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Volume 5 Number 2 June 2023

CONTENTS

- Leonardo Piccinetti, Donatella Santoro, Mohamed Ramadan A. Rezk**
THE KAROLINSKA INSTITUTE INNOVATION ECOSYSTEM FOR CANCER STARTUPS: LESSONS LEARNED AND BEST PRACTICES 10
- Hudson Mutandwa and Shikha Vyas-Doorgapersad**
PUBLIC PRIVATE PARTNERSHIPS TO IMPROVE WATER INFRASTRUCTURE IN ZIMBABWE 24
- Adetayo O. Adeniran, Mobolaji S. Stephens, Ikpechukwu Njoku**
ASSESSMENT OF BASIC AIRLINE SERVICE IN NIGERIA 38
- John Mamokhere.**
SENDING A MESSAGE TO THE TOP: THE INFLUENCE OF SERVICE DELIVERY PROTESTS ON SERVICE DELIVERY PLANNING IN SOUTH AFRICA MUNICIPALITIES 60
- Hamed A. Ead, Mohamed Ramadan A. Rezk, Leonardo Piccinetti, Donatella Santoro, Abdallah Elbadry, Mahmoud M. Sakr.**
INTEGRATING ENTREPRENEURSHIP INTO CHEMISTRY EDUCATION – CAIRO UNIVERSITY POST-GRADUATE STUDENTS' CASE STUDY 72
- Adetayo Olaniyi Adeniran, Joseph Mosunmola Muraina, Joseph Olanrewaju Ilugbami, Adedayo Ayomide Adeniran.**
GOVERNMENT POLICY: MEANING, TYPES, MANIFESTATIONS, THEORIES, AND POLICY CYCLES 83

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THE KAROLINSKA INSTITUTE INNOVATION ECOSYSTEM FOR CANCER STARTUPS: LESSONS LEARNED AND BEST PRACTICES*

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Abstract. The Karolinska Institute's cancer startup innovation ecosystem is a dynamic network of stakeholders who collaborate to develop and commercialise innovative ideas and technologies in cancer research and treatment. This ecosystem has been successful in cultivating an environment of innovation and entrepreneurship, producing several successful startups in the cancer research and treatment space. This paper aims to provide a systematic review of the lessons learned and best practices from the Karolinska Institute innovation ecosystem for cancer startups. The review includes a comprehensive SWOT analysis, as well as insights from interviews with stakeholders from academia, industry, and government. The SWOT analysis identified several key strengths of the Karolinska Institute innovation ecosystem for cancer startups. The interview methodology for this study involved a semi-structured approach, with open questions designed to elicit detailed and nuanced responses from the participants. The Interviews and SWOT analysis identified several key of success of the Karolinska Institute innovation ecosystem for cancer startups is due to a number of key factors, including strong leadership, collaboration, funding mechanisms, supportive policies, and infrastructure. Effective leadership is required to guide the ecosystem and foster an innovation culture. Collaboration among stakeholders is critical for knowledge sharing, resource allocation, and coordination. Funding mechanisms and infrastructure are critical for supporting R&D activities and providing startups with the resources they need to grow and succeed. To protect and incentivize innovation, supportive policies such as intellectual property laws and regulatory frameworks are required. In addition, the paper discovered that incubation programmes are critical to the success of cancer startups in the Karolinska Institute innovation ecosystem. These programmes connect startups with resources, mentorship, and networks that are critical to their growth and development.

Keywords: Karolinska Institute; cancer startups; innovation ecosystem; SWOT analysis; incubation programmes

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1. Introduction

1.1. Innovation ecosystem and its importance

The literature on innovation ecosystem focuses mostly on the concept and importance which has been widely used, often with different qualifiers such as national innovation systems (Lundvall, 1992) or sectoral innovation systems (Breschi and Malerba, 1997). The term "innovation ecosystem" refers to a diverse group of players who work together to produce innovations that add value (Adner, 2006; de Vasconcelos Gomes et al., 2018). The innovation ecosystem is characterized as a network of interrelated organizations, centered around a core firm or platform, that includes both producers and users, and is dedicated to the creation of novel value through innovation (Autio and Thomas, 2014). In recent years, the idea of an innovation ecosystem has drawn more and more attention as a means of comprehending the complex and dynamic connections between the various actors participating in the innovation process.

Further, the literature analyses the primary goal of an innovation ecosystem, which is described as a network of interconnected businesses focused on a central company or platform and including both production and use-side actors (de Vasconcelos Gomes et al., 2018). The main goal of an innovation ecosystem is to promote collaboration and exchange among its members to speed up innovation and generate economic value. Innovation plays a critical role in the success and growth of organizations across various industries. It is widely recognized as a key driver of economic development, as it enables firms to create new products, services, and processes that improve efficiency, increase productivity, and enhance customer satisfaction (Dutta and Bilbao-Osorio, 2012). The importance of an innovation ecosystem lies in its ability to create an environment that supports and encourages innovation. By bringing together a diverse set of actors, an innovation ecosystem provides access to resources, knowledge, and expertise that may not be available to individual actors. Through collaboration and knowledge transfer, the ecosystem can help to break down silos and foster innovation across different sectors and disciplines. There is a growing body of academic literature on the concept of innovative ecosystems and their importance for driving economic growth and innovation. One (Cooke, 2001).

There are indeed studies that emphasize the role of open innovation and the importance of knowledge spillovers in innovation ecosystems. (Chesbrough, 2003). Innovation is no longer confined within the boundaries of individual firms, but rather is distributed across a network of actors who collaborate and exchange knowledge to create new products and services. More recently, scholars have focused on the role of digital technologies and platforms in innovation ecosystems. They have argued that digital platforms can facilitate collaboration and exchange by connecting actors across different geographies and sectors. They have also highlighted the importance of data and analytics in creating new opportunities for innovation and economic value creation. Overall, the academic literature on innovation ecosystems underscores the importance of collaboration, exchange, and openness for driving innovation and economic growth.

1.2. Karolinska Institute innovation and incubator system

A Swedish medical university Karolinska Institute (KI) has been developing its own innovation-supporting system since the late 1990s (Stone and Frank, 2001). The Karolinska Institute is known for its innovative research in various fields of medicine and health sciences. This system consists of a highly integrated group of organisations that select medical discoveries from the Nordic countries and turn them into spin-offs that KI's incubator directly controls and finances for up to 10-15 years with significant funds, in addition to offering business support services to the incubated businesses (Baraldi & Ingemansson Havenvid, 2016), KI's incubator also offers highly specialised drug discovery services (Baraldi et al., 2014).

A programme for entrepreneurship at the Karolinska Institute helps researchers and students turn their ideas into profitable businesses. The initiative helps researchers and students launch their own businesses by offering mentoring, training, and money. The Karolinska Institute is home to a number of incubators and innovation hubs that offer resources and assistance to early-stage businesses. One of the key ways that the Karolinska Institute supports startups is through its incubation programs. The Karolinska Institutet Innovations AB (KIAB) incubator, for example, provides startups with access to office and laboratory space, as well as business development support, mentorship, and networking opportunities. The incubator also offers access to funding sources and access to the Karolinska Institute's network of researchers and clinicians (KI Innovations, 2022). These resources include access to equipment, money, mentorship, and networking opportunities in addition to lab space (KI Innovations, 2022).

KI's incubator combines elements of numerous models due to its excessive focus on science and a particular industry (biomedical), maximum intervention in start-ups, and rigorous emphasis on picking winning ideas (Bergek & Norrman, 2008). Furthermore, KI's incubator includes activities that go beyond those of a normal incubator, such as actual product development and international operations (Baraldi & Ingemansson Havenvid, 2016). The Karolinska Institute has contributed to the development of a number of cancer startups with a focus on the invention of cutting-edge technologies and cancer treatments to enhance patient care. These firms, many of which are founded on research from the Karolinska Institute, demonstrate the institute's dedication to cancer care innovation. DRIVE is a life science incubator program run by KI Innovations, a subsidiary of Karolinska Institutet. The program is designed to support early-stage life science companies and accelerate the development of innovative healthcare products and services. Cancer startups are companies that are focused on developing innovative technologies and treatments to improve cancer diagnosis, treatment, and patient outcomes. These startups are often founded by researchers or entrepreneurs who have identified a need or opportunity in the cancer space and are working to develop a solution.

The Karolinska cancer startups ecosystem is one example of how these principles can be applied to a specific domain, with the goal of improving patient outcomes and creating economic value. In the case of the Karolinska cancer startups ecosystem, the objective is to improve cancer treatment and patient outcomes. By providing funding mechanisms, research partnerships, knowledge transfer, and networking opportunities, the ecosystem supports the development of innovative solutions to address the complex challenges of cancer research and treatment. The ecosystem also has the potential to attract and retain talent, create new jobs, and drive economic growth in the region. The innovation ecosystem has a relational perspective in which internal and external environment exchange inputs and outputs, feedback each other and collaboratively design innovative solutions (Torres Valdés et al., 2018). In business, the ecosystem may be formed around a product, service, process, customer, industry, and platform (Kumar et al., 2015). Health care and life science incubators are highly specialized and have close ties to academia (Schwartz and Hornych, 20, Schwartz and Hornych, 2010). Even though there are many "bio-incubators" in Europe (Ehret et al., 201), there isn't much study that specifically focuses on The Karolinska cancer incubator.

1.3. Examples of successful startups that have emerged from the Karolinska cancer ecosystem.

The Karolinska Institute plays a vital role in incubating and supporting startups in the field of cancer research and treatment. The institute provides a range of resources and programs to help entrepreneurs and researchers develop and commercialize their innovative ideas. The Karolinska cancer startups ecosystem has produced several successful startups that have made significant contributions to cancer research and treatment Table (1).

Table 1. Examples of successful startups that have emerged from the Karolinska cancer ecosystem

Startup (Year of established)	About Startup	Main Products	Value
Aprea Therapeutics (2003)	Aprea Therapeutics is a biopharmaceutical company that develops and commercializes novel anticancer therapeutics. https://www.aprea.com/	The company's lead product, eprenetapopt, is a small molecule that induces apoptosis (cell death) in cancer cells and is currently being evaluated in clinical trials for the treatment of solid tumors and hematologic malignancies.	Over \$200 million in funding
Oncopeptides (2010)	Oncopeptides is a pharmaceutical company that develops and commercializes innovative drugs for the treatment of cancer. https://www.oncopeptides-us.com/en	The company's lead product, melflufen, is a first-in-class peptide-drug conjugate that is currently being evaluated for the treatment of multiple myeloma.	Over \$1 billion in funding
Forendo Pharma (2013)	Forendo Pharma is a clinical-stage biopharmaceutical company that develops therapies for gynecological conditions and cancer. http://www.forendo.com/	The company's lead product, FOR-6219, is a small molecule inhibitor of HSD17B1, which is being developed for the treatment of endometriosis and breast cancer.	Over \$40 million in funding

2. Research Methodology

A comprehensive literature review was conducted to gather information on the concept of innovation ecosystems, their importance, and factors contributing to their success. Sources used included academic articles, research reports, and online resources from reputable organizations. Additionally, interviews were conducted with key stakeholders involved in the Karolinska cancer startups ecosystem, including representatives from Karolinska Institute and Karolinska University Hospital, as well as entrepreneurs and investors. The insights gathered from these interviews provided valuable firsthand perspectives on the innovation ecosystem and its impact on cancer research and treatment.

the study employed a SWOT analysis to identify the ecosystem's strengths, weaknesses, opportunities, and threats. The analysis considered the findings from the literature review, interviews, and survey to identify the ecosystem's internal and external factors that impact its success. The SWOT analysis provided a comprehensive understanding of the ecosystem's current status and identified areas for improvement.

In addition to the SWOT analysis, a semi-structured interview, with open questions designed to elicit detailed and nuanced responses from the participants were conducted with key stakeholders involved in the Karolinska cancer startups ecosystem. Participants were chosen based on their experience, knowledge, and involvement in the ecosystem. These stakeholders included representatives from Karolinska Institute and Karolinska University Hospital, as well as entrepreneurs and investors.

The questions were designed to be broad and non-leading, allowing participants to express their thoughts and ideas freely, the survey including the following questions:

1. What is your role within the Karolinska cancer startups ecosystem?
2. Do you think the ecosystem plays an important role in driving innovation in cancer research and treatment?
3. Have you seen any examples of successful products or services developed within the ecosystem?
4. Does the ecosystem facilitate collaboration between different stakeholders?

5. Do you think the ecosystem has the potential for future innovation and success?
6. Have you faced any challenges or obstacles within the ecosystem?
7. Do you see the ecosystem evolving in the coming years?
8. Would you recommend the ecosystem to other entrepreneurs looking to start a business in the field of cancer research and treatment?
9. Do you think the ecosystem provides valuable resources and support for startups in the field of cancer research and treatment?
10. Do you believe the ecosystem has contributed to the advancement of cancer research and treatment?

Overall, the research methodology for this paper involved a combination of interviews and SWOT analysis, the combination of these methods allowed for a comprehensive analysis of the Karolinska Institute innovation ecosystem for cancer startups, drawing on both academic literature and stakeholder insights. The findings and best practices identified in this study can provide valuable guidance for policymakers, entrepreneurs, and other stakeholders seeking to promote innovation and drive economic growth in the field of cancer research and treatment.

3. Results and discussions

3.1. Innovation ecosystem of Karolinska Innovation cancer startups

The innovation ecosystem of Karolinska cancer startups is a collaborative network of researchers, entrepreneurs, investors, and industry partners focused on developing innovative technologies and solutions to improve cancer care. This ecosystem is supported by the Karolinska Institute, Karolinska University Hospital, and the Swedish Cancer Society, among others. Karolinska Institutet (KI) has a strong focus on cancer research, with a number of world-renowned research groups and centers dedicated to studying cancer biology, diagnosis, and treatment, the Karolinska cancer startups ecosystem is a complex network of individuals, organizations, and institutions that are involved in the creation, development, and commercialization of new cancer-related technologies. The ecosystem comprises various components that work together to foster innovation, collaboration, and entrepreneurship. Some of the key components of the ecosystem of The Karolinska Institute that supports innovation and entrepreneurship in the cancer include:

1. Karolinska Institute: The Karolinska Institute is a world-renowned medical university that is at the center of the ecosystem. It provides expertise, resources, and infrastructure for researchers, entrepreneurs, and clinicians to develop new cancer-related technologies and therapies. The Karolinska Institute also plays a crucial role in training the next generation of cancer researchers and clinicians (Stone & Frank, 2001). More than 350 research groups are part of the larger umbrella organization Cancer Research KI at Karolinska Institutet. By bringing together leading cancer researchers from many fields, the goal is to merge cancer research and clinical oncology to contribute to the development of novel scientific findings that may be swiftly applied to clinical practice for the benefit of patients and society.

2. A business incubator (Drive): The Karolinska Innovation Incubator provides early-stage cancer startups with access to office space, mentorship, and funding (Incubator DRIVE - KI Innovations, 2022). Karolinska Innovation offers incubation facilities for cancer startups at the Karolinska Institute campus in Stockholm, Sweden. These facilities provide resources and support to startups and early-stage companies developing new technologies and treatments for cancer care that match with the incubators provide place which is both physical and organizational (Smith & Zhang, 2012)) and provides logistical support to start-ups as well as the opportunity to collaborate with other organizations (Oakey, 2012: 68).

3. The Proof-of-Concept program (POC): Karolinska Innovation offers funding opportunities for cancer startups through its grant programs the Proof-of-Concept program (POC). The PoC program provides funding of up to

SEK 500,000 (approximately USD 60,000) to support the development of a proof of concept or prototype for a novel product, technology, or service in the life sciences. These programs provide funding for early-stage development of cancer innovations.

4. Swedish public funds (Vinnova & Almi) the two most significant Swedish enterprises that are sources of financing for innovation projects and new companies are Vinnova and Almi. Vinnova, Sweden's innovation agency, has a large number of grants and programmes available for new companies and ideas that are developed from academia. Vinnova provides funding for evaluation/verification of business ideas and projects. Almi provides various forms of grants, loans and venture capital for companies in the start-up phase. Almi is a governmental financing body represented throughout Sweden via regional subsidiaries. Almi provides consultation, mentorship and different forms of financing (Innovation financing, 2023).

5. Karolinska University Hospital: The Karolinska University Hospital is a leading cancer treatment center that provides access to state-of-the-art cancer care and expertise. It collaborates closely with researchers and entrepreneurs to develop new cancer-related technologies and therapies and to improve patient outcomes (Kihlander & Gravenius, 2022).

