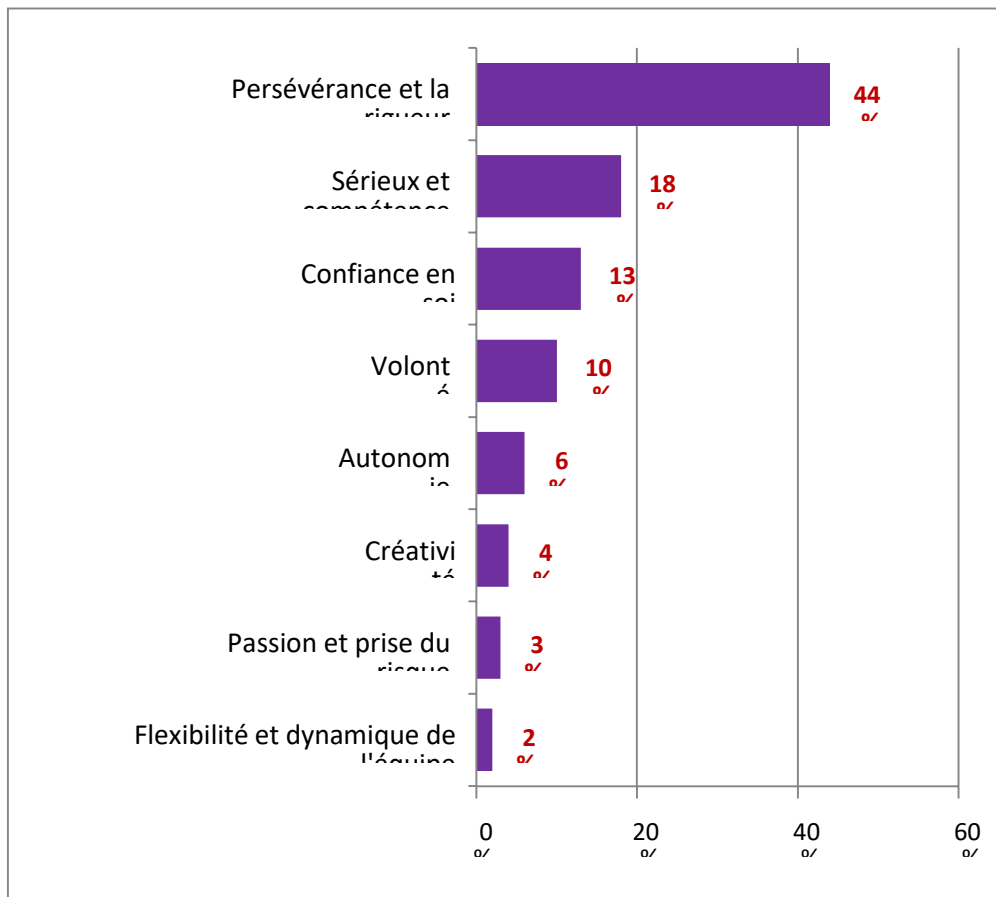
passion et la prise du risque (3%) et la flexibilité, leadership et la dynamique de l'équipe (2%) représentent les causes de leur réussite.

## ❖ Si non, quelles sont les raisons de votre insatisfaction?

L'analyse du graphique ci-dessus montre que les raisons de l'insatisfaction des femmes entrepreneures apparaissent plus ou moins différenciées. la difficulté d'atteindre l'objectif visé constitue la principale avec 40% des enquêtés. L'instabilité du marché due à la pandémie de COVID-19 est également important puisqu'il a été cité par le 40% des enquêtées.

L'instabilité du marché à cause du COVID-19	30 %
Difficulté de trouver des profils qui partagent le même objectif	10 %
Difficulté d'atteindre l'objectif visé	40 %
Le projet est encore en phase de lancement	20 %

Les contraintes spécifiques au moment de la création de l'entreprise et la difficulté de trouver des profils qui partagent le même objectif sont évoquées respectivement par 20% et 10%.

❖ **Comment avez-vous financé votre projet**
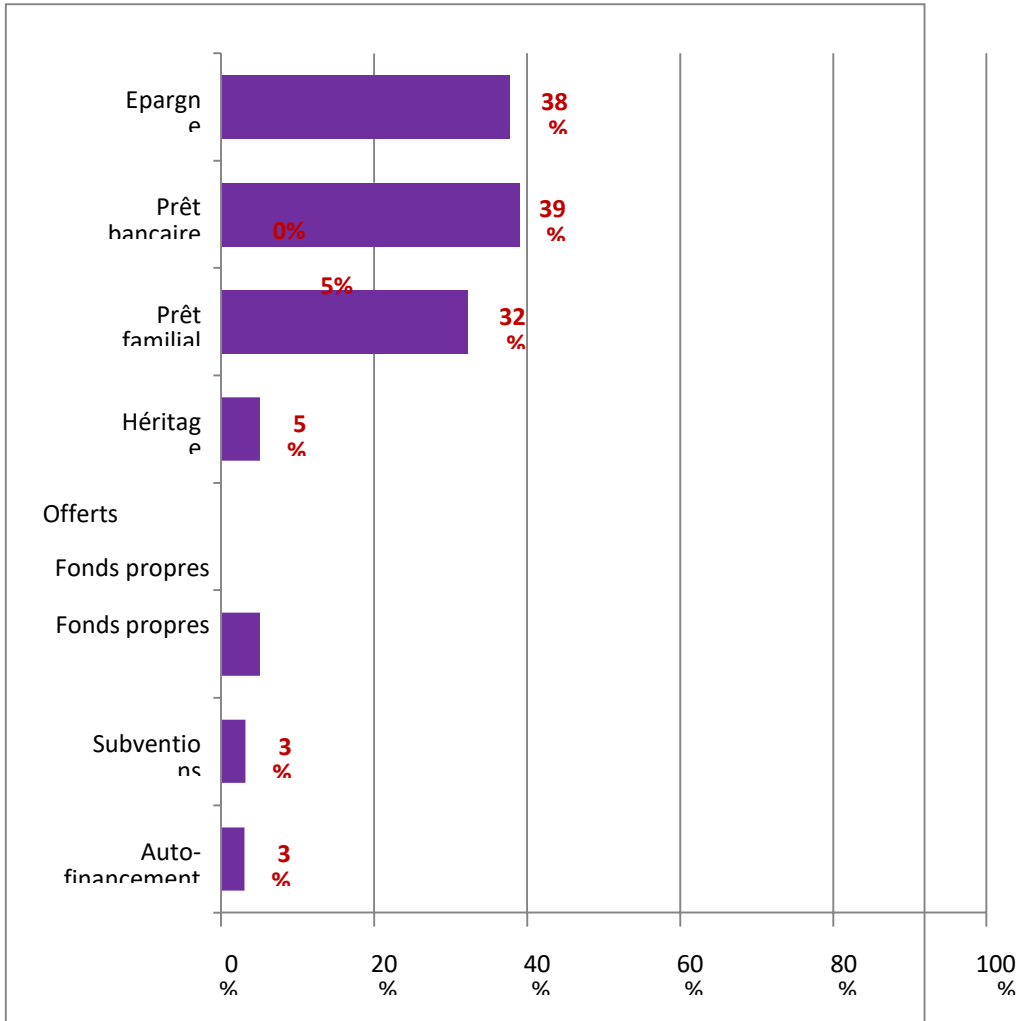
L'analyse du graphique ci-dessus fait ressortir que 39% de notre échantillon ont pu financer leur projet grâce au prêt bancaire tandis que 38% ont eu recours à l'épargne et 32% au prêt familial.

Avez-vous bénéficié de mesures d'accompagnement mises en place par l'Etat ?
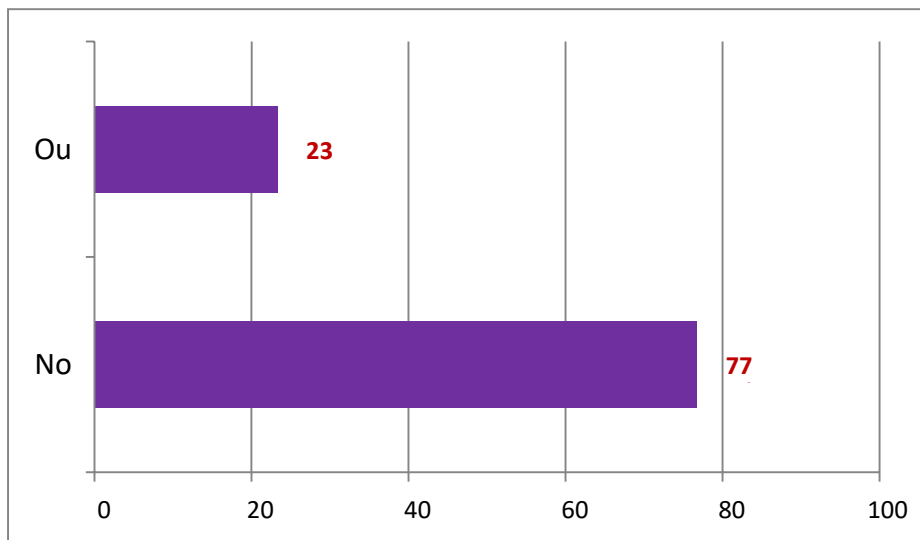
L'analyse du graphique ci-dessus révèle que 77% des femmes entrepreneures ayant répondu à notre questionnaire n'ont pas bénéficié de mesures d'accompagnement mises en place par l'Etat. Seul 23% affirment qu'elles ont tiré profit de ces mesures.