6. Karolinska Development AB: is a Swedish life sciences investment company focused on developing and commercializing innovative medical products. The company was founded in 2003 and is headquartered in Stockholm, Sweden. The company is focused on investing in early-stage life science companies with high potential for commercial success, including those developing innovative cancer therapies. In addition to providing funding, Karolinska Development offers startups access to its extensive network of experts in various areas of cancer research and development, including clinical trials, regulatory affairs, and business development (Karolinska Development, 2023); see Figure 1 below.



Figure 1. Overview of the innovation ecosystem of Karolinska cancer startups

3.2. SWOT analysis of innovation ecosystem of Karolinska cancer startups

The innovation ecosystem of Karolinska cancer startups is a dynamic, multifaceted system that encourages the development of innovative treatments for cancer. Some of the key participants in this ecosystem include researchers, physicians, industrial partners, regulatory and legal experts, business development specialists, and Karolinska Innovation and Karolinska Development.

In this case, a SWOT analysis can be used to help identify the advantages, disadvantages, opportunities, and threats of the innovation ecosystem.

The SWOT analysis of Karolinska cancer startups' innovation environment indicates numerous critical strengths, weaknesses, opportunities, and threats that impact cancer entrepreneurs' capacity to develop and commercialize innovative approaches.

The report shows Karolinska Institutet's world-class research capabilities as well as the supportive ecosystem that gives access to funds, business partnerships, and specialised manpower. However, the investigation reveals a number of problems, such as limited resources, strong competition, and lengthy regulatory approval.

Emerging technology, increasing markets, and personalized medicine are among the opportunities indicated in the SWOT analysis. However, the report identifies several threats, including as legislative changes and cybersecurity issues.

Overall, the SWOT analysis emphasizes the complex and dynamic character of the Karolinska cancer startups' innovation environment. While there are numerous strengths and opportunities to encourage innovation and growth, there are also numerous challenges and risks that must be addressed for cancer entrepreneurs to succeed.

Cancer startups can maximize their ability to produce innovative approaches that improve cancer outcomes and reduce disparities in cancer incidence and mortality rates by recognizing these aspects and devising strategies to address them. See Table 2 below.

Table 2. SWOT analysis of innovation ecosystem of Karolinska cancer startups

Strength	• Karolinska Institutet is located in the Stockholm region, which is home to a number of other significant actors in the life sciences industry, including universities, research institutions, and biotech companies. • A well-deserved reputation of KI for top-notch cancer research, offering a strong base upon which cancer startup companies can expand (QS World University Rankings, 2023). • Effective industry collaborations of Karolinska cancer entrepreneurs have the chance to work with a variety of industrial partners, including as pharmaceutical companies, producers of medical equipment, and biotech companies. • The Karolinska cancer entrepreneurs have access to a variety of funding options, including government grants, venture capital firms, and angel investors. • Karolinska cancer entrepreneurs can take advantage of a helpful environment that consists of incubators, accelerators, and other tools intended to boost startups' growth and success. • Strong talent pools are made available for cancer entrepreneurs by Karolinska Institutet, which draws highly qualified researchers and physicians from all around the world. • Sweden has a strong regulatory environment that supports innovation and encourages the development of new medical technologies and treatments. • Karolinska cancer startups have access to a big patient population as well as a broad network of clinical trial locations, which can assist to accelerate the discovery of new medicines.	Opportunity	• The cancer therapy market is likely to expand further, presenting considerable prospects for Karolinska cancer startups. • Emerging technologies, such as artificial intelligence and gene editing, provide enormous prospects for innovation in cancer research (Sebastian & Peter, 2022). • Karolinska cancer entrepreneurs can grow into foreign markets, particularly in places with high cancer incidence rates; and KI cancer startups can establish new business models based on outcomes-based care or value-based pricing. • Personalized medicine provides huge prospects for innovation in cancer research by enabling treatment that is personalized to individual patients. • Karolinska cancer entrepreneurs can look towards expanding into other markets like oncology diagnostics or supportive care (Celis & Pavalkis, 2017). • Karolinska cancer startups can create companion diagnostics that can help identify patients who are most likely to benefit from specific treatments, thereby improving patient outcomes and lowering costs. • Telemedicine systems and mobile health apps, for example, provide tremendous prospects for innovation in cancer care delivery and patient involvement (Haleem et al., 2021).
Weakness	• Karolinska cancer startups may suffer resource limits, especially in the early stages of development, and may face strong competition from other startups and established corporations. • The cancer treatment market in Sweden is relatively small, making it difficult for Karolinska cancer startups to scale and profit, and the startups may face difficulties expanding into international markets, particularly in regions with different regulatory environments and healthcare systems (Kanavos & Sullivan, 2010). • The regulatory approval procedure for new cancer treatments can be lengthy and difficult, causing innovative technology to be delayed in commercialization. • Cancer startups may have limited access to real-world data on cancer patients, making it harder to develop and refine innovative treatments. They may also face difficulties getting clinical expertise and partnering with other organizations (Penberthy et al., 2021).	Threat	• The regulatory environment for medical technologies and therapies is complex and changing, which might offer difficulties for Karolinska cancer companies. • Intellectual property issues, such as patent infringement lawsuits, may confront a startup (Risky Business: The Five Biggest IP Mistakes Startups Make, 2018). • Cancer startups may face funding challenges, limiting their ability to develop and commercialize new technologies. • Cancer startups may face significant competition from established players in the pharmaceutical and biotech industries. • Technological advances may quickly render existing technologies and treatments obsolete, becoming a threat to Karolinska cancer startups developing new solutions. Hacking attempts and

			ransomware assaults, for example, might represent major hazards to Karolinska cancer businesses. • Ethical problems, such as the use of human subjects in clinical trials or the use of gene editing technology, may threaten Karolinska cancer businesses (Shinwari et al., 2018).
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3.3. Factors contributing to the success of the innovation ecosystem

The success of the Karolinska cancer startups innovation ecosystem can be attributed to several factors:

Social Factors regarding population and awareness: Sweden has one of the highest life expectancies in the world, and the population is rapidly aging. According to Statistics Sweden, in 2020, around 20% of the population was aged 65 or older, and this proportion is expected to increase to 25% by 2030. Between 2018 and 2022, the life expectancy for men and women was 81.05 and 84.56 years, respectively. In 2022, Sweden had one of the highest life expectancy levels worldwide (Statista, 2023). The aging population in Sweden creates a high demand for cancer treatments. According to the Swedish Cancer Society, the number of cancer cases is expected to increase by 40% by 2030, which creates an opportunity for Karolinska cancer startups to develop new treatments that cater to this demographic (Globocan, 2020). See Figure 2 below.

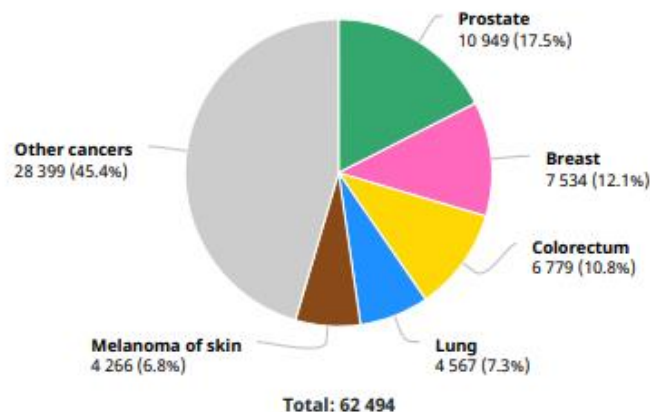


Figure 2. Number of new cases in 2020, both sexes, all ages

The Strong public awareness and support for cancer research and treatment in Sweden creates a favorable environment for Karolinska cancer startups to raise funds and attract talent. For example, thirteen researchers at Karolinska Institutet have been awarded 54.9 million Swedish kronor from the Swedish Cancer Society. The foundation is distributing a total of SEK 124.3 million to 31 cancer researchers in Sweden (Swedish Cancer Society, 2023). In addition, patient-centered treatment is becoming more popular, emphasizing the value of patient outcomes and experience. Karolinska cancer companies can create therapies that give patients' demands top priority and enhance results.

Support from Karolinska Institutet and Karolinska University Hospital: The support provided by Karolinska Institutet and Karolinska University Hospital is a crucial factor contributing to the success of the innovation ecosystem for Karolinska cancer startups. These institutions provide a wealth of resources, expertise, and funding to support the development of new technologies and products. Karolinska Institutet is a world-renowned medical university that is focused on research and education in the field of medicine and health sciences. The institute has a long history of innovation and has been responsible for several important medical breakthroughs, including the discovery of the structure of the nerve impulse and the development of the first pacemaker. Karolinska Institutet has a strong commitment to fostering innovation and entrepreneurship and has established a number of programs and initiatives to support the development of new technologies and products.

Karolinska University Hospital is a leading academic medical center that is focused on providing high-quality patient care, education, and research. The hospital is closely affiliated with Karolinska Institutet, and many of its staff members are also affiliated with the institute. This close collaboration between the hospital and the university creates a fertile environment for innovation and entrepreneurship, as researchers and clinicians work together to develop new technologies and products that can improve patient outcomes.

Collaboration between researchers, clinicians, and entrepreneurs: Collaboration between researchers, physicians, and entrepreneurs is a critical aspect in the success of the Karolinska cancer startups' innovation ecosystem. The ecosystem brings together people from many backgrounds and disciplines, offering a productive platform for collaboration and knowledge sharing. Entrepreneurs provide financial acumen and a focus on commercialization, while researchers and clinicians bring expertise in cancer biology and therapy. This collaboration is made possible through a variety of means, including joint research initiatives, networking events, and mentorship programmes (Blevins et al., 2010). Karolinska Institutet Innovation AB, for example, offers frequent seminars and workshops where researchers, physicians, and entrepreneurs can discuss ideas and network. In addition, the organization offers mentorship and coaching to startups, assisting them in navigating the challenging process of bringing a new product or service to market.

Researchers and clinicians can obtain a greater understanding of the commercial potential of their study through these relationships, while entrepreneurs can receive access to the most recent scientific and medical expertise. This collaboration can also serve to hasten the translation of basic research into clinical practise, which will benefit patients and the larger community in the long run.

Access to funding and resources: Another crucial component contributing to the development of the Karolinska cancer startups ecosystem is access to finance and resources. Life sciences startups frequently require considerable expenditures to support R&D, clinical trials, regulatory approvals, and commercialization. Access to capital is therefore important for the development and growth of businesses in this industry. The Karolinska cancer startups ecosystem offers a variety of funding options to help entrepreneurs at various stages of development. KI Innovations, for example, gives seed finance to early-stage entrepreneurs, whereas Karolinska Development AB provides venture capital to more developed enterprises. Furthermore, the Swedish government and the European Union fund companies through programmes such as Horizon 2020 and the European Innovation Council.

Aside from investment, the ecosystem provides a variety of resources to assist entrepreneurs. KI Innovations, for instance, provides lab and office space, as well as equipment and services to support research and development. The ecosystem's incubators and accelerators also offer mentorship, training, and networking opportunities to help entrepreneurs succeed and develop. In general, startup success in the Karolinska cancer startups ecosystem is dependent on access to finance and resources. The ecosystem offers a variety of funding sources and resources to assist companies at various stages of growth in overcoming financial barriers and succeeding in their individual fields of innovation.

4. Conclusion

The Karolinska Cancer Startups ecosystem has become a model for other institutions looking to support cancer startups and advance cancer research. One of the key lessons learned from this ecosystem is the importance of collaboration and partnerships. By bringing together experts from different fields and institutions, the Karolinska Cancer Startups ecosystem has created a network that supports startups throughout their development process. This collaboration has also led to the development of new technologies and approaches to cancer treatment. Another best practice from the Karolinska Cancer Startups ecosystem is the emphasis on personalized medicine. By tailoring treatments to individual patients' needs, startups can improve treatment outcomes and reduce side effects. This focus on personalized medicine has been a driving force behind the development of new technologies and therapies in the field of cancer research.

The Karolinska Cancer Startups ecosystem also places a strong emphasis on mentorship and support for startups. Through programs like the Karolinska Institutet Innovations AB (KIAB) and the Karolinska Venture, startups receive guidance and resources to help them navigate the complex process of bringing new products and services to market. This support has been instrumental in the success of many startups in the ecosystem. Karolinska Cancer Startups has a robust innovation ecosystem that plays a critical role in driving innovation in cancer research and treatment. The ecosystem includes a network of experts, resources, and funding opportunities that support startups in the field of cancer research and help them bring new products and services to market. The importance of this ecosystem cannot be overstated, as it provides startups with the resources and support needed to accelerate their growth and success. With access to the latest research, cutting-edge technologies, and a network of experienced professionals, startups in the Karolinska Cancer Startups ecosystem are well-positioned to make significant strides in cancer research and treatment.

Looking to the future, there is enormous potential for continued innovation and success in the field of cancer research. With ongoing advancements in technology and an increased focus on personalized medicine, there are many opportunities for startups to develop new and innovative approaches to cancer treatment.

Overall, the Karolinska Cancer Startups ecosystem is an excellent example of how collaboration, innovation, and strategic partnerships can drive progress in cancer research and help bring new treatments and cures to patients in need. Overall, the Karolinska Cancer Startups ecosystem shows how collaboration, personalised medicine, and mentorship can encourage cancer research and treatment innovation. Other universities seeking to help cancer entrepreneurs can draw from the best practises and lessons learnt from the Karolinska Cancer entrepreneur's ecosystem in order to build their own successful innovation ecosystems.

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PUBLIC-PRIVATE PARTNERSHIPS TO IMPROVE WATER INFRASTRUCTURE IN ZIMBABWE**Hudson Mutandwa¹, Shikha Vyas-Doorgapersad^{2*}***School of Public Management, Governance & Public Policy, College of Business and Economics, University of Johannesburg, South Africa**E-mails: ¹hudsonmutandwa@gmail.com; ^{2*}svyas-doorgapersad@uj.ac.za (Corresponding author)**Received 25 February 2023; accepted 20 May 2023; published 30 June 2023*

Abstract. Zimbabwe desperately requires financial assistance to fix existing infrastructure and build new urban water systems. This analysis suggests that PPPs may give Zimbabwe the best opportunity to overcome its problems with water infrastructure. Zimbabwe still has trouble supplying water to its cities because of a shortage of resources and deteriorating infrastructure. This situation was already confirmed by the United Nations Children's Fund (UNICEF) (see 2019 reports), and PPPs could mitigate the financial challenges to assist the Zimbabwean Government. The study utilised qualitative research to gather information. Interview responses were supplemented with a literature review to thematically state responses. The results demonstrate that political backing, government accountability, economic viability, and suitable statutory, financial, technological, and institutional frameworks are the key prerequisites for implementing PPPs effectively in Zimbabwe. The study proposes that PPPs are perceived as an alternative reform strategy for improved urban water infrastructure in the country. However, PPPs must consider the implementation imperatives before being adopted and implemented. This requires an environment conducive to operating PPPs, including proper planning and meticulous implementation. If entered hurriedly, PPPs can exacerbate the problems they were implemented to rectify, thereby saving the taxpayers' hard-earned money.

Keywords: Public-private partnerships; urban water; water infrastructure; Zimbabwe

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1. Introduction

Section 77 of the Zimbabwean Constitution (2013) defines water as "a basic human right". It continues to state that "the state must take reasonable legislative and other measures within the limits of the resources available to it to achieve the progressive realisation of this right" (Constitution of Zimbabwe (CoZ), 2013). This distinction was relevant to the study in that the government is unlikely to implement PPPs in water infrastructure even though the Zimbabwe Socio-Economic Transformation (ZIMASSET, 2013:77) blueprint stipulates that the infrastructural development shall be funded through PPPs. The rationale was that, worldwide, the desire to utilise PPPs in developing public infrastructure is gaining momentum, largely to compensate for failures by governments to deliver water infrastructure adequately. According to the Asian Development Bank Institute (ADBI, 2011:4), there has been a significant increase in the use of PPPs driven by limited public funds coupled with an increasing realisation that the private sector could often be better placed to handle many of the tasks traditionally associated

with the public sector. This is based on the view that collaborating private firms and governments could provide mega-projects and produce enhanced outcomes that any entity could not deliver alone. According to Osborne (2000:1), the PPPs have become seen as cost-efficient and effective mechanisms for implementing public policy across a range of policy agendas. McQuaid (2005:9) argues that the benefits of the PPP approach come from recognising that any local actor needs to have all the competencies and resources to deal with the interconnected issues raised in many policy areas. The strength of the partnerships approach is derived from aligning partners' interests and taking cognisance of the interdependencies among diverse actors engaged in the successful provision of infrastructural mega-projects. Grimsey and Lewis (2004:6) argue that PPP is an arrangement. According to Garvin (2010:4), the PPP concept includes three dynamics. The first is a long-term contractual arrangement between the public and private sectors to deliver an infrastructural facility for mutual benefit. The second is that the private sector designs, constructs, finances, operates and maintains the facility. Finally, the potential rewards and risks related to the delivery of the project are shared.