❖ **Si oui, quelles sont ces mesures ?**
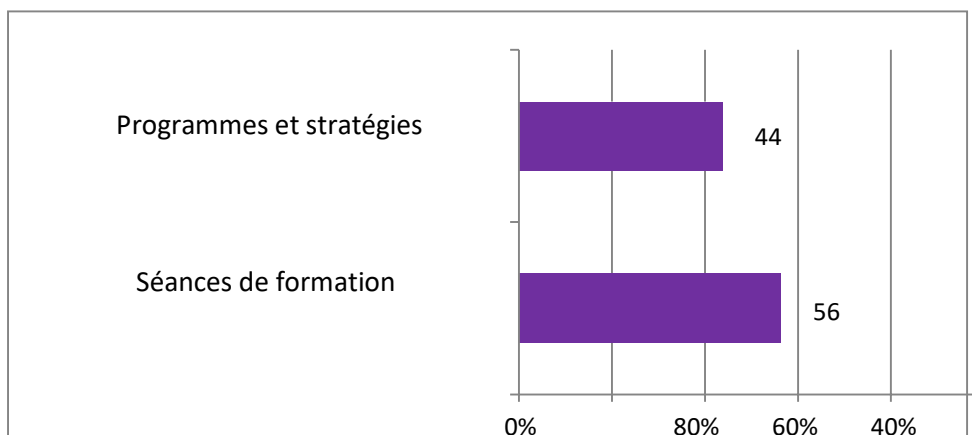
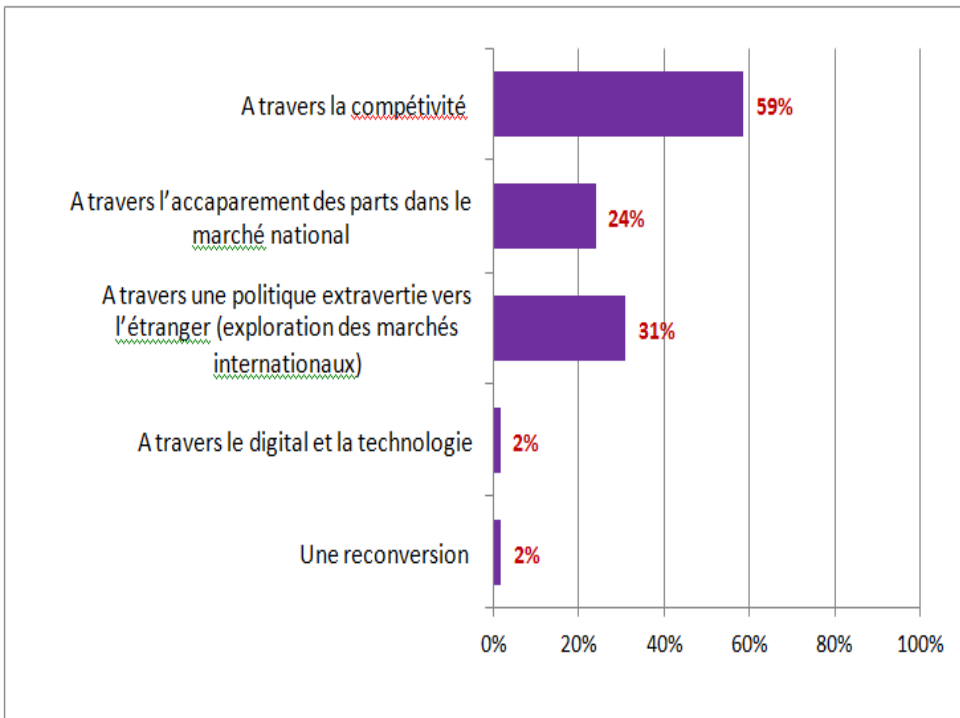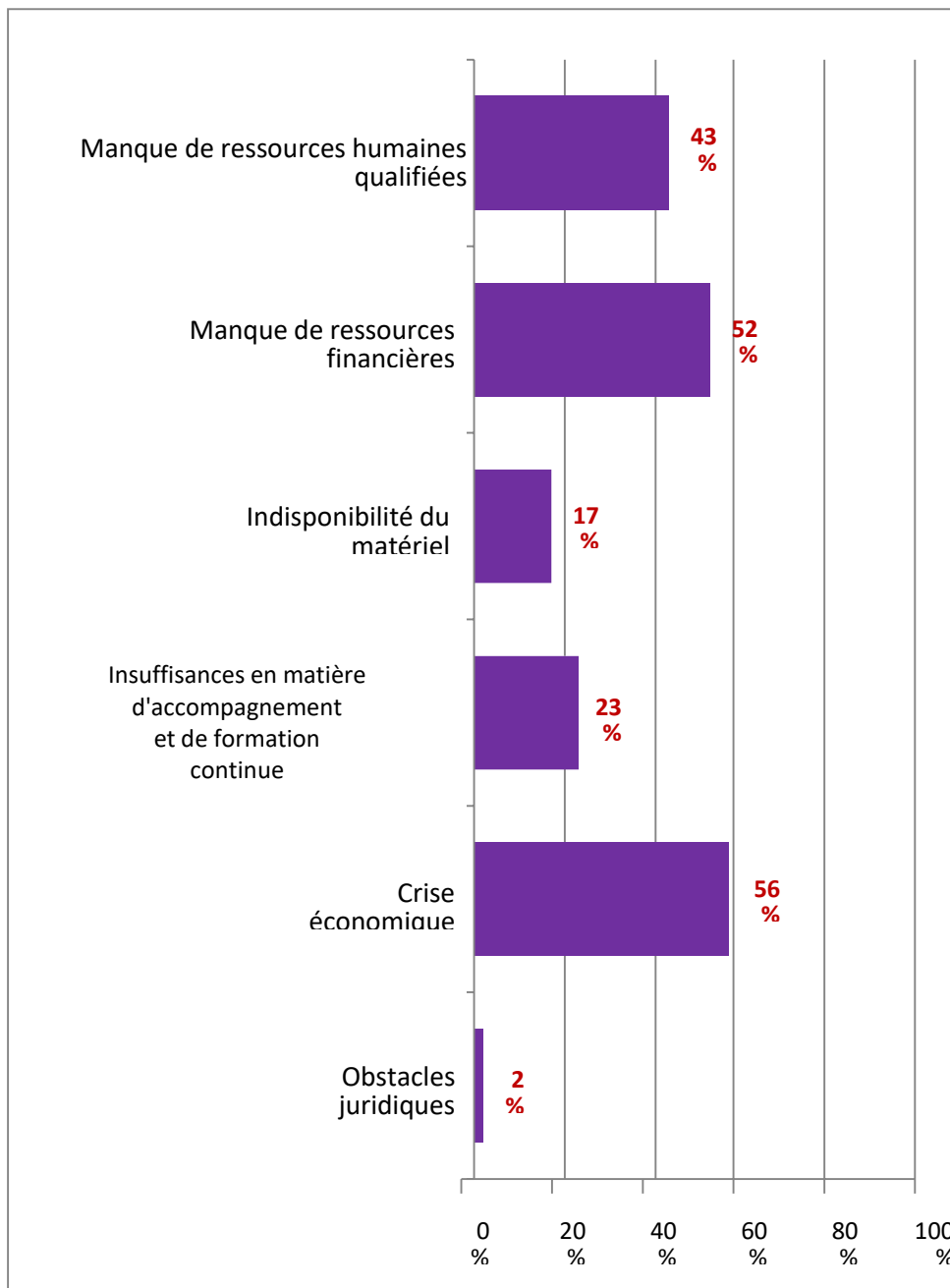L'analyse du graphique ci-dessus fait ressortir que les mesures d'accompagnement dont bénéficient 23% des femmes entrepreneures sont de nature diverse. En effet, 56% d'entre elles ont bénéficié de séances d'encadrement et de formation. Alors que 44% d'entre elles ont tiré profit de programmes et stratégies sous forme d'investissement et de financement.