The roadmap to PPPs involves managing and organising the process; strategic planning; collecting additional information; defining the scope; defining the objectives; selecting the options; resolving the constraints; costing the recovery strategy; implementing the regulatory framework; offering the tender; negotiating the terms and contracting; finalising the terms of partnership; managing the contract, disputes, transition and procurement and monitoring and evaluating the partnership (Helmy, Khourshed, Wabha & Bary, 2020:5). Countries such as the Philippines, Australia, the United Kingdom countries, and South Africa have established PPP units housed within their finance ministries (World Bank (WB), 2011:80; Dube & Chigumira, 2011:23; Mutandwa & Zinyama, 2015:122). It is essential to recognise the significance of water infrastructure in modern urbanised countries and the need for Zimbabwe to improve its water infrastructure in urban areas, as the current state of its water infrastructure is deplorable with the situation compounded by rapid urbanisation in its cities. In 2008 the country experienced cholera and typhoid outbreaks in the main urban cities, namely Harare and Chitungwiza, that resulted in the untimely death of more than 400 citizens (United Nations (UN), 2021:14). In the case of Zimbabwe, it is however not clear which institution is accountable for PPPs and implementing water PPPs may, therefore, be problematic. This challenge may affect the water infrastructure improvement in Zimbabwe, a case under study. The study applied the transactional cost theory to understand the following:

- What are the challenges in the urban water infrastructure?
- How can PPPs as a procurement model improve urban water infrastructure development in Zimbabwe?

After the introduction, the following section discusses the theoretical and empirical literature, followed by a discussion section on challenges in water infrastructure in Zimbabwe. The next section explains the methodology, followed by a discussion of the qualitative findings of this study. In contrast, the last section synthesises, concludes, and offers improvement recommendations and states further research aspects.

2. Theoretical and Empirical Literature

The 1970s' neo-classical ideas, including the principal-agent and transaction cost theories, had a significant influence on the PPP (Walsh, 1991:151; Boston, 1996:34) and "new institutional economics" (Williamson, 1979:240). According to Kaboolian (1998:190), the abovementioned theories are mirrored in the new public management discourse. The 1990s saw the genesis of a new model of public sector management in many countries referred to as NPM (Farnham & Horton, 1996:32). There were numerous variations of the NPM model, such as "market-based public administration" (Lan & Rosenbloom, 1992:539), "new public management" (Hood, 1991:12); "entrepreneurial government" (Osborne & Gaebler, 1992:201); the post-bureaucratic paradigm (Barzelay, 1992:20) and "managerialism" (Pollit, 1993:3). It is evident that, despite the various names, most academics use different terminology to define the same occurrence. Hood (1991:12) considered managerialism in the UK as a determined attempt to implement the '3Es', namely efficiency, economy, and effectiveness. Hood (1991:12) explains that NPM has doctrines that include a focus on the division of administration into user-pay-

based agencies; management as opposed to policy; efficiency and performance evaluation; the utilization of quasi-markets; outsourcing to promote competition; and reducing expenses; monetary incentives; the freedom to manage and on the use of a specific style of contracts.

The study adopts Transaction cost theory (TCT) with a rationale that in addition to the price, every market transaction has other costs such as negotiating the purchase price or choosing an appropriate supplier (Williamson, 1979:235). Williamson (1979:235) explains that, like the PAT, “the transaction cost theory’s focus is on the contract”. The theory emphasizes the state’s function in determining the fundamental terms of contracts (Zinyama, 2014:59). The review of bids, the creation of contract specifications, and the negotiations of the final PPP contract with the successful bidder are all transaction expenses related to PPPs (Zinyama 2014:59). Brown and Potoski (2005:327) assert that the TCT offers a framework that guides government officials through the process of contract management. PPP contracts are complex, but the TCT identifies specific characteristics that affect such PPP contracts. The TCT is concerned with institutional arrangements that best facilitate and economise transaction costs (Stieglitz, 1987:25). The TCT provides a framework that guides decisions on whether to get into PPP contracts and how to maintain contractual ties after the contract has been awarded (Ferris & Graddy, 1991:547). Because of PPP contracts, it is difficult for private and public sector actors to predict future scenarios. Usually, when the contract is complete, the private actors may opportunistically take advantage of ambiguities in an agreement at the expense of the public entity leading to significant risk (Stieglitz, 1987:25). Such opportunism is only minimised through incurring transaction costs. The public entity incurs such costs and includes establishing performance and executing the necessary penalties (Stieglitz, 1987:25). Since the TCT models external vs internal production as a function of both managerial and financial cost, it has the benefit of guiding how public organizations choose to provide services like water, especially in urban municipalities (Williamson, 1996). When deciding whether or not to participate in a PPP, institutions like local authorities assess transaction costs against administrative costs, and production costs associated with providing a service internally or through outsourcing (Forged, 2015:66). The TCT is not without critics and is sometimes criticised for assuming that private partners in a contract operate unscrupulously, pursuing their self-interest with guile (Zinyama, 2014:65). From its most basic form, the TCT advances to provide a more thorough description of organizational transactions, such as logical contracting under asset specificity requirements (Williamson, 1993:453). However, it needs to pay greater consideration to the value of ties built on trust across enterprises (Zinyama, 2014:64).

The concept of transaction cost could be more precise. For example, it is not clearly understood what details should be specified when the government asserts that restructuring institutions like local government has reduced transaction costs (Zinyama, 2014:64). The transaction cost theory excludes components that are included in other contractual models, such as the strategic competence approach (Barney, 1999:7) and the public values and rights approach (DeHoog, 1997:89). The strategic competence approach argues that governments’ peripheral and core competencies drive contracting decisions. Governments should outsource their non-core functions and generate internal services based on their key strengths. The public values approach contends that while deciding whether to contract out, public managers should take into consideration values other than economy and efficiency, with a special emphasis on efficacy, and accountability (DeHoog, 1997:89).

2.1 Background of Zimbabwe’s Water Sector Management

In 1980, Zimbabwe inherited the Water Act (1976) from the former colonial government, which was highly skewed towards the white minority settlers (Musemwa, 2021:27). Various successive colonial governments considered controlling the allocation of water in the capital city, then known as Salisbury (now Harare) as a means to give content and form to the segregation between black and white citizens. The city’s infrastructure was primarily designed to serve the white settlers first (Musemwa, 2021:27). In 1980; the new ZANU-PF Government decided to implement major reform programmes in the water sector (Mukurira & Mugumo, 2006:147). The reform programmes aimed to align the country’s water regulations with the national goal of rectifying the

discriminatory 1976 Water Act that limited access to water resources to the minority white population. The reforms also sought to embrace the principles of integrated water resources management (IWRM) in line with the new legislation of the Water Act of 1998. The formation of the Zimbabwe National Water Authority (ZINWA) and the seven catchment councils because of the rationalization of water resource management strategies led to the enforcement of the 1998 Water Act. In 2004, a Rural Water, Sanitation and Hygiene (WASH) Policy document was drafted for cabinet consideration. A subsequent review of the document in 2009 picked major gaps in the policy (National Action Committee [NAC], 2010, cited in Dhoba, 2022:249), demanding water reforms to improve the situation.

2.2 Water reforms in Zimbabwe

The water reforms in Zimbabwe were implemented in tandem with developments in other countries. According to Menard, Tropp, & Jiménez (2017), the previous two decades had witnessed major water policy reforms in both developed and developing countries with the significant aim of improving water service delivery. In developing countries, such policy reforms were usually supported by multilateral and bilateral agencies that include, amongst others, the devolution (decentralisation) of local government's functions and services, increased room for stakeholder participation in the water sector and the formation of an independent regulatory body (Taonameso, Mudau, Traore & Potgieter, 2021:2). Despite these reforms in the water sector in urban areas, Zimbabwe has been experiencing a deterioration in water service delivery that is characterised by acute potable water shortages and high morbidity rates due to waterborne diseases (Taonameso et al., 2021:1). The country's urban water infrastructure is dilapidated, resulting in poor water quality and constant water shortages and, consequently, induced deleterious epidemiological cholera outbreaks, for example in 2008 and 2018 (Musemwa, 2021:28). The continuous deterioration of the water sector raises fundamental questions about policy formulation, adoption, implementation and evaluation because a water policy that aims to provide affordable, adequate, quality and sustainable water services ought to include regulations, programmes and plans (Taonameso et al., 2021:2).

2.3 Water sector challenges in Zimbabwe

The establishment of ZINWA was in line with the global water reforms. ZINWA is now under the Ministry of Lands, Agriculture, Water, Climate and Rural Resettlement and was previously under the Ministry of Environment, Water and Climate Change until 2018 (Zimbabwe Infrastructure Report (ZIR), 2019:21). Kanyepi and Tanyanyiwa (2021:6) highlight that with exclusive responsibility for delivering, managing, and selling agreement water, ZINWA oversees commercially developing and managing the nation's water resources. The responsibilities of ZINWA vary according to the level of government; at the national level, it makes recommendations to the Minister of Lands, Agriculture, Water, Climate, and Rural Resettlement regarding the creation of national policies and water pricing, whereas at the catchment level, it is responsible for ensuring Act compliance (Kanyepi & Tanyanyiwa, 2021:6). Despite the authority vested in ZINWA by the Constitution as promulgated, ZINWA continues to face challenges in the execution of its mandate. Taonameso et al. (2021) note that "ZINWA cannot implement its mandate". One of the complexities highlighted as a challenge is that "ZINWA is both a regulator and a service provider, and the National Water Policy (NWP) of 2013 gave way for the formation of ZINWA" (GoZ, 2015:16). Nhapi (2009) criticises the lack of clarity and the stated roles for ZINWA about urban water management and indicates that this is a significant concern. Such complexities call for investigation through research. Taonameso et al. (2021:6) highlight the need for more resources as another challenge faced by ZINWA. The African Ministers' Council on Water (AMCOW) (2015:24) states that urban water services in Zimbabwe declined from once-high standards due to the failure to repair or maintain an ageing infrastructure resulting in a lack of revenue from water. AMCOW lampoons the authorities for the dysfunctional water distribution network and the effluent entering the rivers and dams that are the significant sources of the country's bulk water supply (AMCOW 2015:24). The outbreak of cholera and typhoid in 2008-2009 and 2020 (Ministry of Health and Child Care (MoHCC), 2020) is evidence of ZINWA's failure to provide clean water, as stated under SDG 6.1. Additional challenges affecting Zimbabwe [and many African countries, holistically] include "a series of recurrent droughts" (in Makaya, Rohse, Day, Vogel, Mehta, McEwen, Rangelcroft & Van

Loon, 2020:520), supplemented with lack of funds, embezzlement of financial resources, and inadequate planning, design, construction, monitoring, and maintenance, as well as location problems (non-alignment with the needs of the population and economic exploitation) and financial unsustainability (Marriott, 2014; Kabi, 2020, cited in Elle, 2022:1-2). These challenges are already emphasised under the Water Act [Chapter 20:22] of 1998 which notes that there are major challenges and constraints in managing water resources throughout Zimbabwe. ZINWA needs more financial capacity to execute its primary functions of planning, establishment, and administration of the water resources of the country. ZINWA gets most of its revenue from raw and clear water sales to local authorities without capacity (GoZ, 1998). Furthermore, although the clear water supply function is not prescribed in the Water Act of 1998 [Chapter 20:22], it is covered in the ZINWA Act of 1998. ZINWA is failing to inspect and maintain the water infrastructure, especially the dams, perhaps because of its dual role as both regulator and operator of large dams (Nhapi, 2009).

Urban water services in post-colonial Zimbabwe have declined from their once high standards during colonialism. The government has failed to repair or maintain the ageing infrastructure, which has led to a severe decline in service delivery (AMCOW, 2019:25). Furthermore, reports from urban settlements and semi-urban growth centres present a consistent picture of high levels of dilapidated water distribution systems in need of repair as well as effluent outflows entering rivers and dams (Taonameso et al., 2021:4). The same rivers and dams are often the main sources of bulk water. It is also reported that numerous water treatment plants are dysfunctional and do not have the power to pump water consistently, and lack chemicals for water treatment (Taonameso et al., 2021:4). The intermittent power supply to water services is a major contributing factor (Nhapi 2009:231). In the 1980s, Zimbabwe launched an ambitious programme to develop its water supply and sanitation infrastructure, and by the late 1990s, the levels of services were high in sub-Saharan Africa (ADBI, 2011:113). The nation was regarded as a pioneer in the water industry for service delivery, policy change, and innovation. However, due to a lack of significant new capital investment in services during the previous ten years, the sector's prospects have reversed (Chirinda, 2015:6). Additionally, there were insufficient income for the institution in charge of service delivery, which resulted in a persistent reduction in operations and the upkeep of assets. The 2008–2009 rainy season witnessed a significant cholera outbreak with approximately 100 000 illnesses and an estimated 4280 fatalities because of the gradual reduction in water and sewage systems (MoHCC, 2020). Another outbreak of waterborne diseases was recorded in Zimbabwe in recent years. According to the MoHCC (2020), Zimbabwe recorded epidemics of typhoid and diarrhoea in 2019. By 18 October 2020, there were 722 cases of typhoid and 10 deaths and 256 281 cases of diarrhoea, with 115 deaths (MoHCC, 2020). These statistics indicate a need for more progress in providing clean water in Zimbabwe.

3. Methodology

The study utilised a qualitative approach as ‘it emphasises the careful and detailed description of social practice’ (Sibanda, 2015:45; Nyikadzino & Vyas-Doorgapersad, 2020:235; Mothabi & Vyas-Doorgapersad, 2022:367). The study considered purposive sampling and identified 34 respondents from various sectors, such as: academics from Africa University (AU), the Mass Public Opinion Institute (MPOI), Midlands State University (MSU), University of Zimbabwe (UZ); businesses such as the Zimbabwe National Chamber of Commerce (ZNCC), the Confederation of Zimbabwe Industries (CZI); development agencies such as the International Monetary Fund (IMF), the World Bank (WB), United Nations Children's Fund (UNICEF); government ministries, for example, the Ministry of Finance and Economic Development (MoF), the Ministry of Lands, Agriculture, Water, Climate and Rural Settlement (MoL) and the Ministry of Local Government, Public Works and National Housing (MoLG); local authorities such as the Chitungwiza City Council (CCC), Harare City Council (HCC), Norton Town Council (NTC) and Ruwa Town Council (RTC); think tanks such as the African Capacity Building Foundation (ACBF), the Labour and Economic Development Research Institute of Zimbabwe (LADRIZ), the Zimbabwe Economic Planning and Research Unity (ZEPARU); and other stakeholders such as the Zimbabwe National Water Authority (ZINWA).

R1 denoted the first respondent in each "category," followed by the affiliation, the interview's year, and so on. After compiling their responses, the participants were given codes such as R1 (UZ, 2021), R1 (CZI, 2021), and so on.

4. Results and discussion

The research includes comments pertinent to the current article because not all responses may be included in a single article. Future publications will analyse the other responses. With the interviews, the primary researcher was able to understand the issues under investigation fully. The researcher also made observations to acquire information. The article only discusses one theme: the merits of using PPP as a procurement model in Zimbabwe.

4.1 Merits of using PPP as a procurement model in Zimbabwe

PPPs are perceived to be a viable avenue for rendering public goods and services globally (Global Water Partnership Report (GWPR), 2014:5). Governments across the globe are faced with limited fiscal space to fund extensive infrastructure development such as roads, electricity, energy, water, and telecommunications, among others. As a concept of the NPM reform, PPPs could solve public sector infrastructure problems. Various respondents concurred about the benefits of PPPs; for example, R1 (ZINWA, 2021) stated that *"Zimbabwe stands to benefit immensely from using PPPs in its urban water infrastructural development"* and that *"PPPs bring a myriad of benefits to financially constrained governments. Chief amongst them is the rapid delivery of infrastructure, technical expertise and sharing risks with the public sector. The government's desire to use PPPs is rapidly growing"*. This opinion was supported by R2 (ZINWA, 2021), who asserted that *"ZINWA has been authorised to use or seek funding through loans and other models that include PPPs, joint ventures and ZINWA water infrastructure bonds"*. R1 (HCC, 2021) added that *"This golden opportunity to use PPPs was extended to local authorities to fund urban water infrastructure"*. GWPR (2014:5) affirms that owing to economic decline, rendering water in most urban areas in Zimbabwe has significantly declined, hence the country's struggle to achieve the SDGs. This view concurs with R5 (UZ, 2021), who averred, *"It is evident that the state infrastructure for water is overloaded and needs urgent attention from the stakeholders. Evidence of the current state of the infrastructure was the 2008 cholera and typhoid outbreak that infected more than 100 000 citizens and killed nearly 4000 innocent souls"*.

Most of the opinions expressed by the respondents in this study concurred with the information gleaned from the literature in that embracing PPPs triggers efficiency in the provision of water (Sulser, 2018:8). R1 (MoF, 2021) stated, *"The benefits of PPPs are numerous, especially for the public sector, whereby the infrastructure growth is quickened, which is an advantage. The service delivery is also quickened. The ability of the government to intervene adequately is limited by a lack of resources, and the private sector introduces the required resources"*. R1 (ZEPARU, 2021) asserted that *"The merits are that through PPPs Zimbabwe will be able to attract investment in the water sector. African governments do not have sufficiently large budgets to fund infrastructure. For example, the literature indicates that, on average, African governments allocate revenue equal to 12% of the country's gross domestic product to infrastructure projects, which is an insignificant amount. Zimbabwe does not have sufficient resources to fund infrastructure [and] if the country is on austerity, PPP is a funding mechanism for infrastructure"*.

This view also aligns with the WB (2018:2), confirming that PPP benefits include the ability to manage assets or services for the duration of the PPP. The additional benefits of PPPs mentioned in WB (2018:2) documents include that PPPs provide complementary funding and expertise, and innovation in areas such as project management. The Zimbabwean Government has encountered various challenges while implementing its economic restructuring programme. Critical to this programme is the provision and expansion of essential services and the development of sustainable infrastructure (Wehrheim, 2013:7). Well-functioning and accessible infrastructure is fundamental to social and economic development. Infrastructure provides clean water, power and

gas to a country's citizens and businesses and connects them to their jobs, healthcare facilities and schools. An estimated 60 million people have no access to clean drinking water (WB, 2018:7).

In terms of models for water-related PPPs, most of the respondents opined that Design-build-finance-operate (DBFO), Built Operate Own Transfer (BOOT), Rehabilitate Operate and Transfer (ROT), and Build, Operate and Transfer (BOT) are preferable. In support of PPPs, most of the respondents shared the same opinions; for example, *"PPPs bring quick money. There is no need for funding headaches, and you can have a permanent infrastructure, and DBFO is suitable. These models depend on how new or old a project may be — an old one may need ROT"* R1 (MSU, 2021) and *"new projects may need BOT"* R4 (UZ, 2021). R1 (UZ, 2021) stated that the *"Preconditions for PPPs include mutual trust between two parties, clearly defined legal and legislative frameworks and a clearly defined profit or loss-sharing framework. The formula must be clearly defined and agreed upon by both parties. It should be made very clear who does what and how. Another key issue is technical expertise. It is different from contracting-out, which is for short-term projects"*. This statement was supported by R1 (AU, 2021), who asserted that *"PPPs are complex, multi-dimensional and used for long-term projects."*

Mutazu (2020:6) mentions that PPPs effectively provide quality services in support of the preceding views. In the context of severe infrastructure gaps/backlogs and limited public funds and capacity for addressing the problem, one viable option for mobilising private sector resources is the use of PPPs. The literature review confirms that the Zimbabwean Government has adopted PPPs for various projects in the country. This government position is envisaged in the Short-Term Economic Recovery Programme (GoZ, 2009), the Zimbabwe National Budget Statement (GoZ, 2021:13) and Zimbabwe Socio-Economic Transformation (2013-2018) (GoZ, 2013). R2 (WB, 2021) expressed that *"Because the government of Zimbabwe is incapacitated, it will have a way to bail itself out through PPPs"* and that *"We have seen people in the high- and low-density suburbs buying water or having to pay exorbitant amounts to access water so the benefits are high and at least the water will be available, and if people are to pay, it means they will also be getting quality water so there will be an improvement in the quality of the water and the resources if a PPP invests in water infrastructure development"*. R1 (CCC, 2021) agreed and remarked that *"PPPs bring money to the country for capital projects"*.

Asked if PPPs can be considered a solution to urban water infrastructure challenges in Zimbabwe, the respondents expressed different views, as reflected in their responses. *"No, they are not the solution because they are divorced from the people"* R2 (UZ, 2021); *"Yes. It is the modern practice"* R4 (UZ, 2021). R1 (UZ, 2021) opined that *"PPPs are the solution. The government of Zimbabwe is faced with minimal fiscal space. It cannot manoeuvre because of sanctions; it cannot get international credit and loans. The economy of Zimbabwe is shrinking, the revenue base is shrinking, and the room to manoeuvre is limited. The only way out is to have the private sector join. For successful urban water infrastructure development, the private sector, both local and international, should chip in because they have capital. PPP is the only viable option to catapult Zimbabwe from its current mess"*. R1 (CCC, 2021) suggested, *"Concerning expertise, as a local authority, we do not have the expertise, and we do not have adequate financial resources. Hence, private partnerships ease the municipality's burden in providing water"*. Mutazu (2020:2) notes that more funding is the most significant problem facing developing countries, including Zimbabwe, concerning infrastructure development.

Literature in support of PPP benefits to Zimbabwe confirms that the country was under tight fiscal pressures in the late 1990s and could not afford to fund the PPPs. However, they were recommended as viable tools to finance infrastructure development in rail services, power generation, air transport, highway, and dam construction. However, some PPP projects in areas such as railway and road networks have been implemented in Zimbabwe (GoZ, 2009:119). It is apparent from the findings that PPPs could be a solution to Zimbabwe's urban water infrastructure challenges. The GoZ would benefit immensely from embracing PPPs. Strong evidence from the respondents and data gleaned from the literature suggests that, at the time of this research, Zimbabwe's urban water infrastructure needed urgent attention. The data indicate that Zimbabwe faced a severe fiscal deficit with

insufficient funds to build, maintain or rehabilitate its urban water infrastructure. The study also established that the GoZ highlighted the need to embrace PPPs in all its blueprints from 2009 to 2021. These blueprints include the Short-Term Economic Recovery Programmes (STERP) 1 and 2, the Zimbabwe Agenda for Sustainable Socio-Economic Transformation (ZIMASSET) and the Transitional Stabilisation Programme (TSP).

5. Synthesis, conclusion and recommendations

The Greater Harare Water and Sanitation Investment Plan recommended harnessing the private sector through PPPs to finance water infrastructure development. The Zimbabwe National Chambers of Commerce (ZNCC) (2009) highlighted the need for an institutional policy framework for PPPs in Zimbabwe. These include the Political Commitment Framework (PCF) governing how PPPs are governed. The legislative framework serves as assurance and insurance to investors that the government must honour the contract. The ZNCC (2009) noted several challenges that adversely affected the proper implementation of PPPs in Zimbabwe; they include the unavailability of a legislative framework and funds and a lack of commitment from stakeholders and recommended the need for a legislative framework. The ZNCC (2009) also noted a need for more liquidity in the market that forced private firms to focus on their current, heavily undercapitalised operations.

In response to the call for such a framework, the government enacted the Joint Ventures Act of 2015, Chapter 22:22. This Act serves as a PPP legislative framework in Zimbabwe under the auspices of the Ministry of Finance. Despite all these efforts, infrastructural challenges concerning water continue in Zimbabwe. Major dam projects proposed by the Greater Harare Action Plan, Water Resources and Infrastructural Conference of 2015 remain stagnant, including the Kunzvi Dam for Harare, the Zambezi Water Project and the Siya Dam Project. In addition, Zimbabwe continues to face several challenges to implement and operationalise the PPP financing model, although the JVA 2015 has been passed. The implementation framework has to be put in place, including crucial institutions that are required to play a significant role (Zimbabwe Economic Policy Analysis and Research Unit (ZEPARU), 2016:51). A delay in developing a robust institutional and legal PPP framework has resulted in the sluggish uptake and implementation of PPP projects in Zimbabwe (ZEPARU, 2016:49).

In their explanation of enabling environments, Christy, Mabaya, Wilson, Mutambatsere and Mhlanga (2009:9) state that these are collections of institutions, rules, assistance programmes, and other circumstances that collectively form or enhance a broad business environment where businesses and commercial activities can begin, grow, and prosper. Christy et al. (2009:9) further explain that a conducive enabling environment is associated with domestic and friendly interactions in business through policies and institutions that promote investment and attract and engender economic growth. Thus, PPPs are key to political stability, economic, social, and technological development, the rule of law, respect for property rights, and corruption sensitivity. According to Christy et al. (2009:9), developing a successful PPP programme is a complex undertaking involving various challenges for countries in the developing world. For a government to establish an environment conducive to the operation of PPPs, it needs to take several essential building blocks for implementing a credible PPP programme. It is important to note that any failure to execute a single action may delay the entire programme or cause the breakdown of existing projects. Any private and public sector operators contemplating partnerships for the first time must realise that PPPs can appear to be economical and political minefields full of technical complexities that are best dealt with by experts. In Zimbabwe, the economic, technological, and political aspects of a PPP could be obstacles due to poor relations with the economically powerful Western powers who introduced sanctions protesting for sound governance (Chikwawa & Bvirindi, 2019:12). It is also considered that Zimbabwe's current PPP arrangement is a crowded arena with a diversity of players.

It should be considered that in the 1990s, in the context of Africa, many governments embarked on ambitious reforms of their urban water supply and sanitation (WSS) services, and this included delegating the management of utilities to private operators under various contractual agreements (Marin, 2009:1). There were high hopes that

PPPs would improve the fortunes of non-performing public utilities by injecting a more commercial orientation, new expertise, financial resources and knowledge and know-how. As widely illustrated in the literature (ZNCC, 2009:23; Robles, Torero & Braun, 2009:4), given a limited national fiscal space, rapid urbanisation and population growth, the concept of PPPs can be consolidated as a remedial action to address government failures in undertaking sovereign mandates. According to Jerome (2004:20), the constant malfunction of African governments is well documented but unremedied, and this manifests in their failure to deliver essential services and goods to the general population. Most governments in the developing world operate in an environment of limited resources for maintaining and upgrading infrastructure due to fiscal constraints. This is mainly because national government utilities face challenges due to political interference and a general lack of transparency, resulting in poor cost recovery strategies and low productivity (Baylis & Hall, 2000:35; Jerome, 2004:20; World Bank (WB), 2009:23; Zhou, 2012:34).

PPPs' capacity and institutional status entail creating new institutions and assigning appropriate levels of authority to regulate such partnerships. All new institutions ought to employ learned personnel to initiate standard procedures, and product manuals, train staff to perform their new roles and develop the tools required to implement new functions in such partnerships (Dube & Chigumira, 2011:23; Mutandwa & Zinyama, 2015:130). The financial, economic, and commercial issues highlight the necessity to come to terms with stakeholders concerning the benefits and economic balance in this sectoral reform. In addition, developing a commercially viable financial strategy for PPPs that is realistic for the market is desirable. The technical elements entail documenting and defining the anticipated technical outcomes for such partnerships and determining the "right metric for acquiring the investment, measuring and attaining the improvements and the documentation of the anticipated improvements that do not need major investments" (Xing, Li & Li, 2020:3).

Although the preconditions for PPPs are comparatively analogous in context, they vary from one country to another. In the European Union (EU) bloc, for example, these preconditions are specified in the European Commission (EC) guidelines (WB, 2011:20). The significant preconditions for the successful implementation of PPPs include political will; government commitment; economic stability; regulatory, policy, legal and institutional frameworks; respect for property rights; technical expertise; financial support and public acceptance (Dube & Chigumira, 2011:21; ADBI, 2011:5). The successful implementation of PPPs also requires institutional capacity. The technical elements entail documenting and defining the PPPs' anticipated technical results. A political environment conducive to the operation of the PPPs must be cultivated. Van Meters and Van Horn (1974:30) contend that implementing public policies requires political support. Fervier (2003:7) identifies the preconditions for successful PPPs as clear regulatory and legal frameworks, the integrated grant financing of PPP objectives, the planning, conception, and implementation of PPPs as well as economic, financial and PPP structures.

The study's findings explore additional questions, such as the possibility of using PPPs in urban water infrastructural development in Zimbabwe and the level of Zimbabwe's readiness to embrace PPPs in urban water infrastructural development. These aspects will form part of future publications.

The study offers significance despite encountering a few limitations. This study sought to understand the dynamics of implementing PPPs in water infrastructure development. The selection of this water sector was prompted by the fact that water is becoming a severe challenge in Zimbabwe, as indicated by the relocation of companies from provinces such as Bulawayo to Harare and the resurgence of waterborne diseases such as cholera, typhoid, and dysentery. Furthermore, the water distribution networks in all Zimbabwean cities need to be more dilapidated. Therefore, the study sought to understand how PPP implementation can address water infrastructural challenges in Zimbabwe. This is a topical issue in public administration in Zimbabwe.

As PPPs are a sensitive political topic, constraints could be encountered. The topic's sensitivity might limit the respondents' freedom of expression, and the current political climate could lead to the respondents providing inaccurate or exaggerated information for fear of victimisation by the government. The primary researcher attempted to mitigate these limitations by providing a transparent explanation of the aim of the study and the strict adherence to the ethical considerations of confidentiality, anonymity, and avoidance of harm.

Note. This article is based on an unpublished PhD thesis titled Mutandwa, H. 2023 - Urban water infrastructure development in Zimbabwe: The role of Public Private Partnerships at UJ under the supervision of Prof S Vyas-Doorgapersad. Unpublished Thesis. Johannesburg: University of Johannesburg.

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ASSESSMENT OF BASIC AIRLINE SERVICE IN NIGERIA**Adetayo O. Adeniran^{1*}, Mobolaji S. Stephens², Ikpechukwu Njoku³**^{1,2,3}*Department of Logistics and Transport Technology, Federal University of Technology Akure, Nigeria**E-mails:* ¹adeniranao@futa.edu.ng (Corresponding author); ²msstephens@futa.edu.ng; ³injoku@futa.edu.ng*Received 25 February 2023; accepted 19 May 2023; published 30 June 2023*

Abstract. This study assesses the basic airline inhibitors available in the fare classes. It focused on domestic and international passengers that arrive at Murtala Muhammed International Airport (MMIA) in Lagos and Nnamdi Azikiwe International Airport (NAIA) in Abuja. Information was gathered from domestic and foreign passengers who had post-purchase experience and had used the airline's services more than once. The primary data were obtained concurrently from arrival passengers at the two major international airports in Lagos and Abuja using an electronic questionnaire through a survey. The populations of the study were a total of international and domestic passengers in MMIA and NAIA for August 2019. E-questionnaire was distributed to the respondents through a multistage sampling technique, and the data were analyzed descriptively with Relative Importance Index (RII). The study found that baggage permission, permission to communicate with loved ones via telephone during flight, and availability of hot towels after boarding and before landing were the basic service inhibitors for economy class. In addition, baggage allowance, provision of five-star meals, and the presence of digital TV were the basic service inhibitors for business class. It is pertinent to note that since the study was carried out during the COVID-19 pandemic, the passengers' perception of the basic service inhibitors, especially the availability of hot towels after boarding and before landing, will be influenced by COVID-19 measures. This study identified the basic airline inhibitors available in the economy and business class tickets available among international and domestic airlines in Nigeria. This study adopts the EKB post-consumption model to understand passengers' evaluation of airline services in predicting passengers' purchases based on the basic airline inhibitors available in the economy and business class tickets available among international and domestic airlines in Nigeria.

Keywords: airlines; airline services; inhibitors; economy class; business class; first class; Nigeria

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JEL Classifications: M21, O18, R41

Additional disciplines: transport technology and management

1. Introduction

The importance of service sectors to the development of any country must be considered, especially as it is driven by technology. For instance, service sectors in the US contribute about 74% to the GDP and employment generation from 2000 to 2020 (Patricia and Rumki, 2020; Statista, 2021). It contributes about 70.2% to the GDP of Canada, 62% to the GDP of Hong Kong, 70% to the GDP of the Netherlands, and 78.6% to the GDP of Australia (Patricia and Rumki, 2020). In Nigeria, Plecher (2020) revealed that the service sectors contributed about 51% to the Nation's GDP from 2000 to 2020.

The transportation industry is a service sector influenced by technology, politics, and economic changes. As a result of these changes, service quality has been a vital issue for both passengers and airlines. Since the introduction of airline deregulation in the late 70s, considerable changes have been recorded in the air travel industry. Among the changes are the increasing number of flight operations, construction of more functional airports, affordability of airline tickets, and increasing air traffic. Apart from these, intense competition among the airlines directly results from deregulation (Hangjun, Qiong and Qiang, 2018). Due to fierce competition, airlines aimed to maintain quality services to retain passengers.