❖ **Comment voyez-vous les perspectives de développement de votre entreprise ou le cas échéant les limites de ce développement?**

L'analyse du graphique ci-dessus révèle que plus de la moitié de notre échantillon (59%) révèlent que les perspectives de développement de leur entreprise pourraient être assurées à travers la compétitive tandis que 31% et 24% évoquent respectivement que le développement de leur entreprise pourrait être atteint soit travers une politique extravertie vers l'étranger (exploration des marchés internationaux) soit via l'accaparement des parts dans le marché national.

❖ **Quelles sont les limites ou les obstacles de développement de votre projet ?**

L'analyse du graphique ci-dessus montre que la majorité des femmes chefs d'entreprises enquêtées estiment avoir rencontrées des difficultés particulières. Ces difficultés apparaissent très accentuées et très nombreuses à savoir, la crise économique citée par 56% des femmes entrepreneure, le manque de ressources financières (52%), le manque de ressources humaines qualifiées (43%), l'insuffisance en matière d'accompagnement et de formation ainsi que l'indisponibilité du matériel (17%) et les obstacles juridique (2%).

❖ **À la lumière de votre vécu professionnel entrepreneurial, comment vous voyez l'avenir de l'entrepreneuriat féminin au Maroc ?**
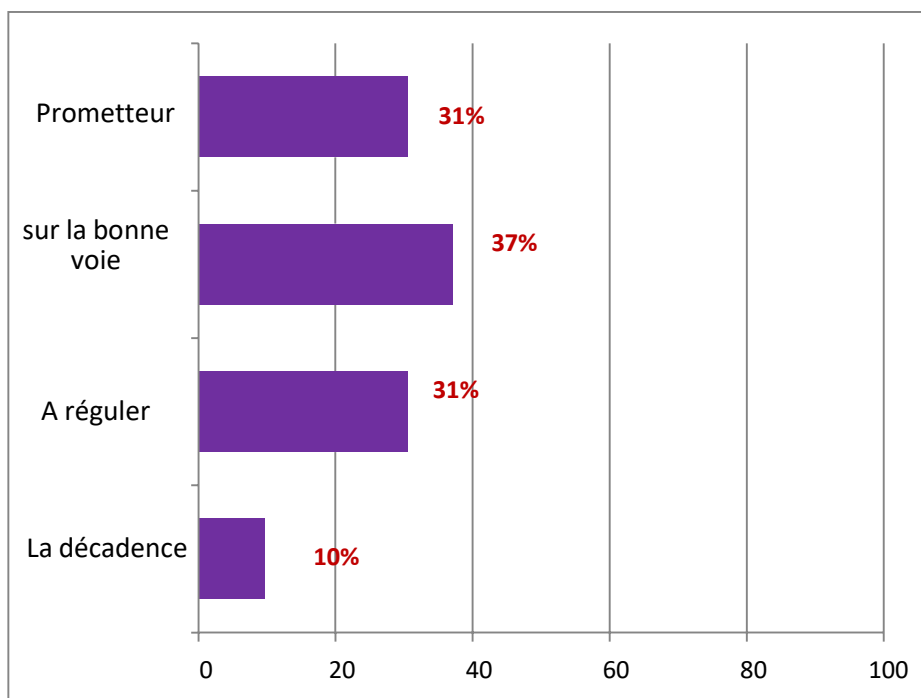
L'analyse du graphique ci-dessus révèle que 37% de notre échantillon révèlent que l'avenir de l'entrepreneuriat féminin au Maroc est sur la bonne voie, 31% affirment que ce secteur est promoteur et devrait être régulé alors que 10% évoquent que ce secteur est décadent

❖ **Selon votre dernière réponse: Quels sont les facteurs ayant conduit à cette déduction?**
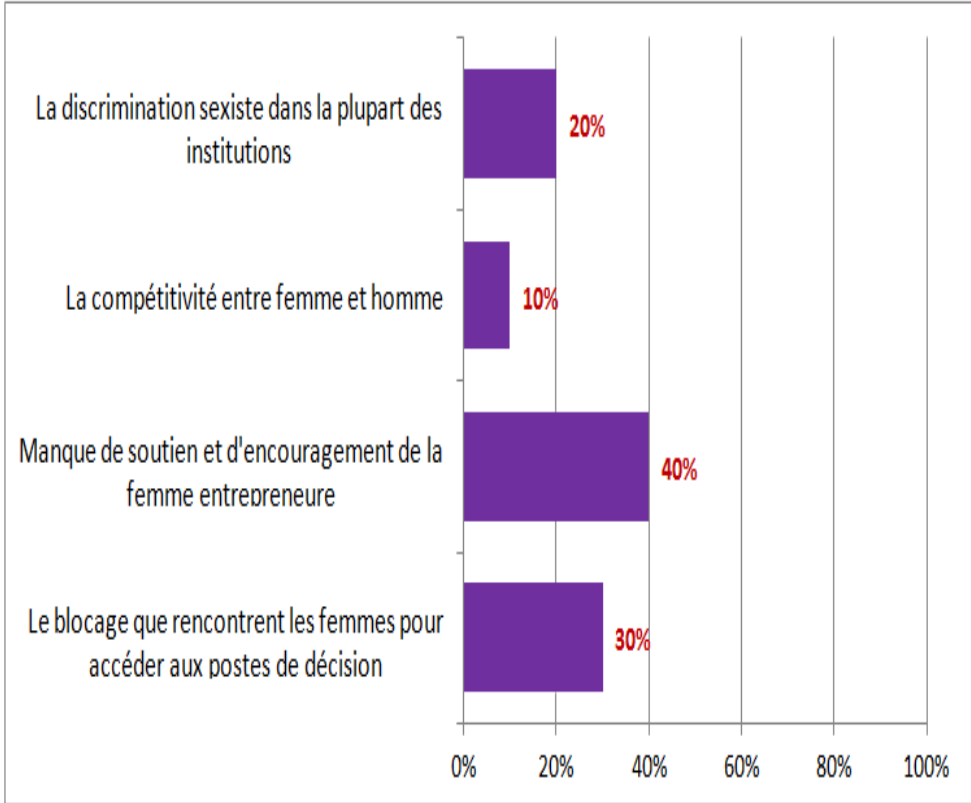
L'analyse du graphique ci-dessus fait ressortir que les facteurs ayant conduit à la déduction du secteur de l'entrepreneuriat au Maroc sont nombreux à savoir, le manque de soutien et d'encouragement de la femme entrepreneure cité par 40% de notre échantillon, le blocage que rencontrent les femmes pour accéder aux postes de décision évoqué par 30%, la discrimination sexiste dans la plupart des institutions indiqué par 20% ainsi que la compétitive entre les femmes et les hommes signalé par 10%.

❖ **Quels sont les axes stratégiques que vous jugeriez utiles, indispensables pour assurer un développement équilibré, et durable de l'entrepreneuriat féminin ?**
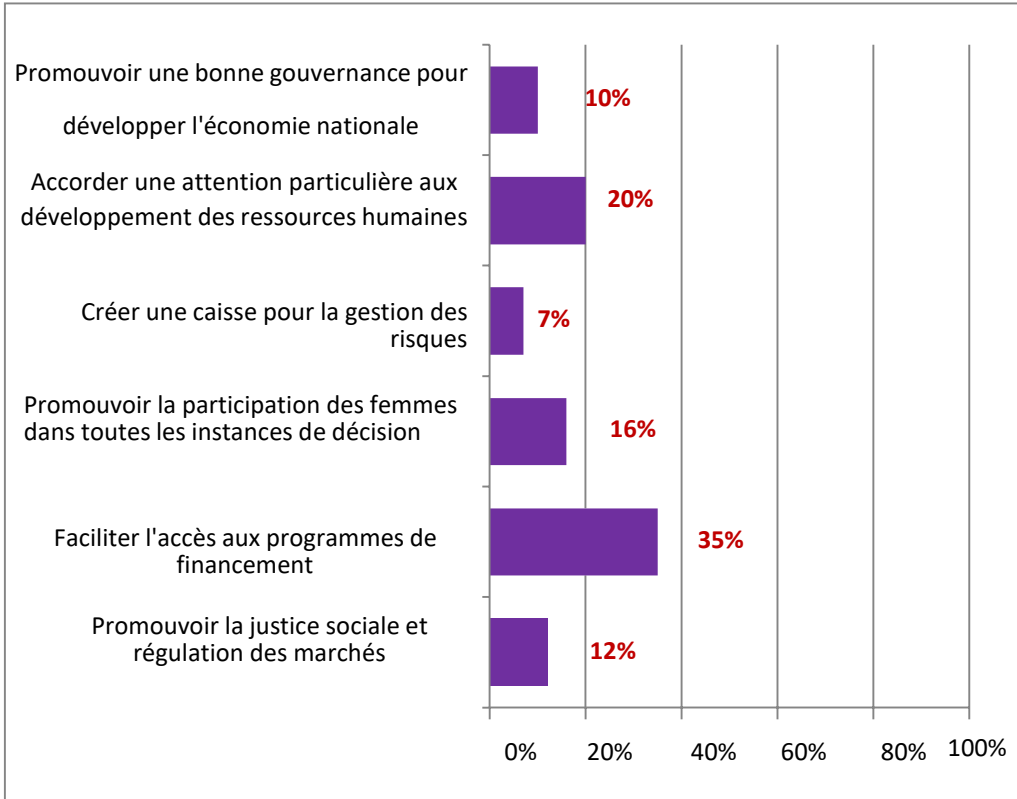
L'analyse du graphique ci-dessus fait ressortir que plusieurs axes stratégiques ont été recommandés par notre échantillon à savoir, la facilitation de l'accès aux programmes de financement (35%), le développement des ressources humaines (20%), la promotion de la participation des femmes dans toutes les instances de décision (16%), la promotion de la justice sociale et régulation des marchés (12%), la promotion d'une bonne gouvernance pour bien développer l'économie nationale (10%) ainsi que la création d'une caisse pour la gestion des risques (7%).

Conclusion

Le présent article avait pour objectif de mettre en évidence les atouts et les contraintes de l'entrepreneuriat féminin au Maroc, en particulier dans la région de Rabat. Cherchant à éclairer notre problématique, nous avons fait usage à plusieurs techniques et méthodes à savoir, la méthode analytique, descriptive et statistique ainsi qu'aux techniques documentaire et de questionnaire pour faciliter la récolte des données. Nous avonsainsi tiré un échantillon de 100 femmes entrepreneures. Après le traitement des résultats, nous avons abouti aux constats suivants :

Tout d'abord, les femmes chefs d'entreprises au Maroc bénéficient d'un environnement entrepreneurial moins favorable. Leur position sur le marché du travail et les inégalités qui subsistent entravent la montée de leurs activités. En effet, ces femmes rencontrent beaucoup de difficultés qui apparaissent assez différenciées selon qu'il s'agisse de la phase de démarrage ou de la phase de gestion quotidienne de l'entreprise. De telles difficultés sont relatives de façon plus générale à la micro, petite et moyenne entreprise, du secteur formel comme du secteur informel, et d'autres relatives à la situation des femmes de façon plus spécifique dans l'économie et dans la société marocaine notamment, les difficultés d'accès à l'information, au financement et au marché, lenteur et lourdeur des procédures administrative, les contraintes d'ordre social liés à la condition de la femme, notamment perception de l'entourage, problèmes liés à l'acquisition d'équipements de production et du foncier.

Ces facteurs, conjugués au manque de soutien et d'encouragement de la femme entrepreneure, le blocage qu'elle rencontre pour accéder aux postes de décision, la discrimination sexiste dans la plupart des institutions ainsi que la compétitive entre les femmes et les hommes conduisent incontestablement à la déduction du secteur entrepreneurial au Maroc.

Par ailleurs, un grand nombre de ces femmes ont recours à l'entrepreneuriat comme alternative au salariat. D'autres préfèrent créer leur entreprise et d'être leur « propre chef » au lieu d'être employées dans le secteur public ou privé. Les raisons qui les incitent à créer leur propre entreprises sont nombreux à savoir, la compétence dans le secteur d'activité,

l'investissement, les besoins matériels de la famille, le défi de réussite dans la vie, la démission d'ancien travail ou retraite. Toutefois, la plupart des femmes sont insatisfaites de leur activité. Les causes essentielles de cette insatisfaction résident dans la difficulté d'atteindre l'objectif visé, l'instabilité du marché due à la pandémie de COVID-19 et les contraintes spécifiques au moment de la création de l'entreprise. Dans ce contexte, la persévérance, le sérieux, la compétence, la persévérance, le relationnel commercial, le leadership, la créativité, le goût du risque et l'expérience demeurent des atouts indispensables d'une femme chef d'entreprise pour qu'elle puisse réussir son activité.

Conscient des enjeux et du potentiel économique des femmes entrepreneures, le Maroc a mis en place un ensemble de mesures d'appui en matière de soutien, d'accompagnement et d'information. Néanmoins, ces mesures demeurent très insuffisants et que le pourcentage de femmes parmi leur bénéficiaires, est relativement faible. L'un des principaux motifs de cette faible participation est l'ignorance de l'existence de ces programmes d'assistance non financière.

En effet, l'accompagnement des femmes porteuses de projet reposait sur double processus d'appropriation. La femme porteuse de projet doit s'approprier les outils de gestion que lui réclament les portants de projet. Ce processus qui n'est pas spécifique à la femme porteuse de projet, est souvent complexifié dans son cas du fait de l'absence de garantie pour le crédit, apport personnel difficile à collecter, environnement hostiles pour la création. Parallèlement, le conseiller fait lui un travail d'appropriation en adaptant son offre au porteur de projet qu'il conseille.

Enfin, il est indéniable que la promotion de l'entrepreneuriat féminin au Maroc ne peut être assurée sans l'élaboration d'un modèle de développement économique. Un tel modèle se concrétise à travers plusieurs axes stratégiques à savoir, la facilitation de l'accès aux programmes de financement, le développement des ressources humaines, la promotion de la participation des femmes dans toutes les instances de décision tant au niveau économique (chambres et associations professionnelles, administrations publiques, etc.) que politique (collectivités locales ..), la promotion de la justice sociale et régulation des marchés, la promotion d'une bonne

gouvernance pour bien développer l'économie nationale ainsi que la création d'une caisse pour la gestion des risques. De même, la création et la multiplication de réseaux de femmes entrepreneurs apparaît essentiel dans ce domaine afin de renforcer leurs compétences en terme de productivité économique par l'échange de services et la création d'une chaîne. Le réseautage contribuerait également à développer leur pouvoir de lobbying sur le plan local, régional, national voire international. Ces réseaux feraient la promotion de cet entrepreneuriat et du rôle économique et social qu'elles jouent auprès des instances de décision et auprès du public.

REFERENCES

[1]   Belcourt, Burke M , Lee-Gosselin J. Hélène « Une cage de verre : les entrepreneures au Canada». CCCSF, Ottawa 1991, p 101.

[2]   Chalal. F « les femmes entrepreneures à Bejaïa : Réalité et perspectives », 4 ème journée internationale sur l'entrepreneuriat des jeunes, Université Biskra, 2013, PP1-2.

[3]   Zaam H. « L'entrepreneuriat féminin au Maroc », Faculté polydisciplinaire de Tétouan, Université Abdelmalek Essaidi, Tanger-Tétouan, 2013.

[4]   Constantinidis C ,« Femmes entrepreneures », in Pierre-Marie Chauvin et al., Dictionnaire sociologique del'entrepreneuriat Presses de Sciences Po (P.F.N.S.P.) « Références », 2015, p 287.

[5]   Lebègue, T. « Le processus entrepreneurial des femmes en France », Thèse de Doctorat en Sciences de GestionUniversité du Brest, 2011, p 99.

[6]   Constantinidis C ,« Femmes entrepreneures », in Pierre-Marie Chauvin et al., Dictionnaire sociologique de l'entrepreneuriat Presses de Sciences Po (P.F.N.S.P.) « Références », 2015, p 300.

[7]   Lebègue, T. « Le processus entrepreneurial des femmes en France », Thèse de Doctorat en Sciences de GestionUniversité du Brest, 2011.

[8]   Constantinidis C ,« Femmes entrepreneures », in Pierre-Marie Chauvin et al., Dictionnaire sociologique de l'entrepreneuriat Presses de Sciences Po (P.F.N.S.P.) « Références », 2015, p 295.

[9]   Constantinidis C ,« Femmes entrepreneures », in Pierre-Marie Chauvin et al., Dictionnaire sociologique de l'entrepreneuriat Presses de Sciences Po (P.F.N.S.P.) « Références », 2015, p 296.

[10] Constantinidis C ,« Femmes entrepreneures », in Pierre-Marie Chauvin et al., Dictionnaire sociologique de l'entrepreneuriat Presses de Sciences Po (P.F.N.S.P.) « Références », 2015, p 297.

The impact of artificial intelligence on international relations

Dr. Zakariya Hassan hussein Abu Dames

Ph.D. Ilham Abdul Rahim Al-Alan Jordan-amman

Summary

This study examined the impact of artificial intelligence on international relations in light of new technological developments, as a modern phenomenon that has highlighted both positive and negative aspects. This phenomenon has been increasingly concerning in international affairs and the strategic interests of nations and peoples.