The Air transport industry is evolving because of the changing dynamics of urbanization, globalization, digitalization, and socio-economic shift, among other factors. Because of these changes, the global economy was predicted to be dominated by Asia, America, and Europe in the year 2030 (Hamish, 2018; Gill, 2020). Therefore, service organizations like airlines must be rightly positioned where the business is and be able to fulfil the customers' wants. With the constraint of Bilateral Air Service Agreements (BASAs), airlines are forming strategic alliances by sharing code to expand global network coverage, dominate new routes, and offer quality service at reduced costs (James and Paul, 2009).

Airline traffic is the amount of airline output that is sold or consumed. The form of traffic can be passenger, cargo, or both, including airfreight, mail and passenger baggage. Airlines are generally categorized based on the nature of traffic; cargo airlines primarily transport airfreight, while passenger airlines primarily transport the combination of passengers, passenger baggage, mail and air freight (Peter, Amedeo and Cynthia, 2009). However, the aircraft used for passenger traffic has limited space for carrying airfreight, usually taken in the belly compartments.

Traditionally, airlines have three travel classes in which a passenger may buy the ticket; in terms of hierarchy, they are first class, business class, and economy class of airlines based on the level of service offerings. The services offered in each class are usually influenced by the earlier identified dynamics (technology, taste, income); therefore, an airline requires a considerable effort to deliver services with good levels of quality. Airline services are essential services that a passenger cannot do away with to gain air travel experience; therefore, evaluating the levels of airline services delivered is pertinent to understanding the customers' needs and areas for service improvement.

Passengers' evaluation of airline services is necessitated as price and quality service offerings are the primary determinants that enhance airline competitive advantage (Jou, Michael, Henser, Chen and Kuo, 2008; Li, Yu, Pei, Zao and Tian, 2017). For airlines to survive, they must be able to deliver a total travel programme (such as non-stop flights, leisure programmes, hotels, and financial services, among all) through a central information system. Air passengers are more conscious of the value of their money and, at the same time, search for more cheap tickets (Roy, Luke and Beukering, 2008; Al Refaie, Bata and Issam, 2014; Anastasia, 2014; Thomas, 2014; Ozlem, Mahmut and Sahap, 2019).

The air transport industry in it is entirely service-based as it offers products (airline service, which is seats-kilometre) to passengers during the travel process in the form of travel experience and satisfaction. The industry faces high competition, even though it is oligopolistic (few operators with many consumers). Recently, the Covid-19 pandemic has made the competition more stringent and rigid in the face of reduced patronage occasioned by travel restrictions and physical distancing measures, which reduce the number of passengers, enplaned and increase the airfare.

The industry is highly technologically driven, and safety consciousness is like no other in the global transport village. As a result of the products/services being the same but with ample opportunities to differentiate them, passengers have tight choice-decision making to do in the face of likely demonstration of some monopoly by

individual airlines. As a result, the customers' evaluation of services offered differs tremendously. Meanwhile, Kumar and Kumar (2019) revealed that airlines often need help choosing what service attributes (inhibitors) to provide for varying classes of passengers or seat-kilometre offered at specific fare rates.

This study aims to assess the basic airline inhibitors available in the classes of airlines in Nigeria. From the standpoint of market competition, airlines need to be conscious of the market dynamics, especially concerning the overall traffic growth of the airline market and patronage of a particular airline. The airline industry in Nigeria has experienced rapid growth in the last decade (Ogunbodede and Odetunde, 2016) from about 12% in 2000 to 17% in 2019. Like other parts of the world, Nigeria's airline industry consists of many airlines competing. As a result of these potentials, it becomes imperative for airlines to identify the fundamental factors that passengers most cherish.

This study is limited to airline services which are the primary aviation services for different classes of airline service (first class, business class and economy class), which a passenger must consume before having a post-consumption travel experience. Information was elicited from domestic and international passengers with post-consumption experience and must have consumed the airline services more than once. The category of domestic passengers must also have international air travel experience. The air passengers were chosen because they are primary users of airline services.

The study areas were Murtala Muhammed International Airport in Lagos and Nnamdi Azikiwe International Airport in Abuja, Nigeria. The two airports were chosen for this study because they are located within the South and North zones, respectively, and they facilitate high patronage in passenger throughputs.

2. Literature Review

Airline services and categories

In the airline industry, the measurement of passenger traffic and airline output is germane to determining the performance of any airline. Airline traffic is the amount of airline output that is sold or consumed. The form of traffic can be passenger, cargo, or both, including air freight, mail and passenger baggage. Airlines are generally categorized based on the nature of traffic; cargo airlines primarily transport air freight, while passenger airlines primarily transport the combination of passengers, passenger baggage, mail and air freight (Peter, Amedeo and Cynthia, 2009). However, the aircraft used for passenger traffic has limited space for carrying air freight, usually taken in the belly compartments.

Traditionally, airlines have three travel classes where a passenger may be seated. They are (1) First class, (2) Business class, and (3) Economy class. All these three classes are differentiated by each airline's policies, although there are dynamics by which the classes are distinguished based on the cabin configuration (Eric, 2017). The first class, as it connotes, is the most expensive, and the passengers seated in this category are more comfortable with extravagant services. Business class is also referred to as an executive class. The fare of this class is expensive but more affordable than first class. The difference between the two is that business class has fewer perks. The last is the economy class. This is divided into two categories based on seats in the cabin "regular economy" and "premium economy."

Regular economy class seating is the fundamental seating arrangement where passengers receive the basic standard service with no real perks. The major service offered is a seat from point A to point B. The other economy class category is premium economy seating which is slightly better than regular economy seating but must be less extravagant than business class. Apart from the seating, a general service, menu items are available for premium economy seating. The distance and row in the seating arrangement in premium economy class are not usually different from that of the regular economy class.

According to Robert (2012), the airline services for each class were identified as shown below:

Economy class

30-32 inches seat pitch; the presence of 10.6 inches digital TV with more than 100 TV channels, more than 200 movies, and about 100 video games; permission to communicate with loved ones via SMS, telephone and email during flight; availability of in-seat laptop power with free headsets; provision of airlines' complimentary in-flight-magazine, duty-free magazines, and a selection of international newspapers; provision of free drinks and complimentary meals; availability of hot towels after boarding and before landing; 30kg luggage permission; the use of online check-in 24 hours before the departing flight.

Business class

Availability of seats that can be converted into a full flat bed; 79 to 87 inches seat pitch; on-demand flight attendants that prepare the flatbed with mattresses; the presence of 17 inches digital TV; availability of international magazines; provision of additional space to accommodate personal belongings beside seats; availability of mini bar; access to communicating with in-flight entertainment and communication (IFEC) system; provision of five-star meals; welcoming passengers with complimentary drinks during boarding; provision of varieties of snacks during the entire flight; allowance of 40kg for baggage and baggage handling priority; access to airport lounges at many destinations; relaxation areas; shower facilities; and business centres; provision of bus service for passengers before arriving at the airport and after landing at the airport; provision of simplified priority cards to passengers which enable them to avoid queues at security or immigration.

First class

Enjoyment of privacy in individual suites with sliding doors, mini bar, vanity table, mirror and wardrobe, toilet and bathroom, stationed flight attendant and contact staff; availability of 23 inches digital TV seat pitch is 82 inches; and other services available in the business class. Jones (1995) noted that the process by which airlines traditionally distinguish their class of services and provide new products and services development in in-flight services is referred to as airline innovativeness. It is important to note that the services rendered in each class are referred to as inhibitors and vary from class to class. Among the inhibitors are significant ones that mainly influence passengers' choice of airline.

Engel-Kollat-Blackwell (EKB) model of consumer behaviour

Engel-Kollat-Blackwell (EKB) model (1968) is the most widely utilized model in marketing that explains five customers' decision-making processes (Darley *et al.*, 2010). These processes are sequential and are as follows:

1. Identification of problem;
2. Searching for information;
3. Evaluation of alternatives;
4. Purchase decision; and
5. Post-purchase evaluation

According to Wolny and Charoensuksai (2014), this model mostly applies to high-involvement products and services due to its schematic representation of consumer cognitive processes. Since air travel services and products represent high-involvement products, this model is preferred when studying travel consumer behaviour (Papathanassis and Knolle, 2011). Additionally, it is important to investigate instances of changing consumer behaviours in response to satisfaction and monetary issues (Loxton *et al.*, 2020), hence, basic when developing marketing strategies.

However, there are conditions when the consumer does not pass through these entire processes and heuristics decisions are made (Nuraeni *et al.*, 2015). Different studies revealed that the decision-making process regarding travel is more complex than the one illustrated in the EKB model (Vinerean, 2014; Gardiner *et al.*, 2013; Nuraeni *et al.*, 2015).

Elucidating on this theory helps to:

- i. Appreciate the most significant variables that influence passengers to embark on purchasing a class of ticket of a particular airline, both deliberately and un-deliberately;
- ii. Reveal the preferences of airline customers vis-a-vis the airline marketing dynamics.

Sirakaya and Woodside (2017); Kim and Han (2010); Buaphiban and Truong (2017); Borhan *et al.* (2017) stated that the decision-making process is affected by internal, external, psychological variables, and non-psychological variables that should be determined primarily within the airline travel market to understand the pattern of consumer behaviour.

The adoption of the EKB model in understanding passengers' evaluation of airline services may have yet to be explored, especially in predicting passengers' purchase or repurchase behaviour. It can be used where airline tickets are grouped into classes. This area has to be investigated as a context for the behavioural model using willingness-to-repurchase. Several studies have found the nexus between service quality, customer satisfaction, customer value and behavioural intentions (Cronin *et al.*, 2000; Chumpitaz and Paparoidamis 2004; Dean *et al.*, 2012). The study hinged on the Engel-Kollat-Blackwell (EKB) model because it explained the post-consumption behaviour of customers.

3. Methodology

Research design

This study employed a survey research design through the quantitative research method. The quantitative research method was used in this study because it employed closed-ended questions to generate numeric data for statistical analysis and hypotheses among different variables (Jasti and Kodali, 2014; Yin, 2018). The survey research design was employed because it is a quantitative method for collecting information from a pool of respondents through probability sampling (Yin, 2018). A survey research design was used to elicit primary data from passengers, which is best for evaluating the services provided by airlines in Nigeria. The quantitative research method was adopted to elicit information with the questionnaire in the form of quantified closed-ended questions.

Passengers that disembarked from the aircraft at the domestic and international terminals in Murtala Muhammed International Airport (MMIA), Lagos and Nnamdi Azikiwe International Airport (NAIA), Abuja were sampled and surveyed. It is worthy of note that the respondents needed for this study were those with international air travel experience and must have consumed the airline service more than once; such respondents were able to provide relevant and reliable information needed for the study.

Study areas

This study targeted the domestic and international terminals in Murtala Muhammed International Airport (MMIA), Lagos and Nnamdi Azikiwe International Airport (NAIA), Abuja. These two airports were chosen for this study because they are located within the South and North zones, respectively, accommodate the majority of airlines operating in Nigeria, and facilitate high patronage in terms of passenger flow.

Murtala Muhammed International Airport

Murtala Muhammed International Airport (MMIA) was built during World War II (1947) when West African Airways Corporation (WAAC) was formed and had its main base at Ikeja. Initially, the airport was known as Lagos International Airport. It was renamed in the mid-1970s, during the construction of the new international terminal, after a former Nigerian military head of state Murtala Muhammed. The international terminal was modelled after Amsterdam Airport Schiphol, which opened officially on 15th March 1979. It is a publicly operated airport owned and operated by the Federal Airport Authority of Nigeria (FAAN). According to the International Air Transport Association (IATA) and the International Civil Aviation Organization (ICAO), the airport codes are LOS and DNMM, respectively (Federal Airports Authority of Nigeria (FAAN), 2020).

The airport is a regional airport for West African countries. It is situated in Ikeja, Lagos State. It has the following coordinates; 06°34'38"N 003°19'16"E / 6.57722°N 3.32111°E and the runway dimensions; Direction of 18R/36L, length of 3,900m with paved asphalt as the surface, and the other has the Direction of 18L/36R, length of 2,743m or 8,999ft with asphalt as the surface (FAAN, 2020)

As of 2019, the airport recorded 4,422,023 and 3,202,837 domestic and international passenger traffic, respectively, and 66,536 and 29,845 domestic and international aircraft traffic, respectively. The domestic passenger traffic in 2019 is more than that of 2018 by 4.17%, while international passenger traffic in 2019 is more than that of 2018 by 5.17%. Likewise, the domestic aircraft traffic in 2019 is more than that of 2018 by 2.52%, while international aircraft traffic in 2019 is lesser than that of 2018 by 27.09% (FAAN, 2020).

Nnamdi Azikiwe International Airport

Nnamdi Azikiwe International Airport (NAIA) was constructed in 1982 and initially designed for passenger movement and later used for both passenger and cargo movement. It is a publicly operated airport owned and operated by the Federal Airport Authority of Nigeria (FAAN). According to the International Air Transport Association (IATA) and the International Civil Aviation Organization (ICAO), the airport code-share ABV and DNAA, respectively (FAAN, 2020).

The airport is situated in Bassa Community in Abuja municipal area council Nigeria. It is about 49km from the Central Business District (CBD), and the location coordinates lie between latitude 09° 00'24" N and longitude 07° 15'47" E and at an altitude of 342 metres. The runway is built with asphalt, and the length is 3,610m (Federal Airports Authority of Nigeria, 2020). As of 2019, the airport recorded 4,403,847 and 1,038,720 domestic and international passenger traffic, respectively, and 64,996 and 9,327 domestic and international aircraft traffic, respectively.

The domestic passenger traffic in 2019 is more than that of 2018 by 14%, while international passenger traffic in 2019 is more than that of 2018 by 2.24%. Likewise, the domestic aircraft traffic in 2019 is more than that of 2018 by 8.5%, while international aircraft traffic in 2019 is lesser than that of 2018 by 5.75% (FAAN, 2020).

The population of the study

Respondents from all countries were included in the analysis. The populations for this study were passenger throughputs (international and domestic) in MMIA, Lagos and NAIA, Abuja for one month. The passenger throughputs in August 2019 (arrival and departure) were adopted as the study population. This month was chosen because the data was administered in August 2021. The year 2019 was chosen because it was before the COVID-19 pandemic. The administration of the questionnaire was done simultaneously in these airports in August 2021 so that the populations for the study are three hundred and ninety-eight thousand, three hundred and thirty-six (398,336) for domestic passenger throughputs in NAIA and one hundred and nine thousand, six hundred and forty-six (109,646) for international passenger throughputs in NAIA, and three hundred and sixty-six thousand, three hundred and thirty (366,330) for domestic passenger throughputs in MMIA and two hundred and ninety-three thousand, and three (293,003) for international passenger throughputs in MMIA (FAAN, 2020).

Sampling frame and sample size

Since the population of this study was the totality of arriving and departing passengers at these airports for August 2021, the sampling frame for the study was the arriving passengers to these airports in the chosen period (August 2021). They were one hundred and ninety-nine thousand, three hundred and sixty-seven (199,367) and fifty-four thousand and thirty-nine (54,039) for domestic and international passenger throughputs respectively in NAIA, and two hundred and seven thousand, nine hundred and ninety-eight (207,998) and one hundred and forty-four

thousand, six hundred and eighty-eight (144,688) for domestic and international passenger throughputs respectively in MMIA (FAAN, 2020).

The population size was finite but quite large. Hence, to make the population manageable and for the sake of resources, a 0.1% size was proposed. For NAIA, the sample sizes were 199 and 54 for domestic and international passenger throughputs NAIA, and 208 and 145 for domestic and international passenger throughputs, respectively in MMIA. The justification for the adoption of 0.1% was hinged on the work of Thomas (2014), which revealed that 0.1 percentage of the airport population could be used to determine the sample size as long as the sample size is picked in such a way that it reflects and represents the attributes of the entire population. Further justification can be adduced to Kline (2016), who argued that the sample size should be at least 200. Hox and McNeish (2020) noted that a sample size that falls between 400 and above is more suitable for data analysis. The sample size estimate is shown in Table 1.

Table 1. Sample size determination of the study

Year	MMIA		NAIA	
	Domestic	International	Domestic	International
August 2019 Arrival	207,998	144,688	199,367	54,039
0.1 Percent	208	145	199	54
Total	353		253	

Source: the authors' field survey

The total estimated sample size was 606 (253 for NAIA and 353 for MMIA).

Sampling techniques

The technique of sampling the passengers for primary data collection was multistage sampling techniques. The researchers employed simple random sampling to approach four airlines daily until the entire terminal airlines were approached. While purposive sampling was used by the airlines to send the link to Google form (e-questionnaire) to the passengers, the passengers employed snowball sampling to share the questionnaire link with other passengers. The questionnaire administration commences in one month (1st August to 31st August 2021). The passengers' response was stopped after the sample size (606) was obtained.