The realistic view of this phenomenon is evolving and increasing at the expense of individuals and their professional interests in particular. In light of these developments, developed countries and the United Nations have been reviewing legal legislations and defining the scope allowed for serving humanity; several scenarios addressing this matter have emerged. And the study concluded its results with recommendations.

Keywords: artificial intelligence, international relations

Introduction

Technology has played multiple roles within different time frames, accelerating in recent decades to the fourth digital technology and the beginnings of the fifth industrial revolution, which contributed to the growth of artificial intelligence capabilities and greater human control over smart machines. This has had a clear impact on international relations in various ways and methods, leading to the reshaping of the international system in new forms. Here, the impact of this technology on international relations and the global system becomes clear; for example, the end of World War II and its consequences played a prominent role in shaping new determinants of global power that led the world into the post-war era, significantly affecting relations between countries.

From here, this study will focus on the impact that artificial intelligence has had on international relations, through a problem that states that there is a clear effect left by artificial intelligence on vast areas of international relations; as artificial intelligence develops, its impact on the structure of international relations and their various developments increases.

Based on the study's problem, several questions have emerged, including the nature of artificial intelligence and the impact it has on international relations. And do the effects of this intelligence lean towards negative or positive aspects?

And what impact can artificial intelligence have on international relations?

Based on the aforementioned, the objective and importance of the study will be clarified to illustrate the role played by artificial intelligence in shaping the structure of relations between countries, on new frameworks that contribute to forming an international system that serves various technological developments. Additionally, it will shed light on one of the most crucial issues in shaping the system of relations

between countries, based on which political tools and international agreements have begun to change in a way that serves this new development.

And all of that with the explanation and clarification of the terms of artificial intelligence, international relations, treaties, and international agreements. With the study relying on the historical method to narrate some historical facts, in addition to the descriptive-analytical method to clarify the scientific material, leading to the results and recommendations.

The concept of artificial intelligence

. Intelligence is the ability to think rationally, act purposefully, and deal effectively with the challenges of the surrounding environment. Thanks to evolution and learning, humans have become capable of solving problems, making decisions, and adapting to situational factors. Artificial intelligence essentially involves extending these capabilities to machines, and thus, artificial intelligence is the ability of a machine to evaluate its surroundings and choose behaviors from a given option that lead to the greatest chance of success.

The concept of artificial intelligence in English is (Artificial Intelligence):

it is a term that refers to the ability to control robots or digital devices using a computer that mimics and simulates the motor and cognitive processes performed by advanced beings like humans. Since the development of the computer in the 1940s, the concept of artificial intelligence has also evolved and entered various fields of life significantly, reaching the point of performing human tasks that require complex abilities such as analysis and deduction, like: perfectly simulating a chess game and proving mathematical theories.

In recent years, there has been significant interest in artificial intelligence and a rapid acceleration in its development. And

accompanying these developments are discussions about the potential social, economic, political, and security impacts of artificial intelligence. And observing the extent of the impact of artificial intelligence on international relations, especially the extent of the impact of technology on the work of ministries, national institutions, government officials, and politicians.

Artificial intelligence has deep roots, dating back to the 1950s as an academic discipline.

The term was officially coined by John McCarthy in 1956. However, this concept did not receive much attention, and by the 1970s and early 1980s, scientists found it difficult to fund artificial intelligence projects in the United States. This field has thrived alongside the rapid development in the field of computing. With the increase in processing power and the data that machines can "learn from," the field of artificial intelligence has developed at an enormous pace, moving from chess strategies to allowing self-driving cars to roam the roads within two decades.

John McCarthy described artificial intelligence as "the science and engineering of making intelligent machines, especially intelligent computer programs." The development of deep learning and neural networks in the late 1990s sparked interest in artificial intelligence and increased optimism about its potential applications in various fields.

McCarthy held a two-month workshop at Dartmouth College, which brought together researchers interested in artificial neural networks. Although it did not lead to any discoveries, it united the founders of artificial intelligence and laid the foundation for future research. It is worth noting that this workshop opened the door to an intensive wave of research in artificial intelligence, leading to the establishment of AI research centers such as Carnegie Mellon and the Massachusetts Institute of Technology, which focused on system creation and problem-solving, such as location identification systems.

In 1997, IBM's chess-playing computer Deep Blue defeated grandmaster Garry Kasparov in a series of controversial matches, and the machine's victory was seen as the first sign that computer makers and software engineers had finally begun to realize their dreams of creating a machine "as smart as" humans. Thus, artificial intelligence is the machine's ability to evaluate its surroundings and choose those behaviors from a given set of options that lead to the greatest chance of success.

And it is important to remember that artificial intelligence took only two decades to move from playing chess to driving cars, and in half a century it will be enough to reach the point of singularity. As technology continues to evolve, concerns about the singularity and the mass proliferation of artificial intelligence are sure to become a major issue in international relations within a few years.

It is worth noting that at the Global Summit on Artificial Intelligence for Good 2023, in his welcoming speech, UN Secretary-General António Guterres said: "Artificial intelligence is making headlines every day, and these headlines are not always positive." Technology leaders and experts warn of the potential risks of artificial intelligence, from the development and use of autonomous lethal weapons to misinformation and disinformation that undermine democracy.

The increasing convergence of artificial intelligence coincided with Guterres' statements, in addition to the recent far-reaching developments that will have implications for the international balance of power; through shaping economic competition, global technological leadership, military capabilities, geopolitical influence, ethical and value-based regulation, as well as the social impact on all of humanity.

Moreover, in 2023, U.S. President Joe Biden briefly summarized the profound impacts of artificial intelligence on humanity, noting that "we will see more technological change in the next ten years - and perhaps the next five years - than we have seen in the past fifty."

The past ... Artificial intelligence accelerates this change.

These statements confirm that artificial intelligence is a force with far-reaching impacts on the future and will accelerate the geopolitical transformation in the world. Over the past twenty years, "traditional artificial intelligence" has become widely prevalent, leading to the operation of advertising algorithms, content recommendations, and social media targeting. Now, artificial intelligence has come to the forefront, as it has been recognized as an innovation that changes the paradigm, not just a passing trend or a cycle of noise.

The concept of international relations.

It is one of the most important branches of political science, through which political phenomena are dealt with in their theoretical and practical dimensions and with various analyses to reach the truth since the organization of human gatherings into states.

In light of addressing bilateral and multilateral interactions between countries and the determinants of international behavior in the realm of foreign policy. So these interactions proceeded in two patterns among different countries.

Throughout the ages, the first was conflictual and the second was cooperative, despite the predominance of the first pattern among international interactions. Even in the second pattern, the cooperative interests between countries prevail. Theories emerged to analyze and explain the phenomena of international conflict and cooperation, especially with the beginning of the twentieth century and beyond, and the emergence of intellectual schools that took an important part in the analysis, starting with idealism and passing through realism and behavioralism... And other schools.

With the expansion of research in this field, it has a definition related to the activities and interactions of states in their various political, economic, ideological, legal, and diplomatic relations outside the framework of the same states. This includes the state's activities in the

external domain, meaning its relations with other states, in addition to international organizations as a new term in the structure of international relations. Each state will act in its external domain in accordance with its internal situation and will adopt its external policy in light of this situation, as a state cannot live in isolation from other states or the external world.

From here, its movement becomes effective in the international arena to achieve its interests, and all of this is related to the two defined patterns of conflict and cooperation, noting that the conflict pattern can take multiple forms and is not limited to the armed aspect only.

Artificial Intelligence and International Relations

The importance of artificial intelligence in international relations lies in the crucial role played by diplomacy and foreign policy in enhancing international cooperation to regulate and develop artificial intelligence. Additionally, artificial intelligence has the ability to significantly boost political efforts and facilitate achieving better outcomes in various diplomatic and foreign endeavors to reach a relatively peaceful consensus among countries.

Among the many uses of artificial intelligence in diplomacy, the ability to provide descriptive analyses of an event during crises for embassies and diplomats, avoiding language barriers, and enabling them to communicate in real-time. Given the high level of uncertainty in decision-making during crises and the likelihood of errors or breaches, the integration of artificial intelligence in this field is expected to succeed if humans retain their authority over the decision-making process.

One important example of the modern use of artificial intelligence in diplomacy is the case of Chinese foreign policy. According to politicians, academics, and bureaucrats in China, artificial intelligence should be viewed as an assistant in the daily decision-making process,

capable of providing inputs, suggestions, and recommendations within seconds.

The administration believes that artificial intelligence could allow for the issuance of political, diplomatic, and international judgments that do not involve human emotions. Since artificial intelligence in China is not yet ready to replace diplomats and government officials.

Among humans, it is undeniable that the government is moving quickly towards this goal, especially with the plan to develop next-generation artificial intelligence.

The Next Generation Artificial Intelligence Development Plan is one of the programs initiated by the Chinese government to support AI education, and the purpose of this effort is to equip students with AI knowledge to better meet the needs of the job market. The government is working on introducing artificial intelligence courses and programs in primary, secondary, and higher education. To provide research and practical training in the field of artificial intelligence, the government has strengthened partnerships between academic institutions and the private sector.

China's artificial intelligence policy, which includes intensifying its research efforts through education and maintaining its competitiveness in the global market, has a strong impact on diplomatic relations and, consequently, on the global power structure. This could lead to a shift in the balance of power in the world and escalate competition between countries, especially regarding technology and the use of artificial intelligence in vital areas such as defense, economy, and infrastructure.

On the contrary, insufficient efforts have been made to apply artificial intelligence in conflict resolution frameworks despite significant progress in resolving conflicts legally. And therefore, there is concern about the proliferation of weapons that operate with artificial intelligence, such as drones.

The first era of drones witnessed the use of drones by states against non-state actors, the second era saw the widespread use of commercial drones by non-state actors against state actors, and the third era of drones will see state-provided drones becoming proxy war weapons everywhere.

With the advancement in making important political decisions using artificial intelligence and information processing, smart warfare is increasingly becoming the norm. This is particularly evident in the fields of AI-driven communication systems, cloud computing, cyber warfare, intelligence analysis, precision-guided airstrikes, predictive analytics, supply chain management, as well as command systems like the Joint All-Domain Command and Control in the United States. Smart warfare has the potential to influence cognitive domain operations, so when paired with psychological operations, it will have cognitive control over the decision-making processes of civilian, military, and political adversaries.

AI researcher Eliezer Yudkowsky says that future AI could become "extremely persuasive" by deploying an industrial virus capable of altering a person's neurology to make them more easily persuaded. Even if current AI cannot yet be considered a weapon of mass destruction, it still possesses deterrent enabling traps.

Foreign policy and international security are also considered hot topics when discussing the use of artificial intelligence and its risks in international politics. Technological developments in the field of artificial intelligence have raised new issues for discussion on the international stage, imposed challenges on international relations, provided a useful tool for diplomats and negotiators, and raised concerns about human rights.

The increasing use of artificial intelligence in foreign policy may also raise concerns, as there will come a time when foreign policy will be ideally decided by artificial intelligence, with merely human oversight.

For example, many researchers are concerned that artificial intelligence may pose potential dangers to humanity in some years.

It is already clear that the multiple aspects of contemporary artificial intelligence and machine learning have a strong impact on how countries handle their foreign policy. For example, China has already unveiled a toolkit for foreign policy related to artificial intelligence alongside the "New Generation Plan," which aims to position China as a global leader in the field of artificial intelligence by 2030 and create a race for the application of artificial intelligence worldwide.

The United States, Canada, and Russia are among the countries that have demonstrated how the AI revolution has permeated their foreign ministries. Artificial intelligence has also emerged as a key tool in many subjects, especially concerning military power such as cybersecurity, threat detection, and combat, as well as sectors like international security, the use of autonomous weapon systems, and monitoring agreements.

It is of utmost importance for predictive analysis to analyze international relations in order to prevent conflicts and implement a peaceful solution. However, artificial intelligence technology is not yet advanced enough to detect and implement strategies for solving international crises and "ruling the world" in the future.

We should consider how artificial intelligence can change the balance of power. Artificial intelligence has the potential to reshape global power dynamics, raising concerns about the growing arms race, especially between the United States and China, who are competing for supremacy in the field of artificial intelligence. There are parallel concerns about an imminent era characterized by rising international competition.

Emerging weapon systems, such as lethal autonomous weapon systems, are intensifying concerns about technological advancements that exacerbate global instability and create one-sided advantages for early

technology developers. Moreover, there is a prevailing assumption that countries skilled in leveraging the impact of artificial intelligence on business and the economy will secure a significant advantage by moving early. In light of this, the role of diplomats becomes increasingly crucial.

Additionally, artificial intelligence can play a role in shaping narratives, managing influence campaigns, and combating misinformation in the field of information warfare. With the increasing recognition of the potential applications of artificial intelligence in the field of information, especially in the context of modern conflicts and geopolitical struggles.

The escalating competition between the United States and China, the wars in Europe and the Middle East, and the changing global alliances have led to the most turbulent geopolitical period since the Cold War.

 At the same time, we are witnessing what may be the most significant innovation since the internet: the rise of generative artificial intelligence capable of producing texts and images, representing a transformative moment that could impact market trajectories and alter the balance of power between nations. The increasing capability of artificial intelligence will profoundly affect issues of growth, productivity, competition, national defense, and human culture. In this rapidly evolving arena, both business leaders and politicians are striving to decode the impacts of this sudden and powerful wave of innovation, explore new opportunities, and navigate new risks.

With the public release of ChatGPT on November 30, 2022, the geopolitical and technological revolutions defining our era collided, and over the past twenty years, "traditional artificial intelligence" has become widely prevalent, leading to the operation of advertising algorithms, content recommendations, and social media targeting. But its power and influence were largely hidden in the applications.

Now, generative AI has taken the lead, with popular user interfaces. Generative AI has been globally recognized as a game-changing innovation, not a passing trend. With the rapid pace of innovation, we have now entered a period we call the years of reciprocal AI, when leaders in every sector are working to understand what generative AI means for them and how they can seize opportunities while mitigating risks.

In this scenario, geopolitical competition remains a constant and ever-present force, shaping interactions between countries. Despite the numerous disagreements on various fronts, the United States, China, and Russia find common ground in recognizing the transformative potential of artificial intelligence and its ability to reshape the global balance of power. In the contemporary geopolitical arena, these major competitors strategically place artificial intelligence at the core of their national strategies. In 2017, Russian President Vladimir Putin emphasized the importance of artificial intelligence, stating: "Artificial intelligence is not just the future of Russia, but the future of all mankind."

The General Secretary of the Communist Party of China, Xi Jinping, also affirmed their commitment to focusing on national strategic needs, with an emphasis on leading scientific and technological research to ensure victory in critical core technologies. And what is meant here is the revolution of artificial intelligence.

In the current scene, as previously expected, the United States and China are emerging as superpowers in the field of artificial intelligence. However, the future trajectory of artificial intelligence is not determined solely by these two countries. In fact, the European Union is also making significant efforts to become a leader in the field of artificial intelligence, while Russia is heavily investing in military applications of the technology.

Although the United States and China stand as the foremost competitors in the field of artificial intelligence, they are also pivotal collaborators in this domain.

According to the 2023 Stanford University AI Index report, despite the escalating geopolitical competition, collaboration in AI research between these two countries has quadrupled from 2010 to 2021. However, it is worth noting that the pace of cooperation has significantly slowed down in recent years, and this trend is expected to continue. In an era where artificial intelligence has become an extremely important field, cooperation, competition, and confrontation between the United States and China extend across economic, technological, political, and military domains.

The complexities of this relationship highlight the multifaceted nature of their interactions in the field of artificial intelligence. While they compete for supremacy and strive for technological advancement independently, they also find common ground in certain collaborative efforts. This delicate dynamic reflects the intertwined nature of global AI development, where cooperation and competition coexist, shaping the landscape of progress and innovation in the field of artificial intelligence.

There are currently more than two thousand companies in the United States working in the field of artificial intelligence. Enhanced efforts by the Chinese state have placed China at the forefront of innovation, and many believe that the country could become a leading expert in the field of artificial intelligence in the world by 2030. And if it manages to do so, it is likely that China will work to shape global policy until 2100.

And despite both the United States and China enjoying strong infrastructure support and the ability to spend vast amounts of money on research and development. This will certainly lead to a unipolar or bipolar model of international relations, where the Eastern and Western giants impose international political laws as they do on a limited scale today.

The military and economic power of the United States, along with China's increasing dominance as the world's factory, has made other state actors wary of them, as many are subject to their needs and demands. And if the two succeed in seizing the initiative in the field of artificial intelligence, it could lead to a technological race akin to a Cold War at the top, leaving other countries struggling to catch up.

Given the almost continuous state of tension that India experiences with China, its emergence as a leader in artificial intelligence could severely damage India's interests, and even its sovereign territories. India has managed to keep the Chinese away from its borders through a combination of military strength, strategic efforts, and diplomacy. However, if China gains leadership in the field of artificial intelligence, the balance may shift in favor of the People's Liberation Army, enabling it to implement long-range war strategies. Therefore, India needs to strengthen its artificial intelligence sector and engage actively to ensure its interests remain protected.

Initial steps have been taken in this direction.