Method of data collection

The benefit of using an internet-mediated approach for primary data collection is that it works best when participants are difficult to contact due to distance and organizational bureaucratic obstacles (Whitehead, 2011). In rent times, the preventive measures against the spread of COVID-19 have made questionnaire administration take a new form. Physical distancing measure and the need to have minimal contact with people is emphasized, particularly at airports. As a result, the internet-mediated approach was conducted using an electronic form of a Google questionnaire.

The primary data was collected at two selected airports in line with this global trend. The airlines shared the questionnaire's Uniform Resource Locator (URL) with their passengers via email. Also, the passengers were allowed to share the link with other passengers. A simple introduction was designed and given to the airlines for ease of administration. Data collection was conducted simultaneously in both airports between Sunday 1st, to Tuesday 31st of August 2021.

Method of data analysis

Descriptive analysis and Relative Importance Index (RII) were employed for data analysis. The services were categorized based on the class of airline tickets (economy, business and first class).

Relative Importance Index

For this study, the Relative Importance Index (RII) was employed to descriptively identify the basic airline inhibitors in the classes of tickets. Johnson and LeBreton (2016) noted that the relative importance index can be fashioned into various dynamics as it aids in finding the contribution of a particular variable which enhances the prediction of a criterion variable both by itself and in combination with other predictor variables. RII can be achieved with the formula below:

$$RII = \frac{\bar{a} W}{A * N}$$

where W is the weight given to each statement by the respondents and ranges from 1 to 5; A is the Higher response integer (5), and N is the total number of respondents.

4. Results and Discussion

This section addresses the aim of this study which is to assess the basic airline inhibitors available in the fare classes.

The response rate of respondents

The sample size was calculated to be about six hundred and six (606) which equals the total number of e-questionnaires to be received by the researcher from the international and domestic passengers that arrived through the Murtala Muhammed International Airport and Nnamdi Azikiwe International Airport. In total, 606 responses were submitted, and 524 (86.5%) were valid for data analysis and reporting. The remaining 82 responses were not usable for the analysis because the respondents did not complete the questionnaire before submission. These responses were, however, deleted (see Table 2).

Moreover, the population only includes arriving passengers in August 2021. Therefore, all the cases in which the respondents indicated their year of air travel experience with less than 1 year and 1 year were also excluded. 35 responses were deleted for that reason. After revising the responses, 489 responses representing 80.7% were left that could be used for the analysis. The investigation participants were approved to participate in the exercise voluntarily. In furtherance to that, the aim of the study was made understandable to them. An intensive and joint effort was ensured to realize the confidentiality, secrecy and anonymity of information given by the respondents; also, they were assured that all information elicited from them was used solely for this study. However, there was difficulty in sharing the URL with the arriving passengers, but it was achievable with the help of some airline staff.

Table 2. A response rate of respondents

Response	Frequency	Percentage
Sample Size	606	
Submitted e-questionnaire	606	100
Invalid responses	(82)	(13.53)
Respondents with 1 year of travel experience	(35)	(5.78)
Total valid response for analysis	489	80.7

Source: the authors' field survey

Brady (2021), Brick and Williams (2013), Welch and Barlau (2013) noted that a response rate of 50% questionnaire returned is adequate, 60% is more adequate, while 70% or more is most adequate for data analysis and reporting. Hence, the valid response of 80.7% for this study is most adequate for data analysis and reporting.

Descriptive analysis

Based on the survey conducted and valid information retrieved from 489 arrival passengers for this study between 1st August to 31st August 2021, there were twenty-six airlines (eight domestic airlines, fifteen international airlines, and three domestic and international airlines) that arrived at the MMIA, Lagos, and NAIA, Abuja, domestic and international terminals as shown in Table 2. According to Chapter v, Article 29 of the International Civil Aviation Organization (ICAO), the nature of flights was domestic and international depending on the points of origin and destination. For this survey, there were three hundred and thirty-five (335) domestic passengers, representing 68.5%, and one hundred and fifty-four (154) international passengers, representing 31.5% (see Table 3).

Table 3. Airlines patronized by passengers

Airlines	Frequency	Per cent	Airlines	Frequency	Per cent
Aero Contractors	47	9.6	Ibom Air	47	9.6
Air France	7	1.4	Kenya Airways	11	2.2
Air Peace	22	4.5	KLM	15	3.1
Arik Air	32	6.5	Lufthansa	6	1.2
Azman Air	27	5.5	Max Air	20	4.1
British Airways	14	2.9	Overland Airways	48	9.8
Cally Air	46	9.4	Qatar Airways	9	1.8
Dana Air	28	5.7	Royal Air	11	2.2
Delta Airlines	7	1.4	Rwand Air	7	1.4
Egypt Air	7	1.4	Swiss	14	2.9
Emirate	7	1.4	Turkish Airlines	7	1.4
Ethiopian Airline	13	2.7	United Air	18	3.7
Green Africa	13	2.7	Virgin Atlantic	6	1.2
Total	489				

Source: the authors' field survey

The cross-tabulation of airlines patronized and the nature of arrival flights to MMIA, Lagos, and NAIA, Abuja, domestic and international terminals was shown in Figure 1. The survey revealed that Air Peace, Azman Air, and Dana Air were the three airlines that offered both domestic and international passenger services within the study period. The airlines that offered only domestic passenger service were Aero Contractors, Arik Air, Cally Air, Green Africa, Ibom Air, Max Air, Overland Airways, and United Air. The major respondents of the domestic airline operators are from Overland Airways, Aero Contractors, Ibom Air, Cally Air, and Arik Air, with 48, 47, 47, 46, and 32 domestic passengers, respectively.

The airlines that offered only international passenger service to the selected airport terminals within the study periods were Air France, British Airways, Delta Airlines, Egypt Air, Emirate, Ethiopian Airlines, Kenya Airways, KLM, Lufthansa, Qatar Airways, Royal Air, Rwand Air, Swiss, and Virgin Atlantic. Among the international airline operators, the major respondents are from KLM, British Airways, Swiss, and Royal Air, with 15, 14, 14, and 11 international passengers, respectively (see Figure 1).

The data embedded in Appendices 2a, 2b, and 2c were used to generate Figures 2a and 2b, which depict the designation of origin airports and cross-tabulation of airlines patronized and the designation of origin airports. Based on Figure 2a, Aero Contractors lifts air passengers from Abuja, Asaba, Bauchi, Benin, Kano, Port-Harcourt, and Yola airports. Air France lifts air passengers from Australia, Canada, France, Mexico, UK, and USA airports. Air Peace lifts air passengers from Abuja, Akure, Dubai, Ghana, Lagos, and South Africa. Arik Air Abuja and Lagos airports. Azman Air lifts air passengers from Abuja, Birnin-Kebbi, Gombe, Kano, Lagos, and Maiduguri airports.

Moreover, British Airways lifts air passengers from the UK. Cally Air Abuja, Calabar and Lagos airports. Dana Air lifts air passengers from Abuja, Enugu, Lagos, and Owerri. Delta Airlines lifts air passengers from the USA only. Egypt Air lifts air passengers from Dubai and Egypt airports. Emirates lifts air passengers from Egypt, Saudi Arabia, South Africa, and UK airports. Ethiopian airline lifts air passengers from Abuja, Australia, Belgium, China, Ethiopia, Greece, Singapore, Switzerland, UK, and USA airports. Green Africa lifts air passengers from Abuja and Lagos airports.

Furthermore, Ibom Air lifts air passengers from Akwa-Ibom, Calabar, Enugu, and Port-Harcourt airports. Kenya Airways lifts air passengers from Ghana, Netherlands, Saudi Arabia, UAE, UK, and USA airports. KLM lifts air passengers from Bauchi, Calabar, Dubai, France, Ghana, and UK airports. Lufthansa lifts air passengers from France and UK airports. Max Air lifts air passengers from Abuja, Asaba, Lagos, and Port-Harcourt airports. Overland Airways lifts air passengers from Akure, Ibadan, Ilorin, Jalingo, Lagos, and Warri airports. Qatar Airways lifts air passengers from Dubai and UAE airports. Royal Air lifts air passengers from France, Germany, Italy, Spain, UK, and USA airports.

Finally, from Figure 2a, Rwand Air lifts air passengers from Dubai, South Africa, Spain, Sweden, and UK airports. Swiss lifts air passengers from Germany, Switzerland, UK, and USA airports. Turkish Airlines lifts air passengers from Algeria, Australia, Belgium, China, Egypt, Ethiopia, and France airports. United Air lifts air passengers from Anambra, Bayelsa, and Enugu airports. Virgin Atlantic lifts air passengers from Ethiopia and UK airports.

Concerning the designation of origin airports as shown in Figure 2b, the study revealed that most of the domestic trips as identified by the respondents originated from Lagos, Abuja, Calabar and Port-Harcourt, representing 13.49%, 13.09%, 7.77% and 6.45% respectively. This implies that the economic growth of Lagos, Abuja, Calabar, and Port-Harcourt is favourable as it influences travel demand (Baker *et al.*, 2015) such that as people get richer, they tend to travel by air (Brida *et al.*, 2018). Also, Figure 2b revealed that most of the international trips to Nigeria as identified by the respondents, originated from the United Kingdom, Dubai and the USA, representing 11.25%, 3.89% and 3.48%, respectively. The majority of international passengers visit Nigeria as a result of business, leisure and education as shown in Figure 3, which indicates that the major trip purposes were business, leisure and education, representing 37%, 21.3% and 19.8%, respectively.

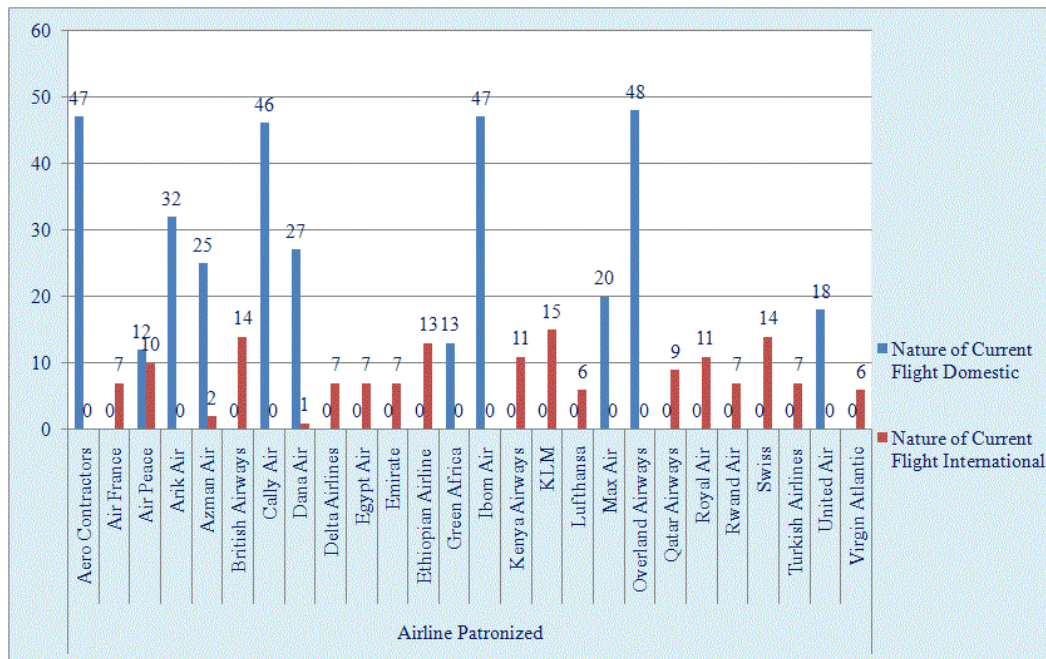


Figure 1. Cross-tabulation of airline patronized and the nature of arrival flight

Source: the authors' field survey

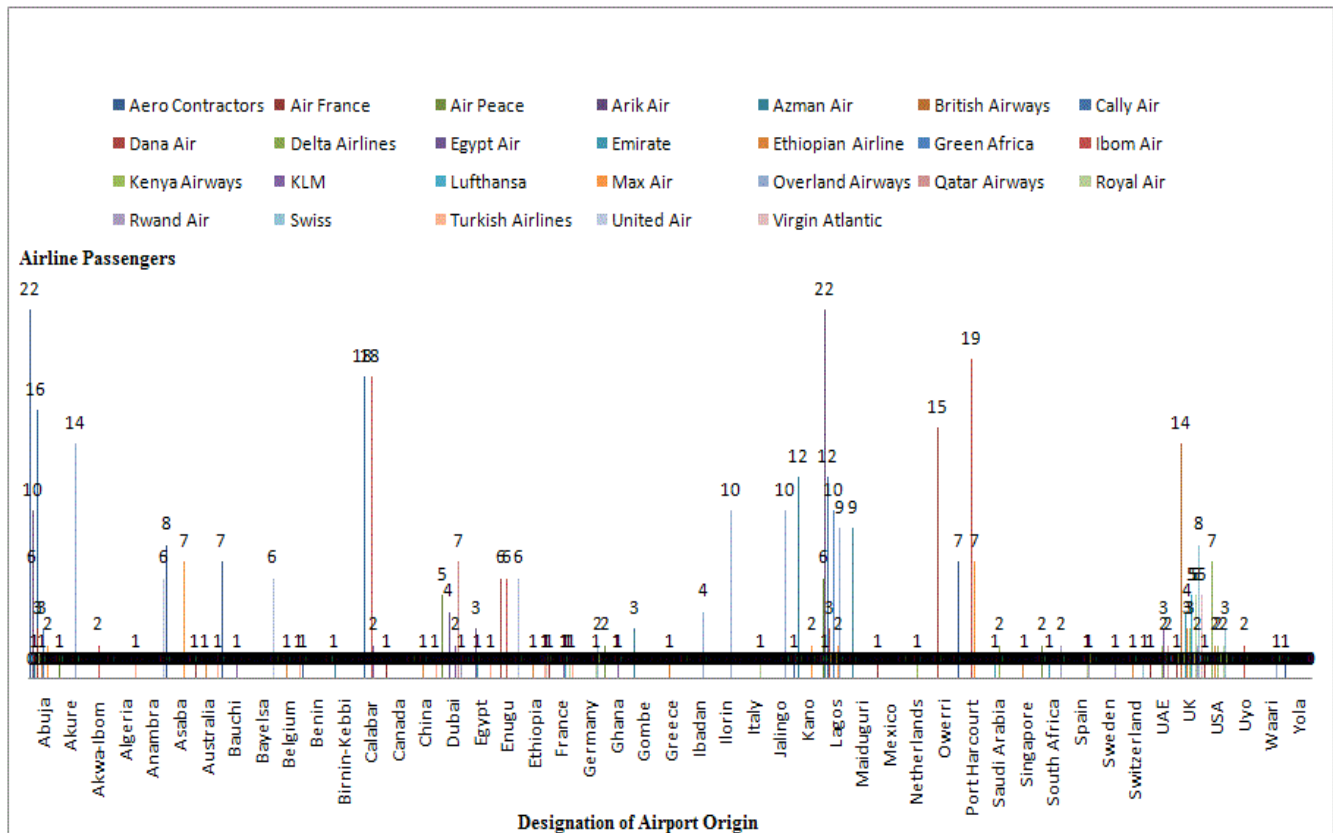
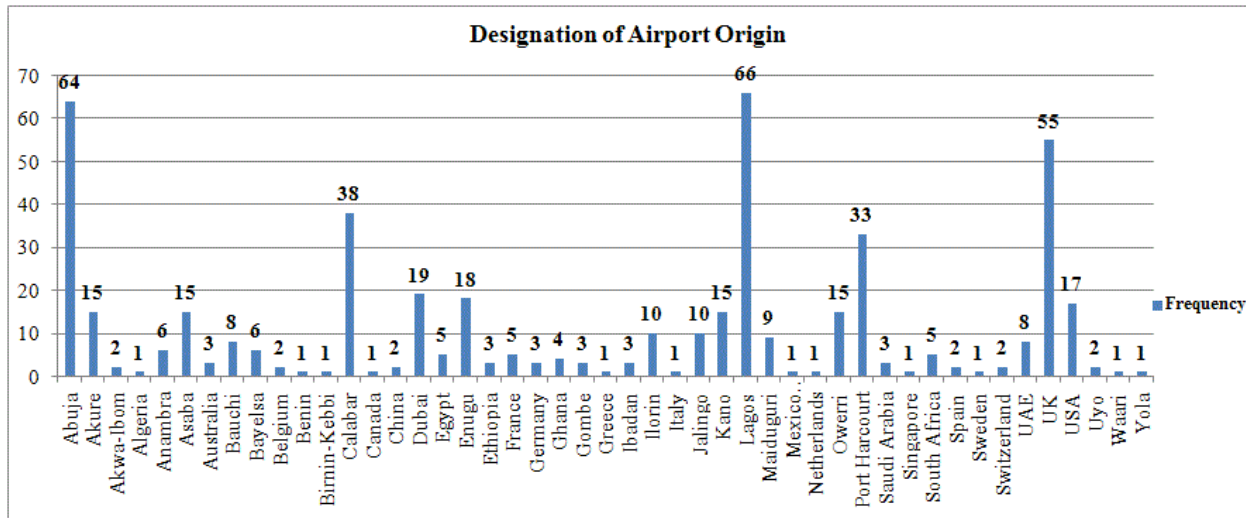
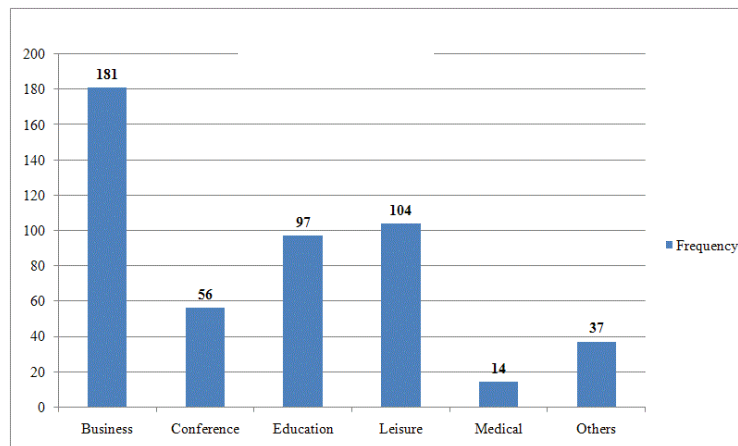