The Indian research center NITI Aayog issued a national strategy for artificial intelligence in 2018, focusing on five sectors: healthcare, agriculture, education, smart cities and infrastructure, and smart mobility and transportation. While the defensive and foreign angles remain untouched for now, the internal development of local artificial intelligence can go a long way in enhancing India's position in international relations.

The emergence and rapid spread of artificial intelligence have begun to change fundamental international structures and processes in many ways. One of the important fields is the military field, where artificial intelligence systems are trained to respond to threats. It is known that South Korea has deployed such a system of automated weapons on its troubled shared border with North Korea.

The ever-changing military landscape has always been a driving force behind a changing international order - after the fall of the Soviet Union, America emerged as the leader of a unipolar world, backed by its military (and economic) power. As discussed above, artificial intelligence now offers the same capabilities that nuclear power once provided in the field of international relations.

Artificial intelligence can also change the game in the field of espionage and intelligence, starting from the manufacture of destabilizing fake news and campaigns against hostile countries to preventing human agents from operating within the country through surveillance.

On a simpler level, artificial intelligence can help diplomats manage the increasing volume of information by extracting patterns and insights that enable better decision-making. Among other potential applications is "scenario simulation," where different strategies and possibilities are input into the AI system, which then calculates the potential outcomes.

It is also important to note that artificial intelligence in itself has become a subject of concern, controversy, and cooperation in international relations. The United Nations, the highest body of international relations in the world today, has begun holding meetings and discussing the nature and impacts of artificial intelligence on the world.

In relation to the European Union, a historic achievement was made in the early days of December when the European Commission, the Parliament, and the member states reached an agreement on the AI Act, which represents a long-awaited reform and has been described as "the first comprehensive legal framework for artificial intelligence in the world." While the final text is still pending, it is likely that this agreement will be ratified before the European Union elections in 2024.

And although the European Union has fewer and smaller AI companies compared to the United States or China, the EU AI Act carries significant commercial and geopolitical implications.

The population of the European Union is 450 million, making it the largest demographic bloc in the West and a major global trade player. The proposed regulatory framework in the AI Act has the potential not only to shape the development and adoption of AI within the European Union but also to exert influence on a global scale.

The proposed text includes extraterritorial applications for both providers and users, indicating that the outlined regulatory measures could extend beyond the borders of the European Union. While the European Union may have inherent limitations in leading artificial intelligence due to the size and scope of its private AI companies, the AI Act positions the EU as a significant player in the global AI landscape.

 The impacts are widespread, which could affect how artificial intelligence is developed and adopted worldwide. By integrating applications beyond territorial borders, the AI Act emphasizes the ability to influence and regulate AI-related activities outside its direct jurisdiction. The regulatory standards set by the European Union could become a benchmark for the development of responsible and ethical artificial intelligence, potentially shaping the path for global AI governance.

As for the United Arab Emirates, it launched an ambitious strategy for artificial intelligence and appointed Abu Dhabi as the world's first Minister of Artificial Intelligence in 2017. With a focus on rapid innovation in the field of artificial intelligence, the UAE has established training programs in artificial intelligence with the University of Oxford and founded the Mohammed bin Zayed University of Artificial Intelligence. The United Arab Emirates' artificial intelligence strategy focuses on a different approach than its counterparts, aiming to become "the most prepared country for artificial intelligence in the world." The

UAE could provide alternative AI ecosystems for non-superpower nations, becoming a crucial partner and a competitive arena for the United States and China.

The United Arab Emirates has made extensive preparations in the field of artificial intelligence.

It is worth noting that AI and cloud computing companies based in the UAE have recruited talent from various countries, including Israel, Indonesia, China, Singapore, and others. This recruitment campaign is part of a major investment exceeding $10 billion dedicated to enhancing artificial intelligence within the country. In the absence of a local semiconductor manufacturing industry, the United Arab Emirates strategically utilized its substantial capital resources to acquire thousands of advanced chips, with a particular focus on purchases from Western countries.

This approach emphasizes the state's commitment to staying at the forefront of technological advancement, even in areas that may lack local production capabilities. Strategic investment in both human capital and technological infrastructure positions the United Arab Emirates as a prominent player in the global artificial intelligence landscape, demonstrating its commitment to fostering innovation and excellence in the field of AI.

Public opinion and opposition are not something that can be easily ignored. No matter the state's strategic interests and benefits from artificial intelligence, public discourse can be extremely powerful in shaping the future of AI, just as it was with nuclear weapons. A number of prominent industrialists and scientists, including Stephen Hawking, Bill Gates, and Elon Musk, have expressed their concerns about the effects of artificial intelligence on humans.

And although many reject such a terrifying scenario as a dark science fiction, it is important to remember that artificial intelligence has taken

only two decades to move from playing chess to driving cars. And even half a century might be enough to reach the singularity. And if technology continues on its current path, concerns about the singularity and the mass proliferation of artificial intelligence are likely to become a major issue in international relations within a few years.

Conclusion

There is no doubt that the rapid technological developments have contributed to the increase of complex technologies in the world, especially among major countries, which has strengthened their control over the world. This is particularly true since the nature of their strategic interests is the primary basis for their leading position, indifferent to the rest of the world. Thus, the use of technology in its various forms becomes fundamental to the nature of their relations with the rest of the world, making the international scene more opaque and complex. Future predictions indicate a state of instability and increased risks. Therefore, the results were as follows:

1- There will be a positive impact on all countries and peoples of the earth if technology and these techniques are used through continuous cooperation, and this will inevitably reflect on all countries of the world.

2- Building on the first result, if this technology, with its various techniques such as artificial intelligence, is used negatively, it will complicate and endanger the international scene, potentially leading to widespread destruction that will affect all countries and their peoples.

3- Activating the role of the United Nations as the guardian of this world and its affairs, and as the highest international body in concluding agreements and treaties that limit the spread of the negative

aspects of artificial intelligence technology among various countries of the world.

4- The presence of significant competition that may increase over time to possess artificial intelligence technology, which could disrupt the international scene in the future.

Recommendations :

1- Creating a global climate aimed at harmony and alignment towards the benevolent nature that serves the global human, which requires swift action from international entities and legal persons to achieve various positive goals.

2- Benefit from the expertise and knowledge of advanced countries in this field by sending scientific missions to prepare qualified and trained young cadres to handle this technology.

3- Concluding bilateral agreements between countries for the optimal use of such technologies to protect the world's nations from any possible dangers.

References

1- Artificial Intelligence. Kuwait Institute of Banking Studies: March 2021, via the electronic link: https://kibs.edu.kw/wp-content/uploads/2021/10/March-2021-Artificial-Intelligence.pdf

2- Amrish Prithvi, (2020) Artificial Intelligence: A New Driving Horse in International Relations and Diplomacy. Diplomatist. Available at: https://diplomatist.com/2020/05/13/artificial-intelligence-a-new-driving-horse-in-international-relations-and-diplomacy/ (Accessed: December 19, 2023). 1b

3- Yebson, H. And Korman, M. (2016). Driverless cars: smart cars and the road ahead. MIT Press

4- Niharika Rawat, artificial intelligence and international relations. Through the electronic link:
Context: https://chss.org.in/artificial-intelligence-and-international-relations
Text to translate: https://chss.org.in/artificial-intelligence-and-international-relations

5- Artificial Intelligence and International Affairs, Australian Institute of International Affairs, via the following link:
https://www.internationalaffairs.org.au/australianoutlook/artificial-intelligence-and-international-affairs

6- Joe Biden, (2023). "President Biden's remarks on artificial intelligence, The White House, retrieved from: https://www.whitehouse.gov/briefing-room/speeches-remarks/2023/07/21/remarks-by-president-biden-on-artificial-intelligence/ (retrieved Access it: January 20, 2024). 1A

7- Goldman Sachs, (2023). "The Generative World Order: Artificial Intelligence, Geopolitics, and Power." Taken from: https://www.goldmansachs.com/intelligence/pages/:~:text=The%20emergence%20of%20generative%20AI,national%20defense%20and%20human%20culture (Accessed: January 20, 2024). 1b

8- Cornelio Piola, (2019) "Diplomacy in the Age of Artificial Intelligence - Royal Elcano Institute," Royal Elcano Institute. Available at: https://www.realinstitutoelcano.org/en/analyses/diplomacy-in-the-age-of-artificial-intelligence/ (Accessed on: January 20, 2024). 1b

Sebastian Wenning, (2023) "What is the Impact of Artificial Intelligence Strategy on Potential Outcomes of Chinese Foreign Policy and Economic Development?", an article in the journal Advances in Social Sciences Research Journal. doi: 10.14738/assrj.104.14416. 1A

10- Katrina E. Here and others, (2019). "Mapping the challenges and opportunities imposed by artificial intelligence on the performance of diplomacy": Diplo Foundation

11- Cade Metz, (2023) "How Artificial Intelligence Could Destroy Humanity," The New York Times. Available at: https://www.nytimes.com/2023/06/10/technology/ai-humanity.html (Accessed on: January 20, 2024). 1A

12- Gabriel Selini, Lorenzo Molina (2022), The Geopolitical Implications of Artificial Intelligence: Consequences for International Relations. Through the website: https://mondointernazionale.org/focus-allegati/the-geopolitical-effects-of-

artificial-intelligence-the-implications-on-international-relations

13- George Krassadakis, (2023), "How is Artificial Intelligence Changing the Global Geopolitical Order?", Medium. Retrieved from: https://medium.com/60-leaders/how-is-ai-changing-the-global-geopolitical-system-528e8ac29c1f (Accessed: January 20, 2024). 2b

14- Roberts, H., Cowles, J., Morley, J., Tadeo, M., Wang, V., and Floridi, L. (2021). The Chinese approach to artificial intelligence: An analysis of policy, ethics, and regulation. Artificial Intelligence and Society, 36 (1), 59-77

15- Generation, A. (2020). Whoever leads artificial intelligence in 2030 will rule the world until 2100. Taken from –
https://www.brookings.edu/blog/future-development/2020/01/17/whoever-leads-in-artificial-intelligence-in-2030-will-rule-the-world-until-2100/

16- Wamakanti, K. (2020). Artificial Intelligence in the Chinese Military: Current Initiatives and Their Implications for India. The Observer Research Foundation

17- - Velez-Green, A. (2015). Foreign Policy Article: The South Korean Sentinel – The "Killer Robot" to Prevent War. Retrieved from
https://www.lawfareblog.com/foreign-policy-essay-south-korean-sentry%E2%80%94-killer-robot-prevent-war

18- Dicks, A. (2018) Comprehensive Information Awareness in China: Second-Order Challenges. Taken from
https://www.lawfareblog.com/chinas-total-information-awareness-second-order-challenges

- Niharika Rawat, artificial intelligence and international relations. Through the electronic link:
Context: https://chss.org.in/artificial-intelligence-and-international-relations
Text to translate: https://chss.org.in/artificial-intelligence-and-international-relations

- Artificial intelligence. Institute of Banking Studies - State of Kuwait: March 2021, via the electronic link: https://kibs.edu.kw/wp-content/uploads/2021/10/March-2021-Artificial-Intelligence.pdf

- Yabson, H. And Korman, M. (2016). Self-driving cars: smart cars and the road ahead. MIT Press

- Amarish Prithvi, (2020) Artificial Intelligence: A New Driving Horse in International Relations and Diplomacy, Diplomatist:
 https://diplomatist.com/2020/05/13/artificial-intelligence-a-new-driving-horse-in-international-relations-and-diplomacy/ (Accessed: December 19, 2023). 1b

- Previous reference: Artificial Intelligence: Institute of Banking Studies (2021)

- Niharika Rawat, artificial intelligence and international relations. Through the electronic link:
Contexto: https://chss.org.in/artificial-intelligence-and-international-relations
Texto a traducir: https://chss.org.in/artificial-intelligence-and-international-

relations

- Artificial Intelligence and International Affairs, Australian Institute of International Affairs, via the electronic link:
Contexto: https://www.internationalaffairs.org.au/australianoutlook/artificial-intelligence-and-international-affairs/
Texto a traducir:
https://www.internationalaffairs.org.au/australianoutlook/artificial-intelligence-and-international-affairs/
- Joe Biden, (2023). "President Biden's Remarks on Artificial Intelligence, The White House, retrieved from: https://www.whitehouse.gov/briefing-room/speeches-remarks/2023/07/21/remarks-by-president-biden-on-artificial-intelligence/ (accessed: January 20, 2024)." 1A

- Goldman Sachs, (2023). "The Generative World Order: Artificial Intelligence, Geopolitics, and Power." Taken from: https://www.goldmansachs.com/intelligence/pages/:~:text=The%20emergence%20of%20generative%20AI,national%20defense%20and%20human%20culture (Accessed: January 20, 2024). 1b
- Cornelio Biola, (2019) "Diplomacy in the Age of Artificial Intelligence - Royal Elcano Institute," Royal Elcano Institute. Available at: https://www.realinstitutoelcano.org/en/analyses/diplomacy-in-the-age-of-artificial-intelligence/ (Accessed on: January 20, 2024). - Amarish Preethi, (2020) Artificial Intelligence: A New Leading Horse in International Relations and Diplomacy, Diplomat. Available at: https://diplomatist.com/2020/05/13/artificial-intelligence-a-new-driving-horse-in-international-relations-and-diplomacy/ (Accessed on: December 19, 2023). 1b

- Sebastian Wenning, (2023) "What is the Impact of Artificial Intelligence Strategy on Potential Outcomes of Chinese Foreign Policy and Economic Development?", article in the journal Advances in Social Sciences Research Journal. doi: 10.14738/assrj.104.14416. 1A

- Previous reference: Artificial Intelligence and International Affairs 1b
- Previous reference: Artificial Intelligence and International Affairs: Australian Institute of International Affairs.

- Katrina E. Here and others, (2019). Mapping the challenges and opportunities imposed by artificial intelligence on the performance of diplomacy. Diplomatic Institution

- Cade Metz, (2023) "How Could Artificial Intelligence Destroy Humanity?", The New York Times. Available at:

https://www.nytimes.com/2023/06/10/technology/ai-humanity.html (Accessed on: January 20, 2024). 1A

- Katrina E. Here and others, (2019). "Mapping the challenges and opportunities imposed by artificial intelligence on the performance of diplomacy." Diplomacy Foundation. Please provide the text you would like me to translate.

- Gabriel Selini, Lorenzo Molina (2022), The Geopolitical Implications of Artificial Intelligence: Consequences for International Relations. Across

Website: https://mondointernazionale.org/focus-allegati/the-geopolitical-effects-of-artificial-intelligence-the-implications-on-international-relations

- Goldman Sachs, (2023). "The Generative World Order: Artificial Intelligence, Geopolitics, and Power." Taken from:
https://www.goldmansachs.com/intelligence/pages/:~:text=The%20emergence%20of%20generative%20AI,national%20defense%20and%20human%20culture (Accessed: January 20, 2024). 1b

- Radina Gigeva, (2017). "Who does Vladimir Putin think will rule the world?" Retrieved from: https://edition.cnn.com/2017/09/01/world/putin-artificial-intelligence-will-rule-world/index.html (Accessed: January 20, 2024). 1A

- Bloomberg News, (2023). "Xi vows victory in the tech battle after U.S. chip restrictions." Retrieved from:
https://www.bloomberg.com/news/articles/2022-10-16/china-s-xi-pledges-victory-in-tech-battle-after-us-chip-curbs (Accessed: January 20, 2024). 1b

- George Krassadakis, (2023), "How is Artificial Intelligence Changing the Global Geopolitical System?", Medium. Retrieved from: https://medium.com/60-leaders/how-is-ai-changing-the-global-geopolitical-system-528e8ac29c1f (Accessed: January 20, 2024). 2b

- Gabriel Selini, Lorenzo Molina (2022): Op. cit.

- - Roberts, H., Cowles, J., Morley, J., Tadeo, M., Wang, V., and Floridi, L. (2021). The Chinese approach to artificial intelligence: Analysis of policy, ethics, and regulation. Artificial Intelligence and Society, 36(1), 59-77

- Generation, I. (2020). Whoever leads artificial intelligence in 2030 will rule the world until 2100. Taken from –
https://www.brookings.edu/blog/future-development/2020/01/17/whoever-leads-in-artificial-intelligence-in-2030-will-rule-the-world-until-2100/.

- And you, K. (2020). Artificial Intelligence in the Chinese Military: Current Initiatives and Their Implications for India. The Observer Research Foundation

- Velez-Green, A. (2015). Foreign Policy Article: The South Korean Sentinel – The "Killer Robot" to Prevent War. Retrieved from https://www.lawfareblog.com/foreign-policy-essay-south-korean-sentry%E2%80%94-killer-robot-prevent-war

- Dix, A. (2018) Comprehensive Information Awareness in China: Second-Tier Challenges. Taken from https://www.lawfareblog.com/chinas-total-information-awareness-second-order-challenges.

- Gabriel Selini, Lorenzo Molina (2022): Op. cit.

- Gabriel Selini, Lorenzo Molina (2022): Op. cit.

Publication

Democratic Arab Center
For Strategic, Political & Economic Studies
Berlin / Germany

Democratic Arab Center
For Strategic, Political & Economic Studies
Berlin / Germany

Email
book@democraticac.de

The views and opinions expressed are those of the authors and do not necessarily reflect the official policy or position of the Arab Democratic Center