Figure 2a. Cross-tabulation of airline patronized and the designation of origin airport

Source: the authors' field survey

**Figure 2b.** Designation of airport origin*Source: the authors' field survey***Figure 3.** The trip purpose of respondents*Source: the authors' field survey*

The mean age of the respondents was 42.35 ± 10.39 years, with a minimum age of 12 and a maximum age of 71 years as shown in Table 4. This implies that the majority of the respondents were not older than 53 years, and was between the age of 32 and 53 years, which is referred to as economic stimulating age (Rhode Island College, 2020). Most of the respondents (52.8%) were married and 200 respondents (40.9%) were self-employed, while 192 respondents (40.1%) were privately employed, as shown in Table 4. This implies that the majority of the people that can afford to travel by air are those in the self-employed or privately employed category.

The respondents for this survey were citizens from 19 countries. Meanwhile, more than half of the respondents (75.9%) were Nigerians. The majority of the respondents (95.3%) have international air travel experience, and the respondents (59.8%) have travel experience for more than two years, as shown in Table 3. Also, 376 respondents (76.9%) have been travelling with that particular airline more than once, which implies that they were familiar with the specific airline's services. The majority of the respondents (72.4%) were economy-class passengers.

Regarding the reasonability of the airline's airfare patronized, more than half of the respondents (80.8%) perceived that the airline they patronized were reasonable. Meanwhile, 50.7% of respondents perceived that the airfares of competitors were more reasonable, and at the same time, the majority of the respondents (63.8%) perceived that the airlines offer promotional programs and offers. This implies that despite the oligopolistic market structure of the airline business, the nature of business is quite competitive, as evidenced by changes in industry practices, technological advancements, low-fare carriers, and frequent interaction with passengers. Regarding the percentage of fare increase on the penalty for changes in the ticket, the majority of the respondents (62%) perceived that the fare increase is more than 20%. In comparison, 21% of respondents perceived the growth is 20%.

Regarding the taste preference of passengers for airline service, 327 respondents representing 66.9% perceived that they have a very high taste for airline services, and the majority (77.7%) received that they travel with the airline because of time value. This implies that taste and time are important factors that drive air passengers to patronize a particular airline. Hence, airlines should improve the quality of taste they dish out to passengers and, at the same time, be reliable in terms of swift operations and service frequency. Regarding the estimate of passengers' monthly income, it was revealed that the majority of passengers representing 84.7% earned between ₱100,000 and ₱1,000,000.

Flight duration is referred to as the total trip time, which is measured from the "true" origin (airport of origin) to the "true" destination (airport of destination). Concerning the flight duration, as shown in Table 4, it was revealed that the majority of the respondents (64.8%) perceived that they travelled on a short haul of less than 1 hour. These are mostly passengers on domestic trips, while 35.2% of respondents were on the long haul trip whose duration is more than 1 hour; these are mostly the passengers on the international routes or those on the domestic route but a longer distance. The majority of the respondents (passengers), representing 91.4% have completed their journey, which implies that they reached their final airport destination upon arrival.

Regarding the specialized form of airline culture, more than half of the respondents (65.4%) perceived that the airlines they patronized do not have any special form of culture. This implies that many airlines, especially domestic ones, do not sell culture to passengers. Regarding airline punctuality or reliability warranties, 49.3% of respondents perceived no compensation for flight delays. In comparison, 46.2% of respondents perceived that there is reimbursement of the ticket cost. Finally is the condition of space for legroom. Most respondents (71%) perceived small space for legroom within the seats. Notably, the state of legroom depends on the class of ticket or cabin service; for instance, the space for an economy class flight will be quite different from the space for a business class (see Table 4).

Table 4. Descriptive statistics of independent variables

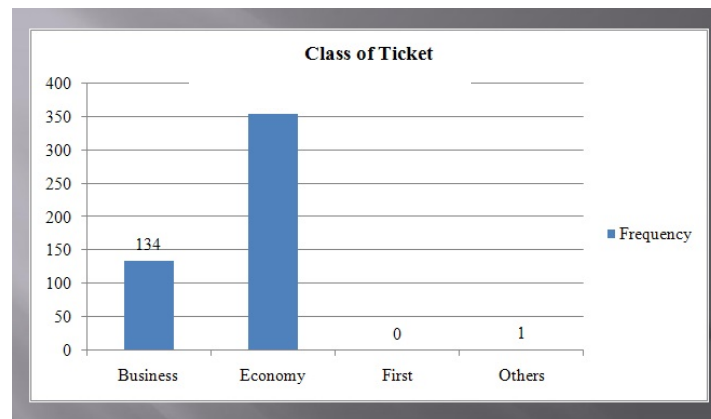
Variables	Indicators	N	%	Variables	Indicators	N	%
Nature of arrival flights	Domestic	335	68.5	International travel	No	23	4.7
	International	154	31.5		Yes	466	95.3
Age	Mean	42.35	489	Travel experience	>2 Years	291	59.8
	Std. Dev.	10.39			2 Years	198	40.8
Marital status	Divorced	75	15.3	First travel with the airline	No	376	76.9
	Married	258	52.8		Yes	112	22.9
	Single	97	19.8		Others	1	0.2
	Widowed	59	12.1				
Nature of employment	Government employed	92	18.8	Class of ticket	Business	134	27.4
	Privately employed	196	40.1		Economy	354	72.4
	Self-employed	200	40.9		Others	1	0.2
				Reasonability of	No	94	19.2

	Others	1	0.2	airfare	Yes	395	80.8
Nationality	America	9	1.8	Reasonability of competitor's airfare	No	241	49.3
	Benin	2	0.4		Yes	248	50.7
	China	8	1.6	Percentage of fare increase on the penalty for changes in ticket	10.0%	80	16.4
	Dubai	4	0.8		20.0%	106	21.7
	France	2	0.4		Others	303	62.0
	Ghana	10	2.0				
	India	12	2.5	Airline promotions and offers	No	176	36.0
	Italy	3	0.6		Yes	312	63.8
	Ivory Coast	1	0.2				
	Jordan	2	0.4	Taste preference for airline service	Do not have a taste	24	4.9
	Netherlands	1	0.2		Limited taste	138	28.2
	Niger	1	0.2		Very high taste	327	66.9
	Nigeria	371	75.9				
	Norway	1	0.2	Estimate of monthly income		2	0.4
	South Africa	36	7.4		₦100,000 - ₦499,999	156	31.9
	Sweden	15	3.1		₦500,000 - ₦1,000,000	258	52.8
	UAE	1	0.2		Above ₦1,000,000	49	10.0
	UK	3	0.6		Below ₦100,000	24	4.9
	USA	7	1.4				
Travel with this airline because of the time value	No	109	22.4	Duration of flight	Long haul (more than 1 hour)	172	35.2
	Yes	380	77.7		Short haul (less than 1 hour)	317	68.4
Stage of journey	Completed	447	91.4	Airline special form of culture	No	320	65.4
	Stop-over	42	8.6		Yes	169	34.6
Warranties on airline punctuality or reliability	Availability of free tickets for the same trip	22	4.5	Condition of space for legroom		2	0.4
	No compensation for flight delay	241	49.3		Small space for legroom within the seats	347	71.0
	Reimbursement of the cost of the ticket	226	46.2		Wide space for legroom within the seats	140	28.6

Source: the authors' field survey

Identification of basic airline inhibitors

The airline services were categorized into three classes (Economy class, Business class and First class). Each class determines the package of services that the airline will offer to the passengers when onboard; it is also among the criteria that determine the airfare. From the analysis shown in Figure 4, it was revealed that most of the respondents (72.4%) purchased economy-class of tickets, and there were no first-class passengers among the respondents.

**Figure 4.** Class of Ticket*Source:* the authors

The assessment of basic airline inhibitors available in each class of airline tickets in Nigeria was achieved with descriptive analysis. The services were categorized based on the class of airline tickets (economy class, business class, and first-class). Notably, there are only two cases with zero variance on one of the variables; hence, rigorous analysis that deals with correlation could only be computed for some pairs of variables.

The descriptive analysis depicts the basic airline inhibitors available in the classes of tickets based on the respondents' perceptions (see Figures 5a and 5b). As earlier identified in Figure 4 that there were no responses obtained from first-class passengers; hence the analysis was limited to economy and business class tickets. As shown in Table 5, '5' represents 'Excellent', '4' represents 'Good', '3' represents 'Fair', '2' represents 'Poor', and '1' represents 'Not Available'.

Figure 5a depicts the respondents' perception of basic airline inhibitors in the economy class ticket on the five-point scales of excellent, good, fair, poor, and unavailable. By merging the respondents' responses under excellent and good, fifty (50) respondents representing 10.2% acknowledged 30-32 inches of space between the seat pitch. Twenty-six (26) respondents representing 5.3% acknowledged the presence of 10.6 inches of digital TV with more than 100 TV channels for economy class passengers. Twenty-one (21) respondents representing 4.3% acknowledged the permission to communicate with loved ones via SMS, telephone and email during flights for economy class passengers.

Furthermore, fifty-nine (59) respondents representing 12.1% acknowledged the provision of airlines' complimentary in-flight magazines, duty-free magazines, and a selection of international newspapers for economy-class passengers. Thirty-six (36) respondents representing 7.3% acknowledged the provision of free drinks and complimentary meals for economy-class passengers. Fifty-six (56) respondents representing 11.4% acknowledged the availability of hot towels after boarding and before landing. Two hundred (200) respondents representing 40.9% acknowledged 30kg luggage permission by the airline. Thirty-nine (39) respondents representing 8% acknowledged the use of online check-in 24 hours before the departing flight.

The above analysis on the economy class ticket revealed that the quality of airline services offered was fair, except for the provision of 30kg luggage permission, which was good. This implies that most economy class ticket airlines permit 30kg luggage by economy passengers and is the basic airline inhibitor for economy class.

Figure 5b depicts the respondents' perception of basic airline inhibitors in the business class ticket on the five-point scales of excellent, good, fair, poor, and unavailable. By merging the respondents' responses under excellent and good, eighty-five (85) respondents representing 17.4% acknowledged the availability of seats that can be

converted into a full flatbed for business class passengers. Nineteen (19) respondents representing 3.9% acknowledged the 79 to 87 inches of space between seat pitches for business class passengers. Eighty-six (86) respondents representing 17.6% acknowledged the availability of on-demand flight attendants that prepare the flatbed with mattresses for business class passengers.

Furthermore, eighty-eight (88) respondents representing 18% acknowledged the presence of 17 inches of digital TV for business class passengers. Eighty-eight (88) respondents representing 18% acknowledged the availability of international magazines for business class passengers. Ninety-four (94) respondents representing 19.2% acknowledged the provision of additional space to accommodate personal belongings beside seats for business class passengers. Twenty-four (24) respondents representing 4.9% acknowledged the availability of a mini-bar; access to communicating with the in-flight entertainment and communication (IFEC) system for business class passengers. Ninety-three (93) respondents representing 19% acknowledged the provision of five-star meals for business class passengers. Twenty-seven (27) respondents representing 5.5% acknowledged that airlines welcome business class passengers with complimentary drinks during boarding. Ninety-four (94) respondents representing 19.2% acknowledged the provision of varieties of snacks during the entire flight for business class passengers. Finally, ninety-two (92) respondents representing 18.8% acknowledged the allowance of 40kg for baggage and baggage handling priority for business class passengers. Eighty-four (84) respondents representing 17.2% acknowledged the access to airport lounges at many destinations and relaxation areas for business class passengers. Nineteen (19) respondents representing 3.9% acknowledged the provision of bus service for business class passengers before arriving at the airport and after landing at the airport. Eighty-five (85) respondents representing 17.4% acknowledged the provision of simplified priority cards to business class passengers, enabling them to avoid queues at security or immigration.

From the above analysis on the business class ticket, it was revealed that the quality of airline services offered was good, except for the provision of bus service, which was poor. In contrast, other services such as 79 to 87 inches of space between seat pitches, availability of mini bar, and welcoming of business class passengers with complimentary drinks during boarding were fair.

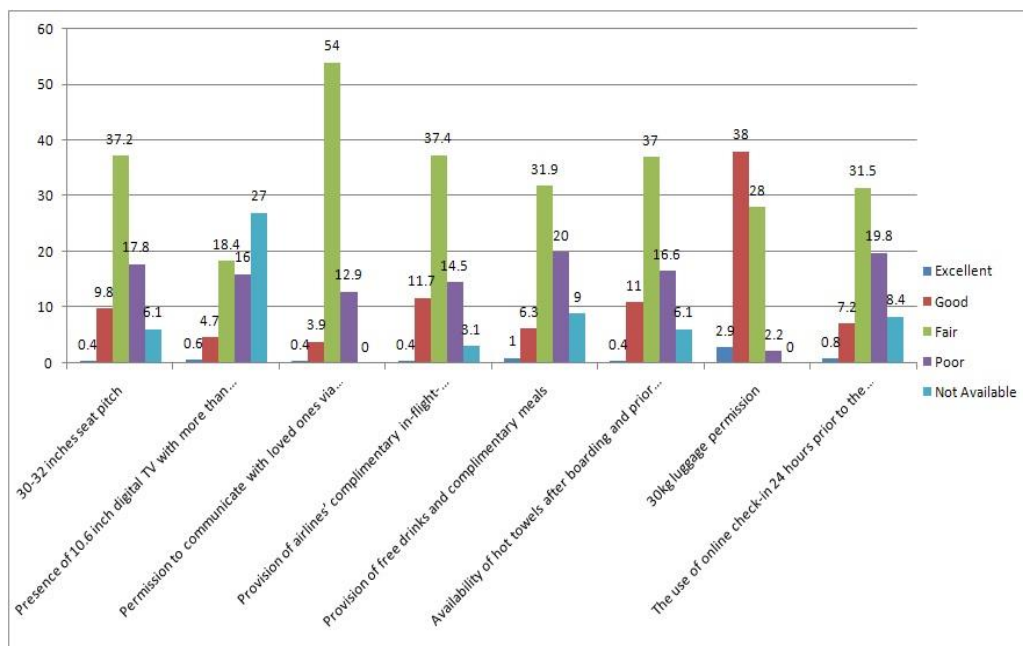


Figure 5a. Descriptive analysis of basic airline inhibitors in the economy class ticket

Source: the authors

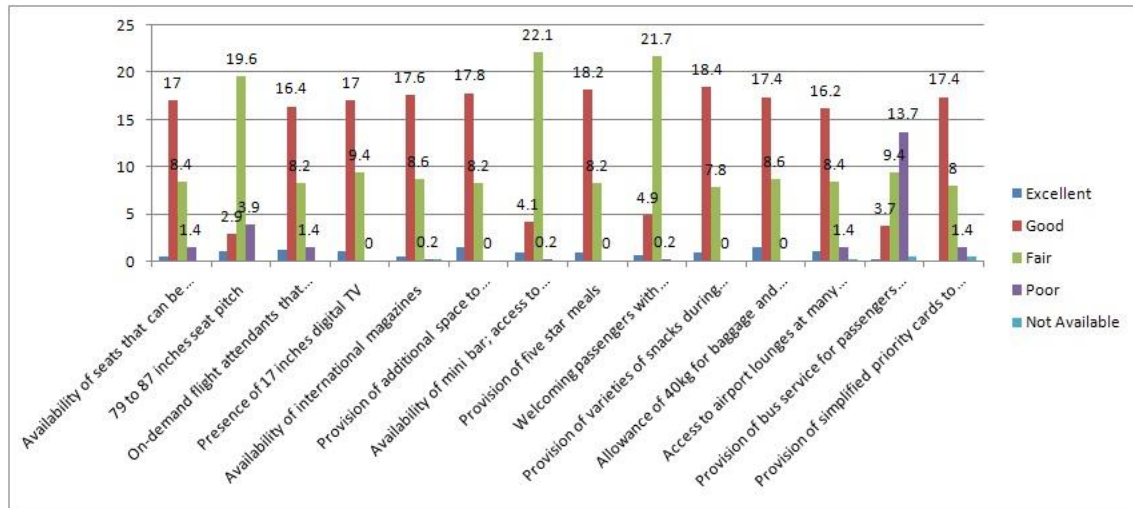


Figure 5b. Descriptive analysis of basic airline inhibitors in the business class ticket

The Relative Importance Index (RII) revealed the basic inhibitors airlines offer in economy and business classes, based on the available data retrieved from respondents. In ranking orders shown in Table 5, the analysis revealed that “30kg luggage permission”, “the Permission to communicate with loved ones via SMS, telephone and email during flight”, and “Availability of hot towels after boarding and before landing” are the basic airline inhibitors available for the economy fare. Also, “Provision of additional space to accommodate personal belongings beside seats”, “Allowance of 40kg for baggage and baggage handling priority”, “Presence of 17 inches of digital TV”, and “Provision of five-star meals” are the basic airline inhibitors available for the business fare.

Table 5. Analysis of Relative Importance Index for airline inhibitors

Choices	Service Items	Frequency					W	RBI	Rank
		5	4	3	2	1			
Quality of services for Economy class	30-32 inches seat pitch	2	48	182	87	30	952	0.389	4
	Presence of 10.6 inches of digital TV with more than 100 TV channels	3	23	90	78	132	665	0.272	7
	Permission to communicate with loved ones via SMS, telephone and email during flight	2	19	264	63	-	1004	0.411	2
	Provision of airlines' complimentary in-flight-magazine, duty-free magazines, and a selection of international newspapers	2	57	183	71	15	944	0.386	5
	Provision of free drinks and complimentary meals	5	31	156	98	44	857	0.351	6
	Availability of hot towels after boarding and before landing	2	54	181	81	30	961	0.393	3
	30kg luggage permission	14	186	137	11	-	1247	0.510	1
Quality of services for Business class	The use of online check-in 24 hours before the departing flight	4	35	154	97	41	857	0.351	6
	Availability of seats that can be converted into a fully flatbed	2	83	41	7	-	479	0.196	6
	79 to 87 inches seat pitch	5	14	96	19	-	407	0.167	10
	On-demand flight attendants that prepare the flatbed with mattresses	6	80	40	7	-	484	0.198	5
	Presence of 17 inches of digital TV	5	83	46	-	-	495	0.203	3
	Availability of international magazines	2	86	42	1	1	483	0.198	5
	Provision of additional space to accommodate personal belongings beside seats	7	87	40	-	-	503	0.206	1
	Availability of mini bar; access to communicating	4	20	108	1	-	426	0.174	9

with in-flight entertainment and communication (IFEC) system								
Provision of five-star meals	4	89	40	-	-	496	0.203	3
Welcoming passengers with complimentary drinks during boarding	3	24	106	1	-	431	0.176	8
Provision of a variety of snacks during the entire flight	4	90	38	-	-	494	0.202	4
Allowance of 40kg for baggage and baggage handling priority	7	85	42	-	-	501	0.205	2
Access to airport lounges at many destinations; relaxation areas	5	79	41	7	1	479	0.196	6
Provision of bus service for passengers before arriving at the airport and after landing at the airport	1	18	46	67	2	351	0.144	11
Provision of simplified priority cards to passengers which enable them to avoid queues at security or immigration	-	85	39	7	2	473	0.194	7

It is pertinent to note that the traffic carried by airlines consists of both passengers and cargo, which can include passenger baggage. As evident in this result, it was revealed that 30kg luggage permission for economy fare and 40kg for baggage permission for business fare were listed among the basic airline inhibitors, which signify that passengers are always conscious of their baggage.

For all classes of fare, seat offering is usually constant, and it is assumed that will be mandatory baggage provision by airlines, which may differ for each class. This finding is in line with the research of Park et al. (2014); Tsaur, Chang and Yen (2016) who found that airline selection relies mostly on tangibles such as seat comfort. Vink *et al.* (2012); Richards (1980) revealed that airline selection depends on plane seats which guarantee the passenger experience in terms of comfort and general acceptance. Regardless of the ticket class, Mendoza (2018) believes that aircraft seats should be comfortable for all passengers, and additional comfort can be made on the seat to differentiate the cabin class.

Despite the availability of various service inhibitors, the basic ones, as revealed by this study, are "30kg luggage permission", "the permission to communicate with loved ones via SMS, telephone and email during flight", and "availability of hot towels after boarding and before landing" for economy fare, while "provision of additional space to accommodate personal belongings beside seats", "allowance of 40kg for baggage and baggage handling priority", "presence of 17 inches of digital TV", and "provision of five-star meals" for the business fare.

The implication of these inhibitors on the economy fare is that airlines can adopt additional luggage permission and varying means of communication during flights as their major pricing strategies that passengers may not avoid. The economy passengers prioritized the availability of hot towels after boarding and before landing. The implication of these inhibitors on the business fare is that airlines can provide additional space to accommodate personal belongings beside seats; airlines can innovate aircraft design such that more baggage space can be allocated with business seats; adopt additional luggage permission and prioritize their baggage handling; provide digital TV and five-star meals.

The provisions of baggage allowance, baggage handling, additional seat pitch, and the availability of hot towels after boarding and before landing were prioritized, maybe as a result of the fact that this study was conducted when the fear of COVID-19 transmission was still fresh in the mind of everyone including the passengers. The use of hot towels during flight is one of the means of controlling the spread of infectious diseases in the aircraft, especially during flight and during the pandemic. Baggage handling and baggage allowance help prevent touch of baggage that may have COVID-19 droplets and additional seat pitch help prevent contact of passengers' seats. This is affirmed in the studies of Ashok (2020) and Delcea et al. (2018).

5. Conclusions

This study assesses the basic airline inhibitors available in the fare classes. It focused on domestic and international passengers that arrive at Murtala Muhammed International Airport in Lagos and Nnamdi Azikiwe International Airport in Abuja. Information was gathered from domestic and foreign passengers who had post-purchase experience and had used the airline's services more than once. The study was rooted in the Engel-Kollat-Blackwell (EKB) model, which explained the post-consumption behaviour of customers. EKB model was adopted because it is a post-consumption decision theory.

The primary data were obtained concurrently from arrival passengers at the two major international airports in Lagos and Abuja using an electronic questionnaire through a survey. The populations of the study were a totality of international and domestic passengers in MMIA and NAIA for August 2019. The month of August was chosen because data was administered in August 2021. The year 2019 was chosen because it was the year before the COVID-19 pandemic, which disrupted economic activities. The sampling frame was the arrival of passengers in the two airports in August 2019. From the sampling frame, 0.1 per cent was used to estimate the sample size. This percentage was hinged on the study of Thomas (2014), and as a result, the sample size was estimated to be 606. The e-questionnaire targeted 606 respondents using a multistage sampling technique (random sampling of all airlines in the terminals, purposive sampling of airline passengers, and snowball sampling by passengers).

The study was analyzed descriptively and with Relative Importance Index (RII). Responses were received from 524 passengers, but 489 responses were valid for data analysis and reporting and were obtained mostly from economy and business class passengers. Regarding the aim of the study, which is to assess the basic airline inhibitors available in the fare classes, the study found that baggage permission, permission to communicate with loved ones via telephone during flight, and availability of hot towels after boarding and before landing were the basic service inhibitors for economy class. Also, baggage allowance, provision of five-star meals, and the presence of digital TV were the basic service inhibitors for business class.

It is pertinent to note that since the study was carried out during the COVID-19 pandemic, the passengers' perception of the basic service inhibitors will be influenced by COVID-19 measures. Therefore, the results of future studies conducted during the post-COVID-19 may have slight difference from this present result because most of the COVID-19 measures put in place by the government have been relaxed. However, this study is relevant because the recommendations could be adopted whether there is an infectious disease outbreak. But in the case of future disease outbreaks, the recommendations will not lead to travel restrictions as experienced previously.

Regarding the basic airline inhibitors available for economy and business class tickets, it was recommended that the management of airlines:

- a) should procure wide-body aircraft, such as the Airbus 380, and Boeing 747, that will enhance additional luggage permission and seat pitches cost-effectively;
- b) should provide varying means of communication during flights and use them as pricing strategies for a class of ticket;
- c) should provide 17 inches of digital TV and five-star meals; and
- d) should provide hot towels during flights, especially during the epidemic of infectious diseases.

For this study, the following limitations were stated. This study targeted economy class, business class and first-class passengers, but valid responses were only retrieved from economy class and business class for the analysis.

Future studies could expand the scope of the study to airports in two or three countries so that more passengers will be captured and the views of first-class passengers can be reflected.

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**SENDING A MESSAGE TO THE TOP: THE INFLUENCE OF SERVICE DELIVERY PROTESTS ON
SERVICE DELIVERY PLANNING IN SOUTH AFRICAN MUNICIPALITIES****John Mamokhere***University of Limpopo, Research Administration and Development, Turfloop Campus, Polokwane, South Africa**E-mail: johnmamokhere@gmail.com**Received 23 February 2023; accepted 20 May 2023; published 30 June 2023*

Abstract. South Africa has seen a surge in service delivery protests in recent years. These protests are often due to the inadequate provision of services. Unemployment, poor housing, water and sanitation, electricity, corruption and municipal administration, health, and crime have all been cited as causes of the protests, which have been termed a "poor's rebellion". Given the service dissatisfaction, residents often use protest as a means of communication to influence policy and decision-making. However, this study sought to assess the influence of service delivery protests on service delivery planning using Bolobedu South under the jurisdiction of Greater Tzaneen Municipality. The study utilised a qualitative research approach to collect and analyse the primary results. The citizens residing at Greater Tzaneen Municipality have been interviewed using a face-to-face semi-structured interview guide and the data was analysed using thematic content analysis. The finding of this study shows that service delivery protests are a common phenomenon in South Africa, with citizens protesting over the inadequate delivery of basic services such as shelter, electricity, water and sanitation. Service delivery protests are legally recognised in South Africa. However, as much as they are legally recognized, they are often disruptive and undermine the maturity of democracy. The study recommends that it is essential to engage with the community regularly and ensure that they are aware of the municipality's plans and progress. This engagement should be ongoing and not just when protests erupt. When people feel that they are being heard and that their concerns are being addressed, they are less likely to resort to protests. It also recommends improved communication and engagement between the municipality and the communities they serve. This can involve regular meetings, consultations, and feedback mechanisms that allow community members to express their concerns and provide input on service delivery planning (IDP).

Keywords: service delivery; protests; disruptive; inadequate; planning; South Africa

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1. Introduction

Since the democratic election in 1994, South Africa has experienced surge of both non-violent and violent protests in rural and urban areas. The phenomenon of service delivery protests has become a norm in South Africa (Wasserman, Chuma & Bosch, 2018; Ndasana, Vallabh & Mxunyelwa, 2022). However, In South Africa, protesting is legally recognised in the Constitution of the Republic of South Africa, 1996, which is the supreme law of the country. The Constitution of the Republic of South Africa, 1996, recognise protesting as a human right

and the right to expression. According to a report by the Public Affairs Research Institute, service delivery protests in South Africa have increased significantly since the early 2000s, with over 2000 protests recorded in 2018 alone (PARI, 2019). These protests often arise due to a lack of basic services and are particularly prevalent in poor and marginalized communities (Akinboade, Mokwena & Kinfack, 2013). Furthermore, a study by Abers, Keck & Smithey (2016) on service delivery protests with a focus on Brazil, India, South Africa, and Mexico found that these protests can influence policy and service delivery planning by drawing attention to specific issues and putting pressure on government officials to act. On the other hand, Akinboade Mokwena & Kinfack (2014) indicate that service delivery protests can influence service delivery planning by forcing policymakers to prioritize the provision of basic services. Mirafab (2004) indicate that service delivery protests can create a sense of urgency among government officials and prompt them to commit resources and formulate plans to address the underlying challenges. This can lead to changes in policy, funding allocations, and the deployment of resources to areas that are most in need of services.

Moreover, Ndou (2019), states that service delivery protests can foster greater community participation in service delivery planning. While Pithouse & Naidoo (2015) concur, that protests can create opportunities for citizens to engage in dialogue with local government officials and co-create solutions to service delivery challenges. This can help to ensure that service delivery planning is more responsive to the needs and priorities of the communities being served. The trend of Service delivery protests in South African provinces and municipalities is rising. Municipal IQ (2023) which is the hotspot monitor revealed that the total number of protests for 2022 was 193 in number. It is clear now that the number of protests for 2022 is rising, although significantly higher than in 2020 and 2021, and has not matched the record protest levels of 2018 and 2019. Municipal IQ (2023) further indicate that Gauteng with 27% of all protests in the country is the most prominent site of service delivery protests for 2022, as it has been historically. It is followed by KZN with 22% of protests and the Eastern Cape with 16%. Gauteng remains the most protest-aggravated province, although KwaZulu-Natal and the Eastern Cape also have high numbers of protests. With regards to the above, the research question to be answered in this study is what is the influence of these service delivery protests in the formulation and implementation of service delivery planning? The stud outlines the problem state, the objective of the study guided by the abovementioned research question and research methodology, the literature review and the conclusion.

2. Problem statement

According to Reddy (2016:7) and Masibigiri (2022:18) stressed that “to date, several government initiatives have been introduced to address service delivery challenges and the dysfunctionality of municipalities, but none have led to any significant improvement in the local governance emergency”. Mamokhere (2020) indicates that this has been witnessed through mass media in a form of protests where societies are expressing their frustration and attempting to influence policy-and-decision-making. Furtherance, Mamokhere (2020) and Masiya, Davids & Mangai (2021) indicates that the influence and factors for the protests have also changed over time, with issues related to housing, water, and sanitation being the most prevalent in the early 2000s. In recent years, protests have shifted to more systemic issues, such as corruption, maladministration, and political interference in service delivery. Xolani et al. (2022), concur that the causes of the protests are diverse and complex, as outlined in previous research, and include socio-economic inequality, corruption, and poor service delivery. These challenges are deeply rooted and require sustained efforts to address them. Burger (2009); Shaidi (2013) and Ngcamu (2019) imply that service delivery protests have become a common manifestation in South Africa, with citizens expressing their dissatisfaction with the poor quality of basic services such as water, sanitation, and electricity (Burchardt, 2022). The research gap in this study is that many studies in South Africa and across the world investigate the causes or underlying factors towards service delivery protests and service delivery challenges. Only few scholars had made contribution on the investigation of the influence of service delivery protests. It is clear that South African municipalities across all the province has witnessed the prevalent service delivery protests due to poor service delivery. This have led to many analyses presenting general theories about the causes

(Masiya, Davids & Mangai, 2021). While these theories shed light on the phenomena, they may not capture the influence of the protests. These protests not only disrupt daily activities but also impact service delivery planning in municipalities. Having assessed the underlying factors towards service delivery protests in South African municipalities, it is now significant to evaluate the influence of such protests if they yield the desired goals. Therefore, there is a need to assess the influence of service delivery protests on service delivery planning in South African municipalities.

Theoretical and Empirical Objective of the Study

This study aims to theoretically and empirically assess the influence of service delivery protests on service delivery planning in South African municipalities.

3. Literature Review

Service delivery protests influence service delivery planning in South Africa

There are many ways in which service delivery protests influence service delivery planning in South African municipalities' perspective. Hereunder are some of the ways in which this has been the case;

Identify and Highlight service delivery gaps

Service delivery protests in South Africa often arise due to a lack of basic services such as water, sanitation, electricity, healthcare, education, and housing, among others. These protests can draw attention to specific areas where service delivery is inadequate and help to identify gaps in the provision of services (Morudu, 2017; Burchardt, 2022). Machiri & Pade-Khene (2020); Burchardt (2022) concur that service delivery protests are a common form of public demonstration in South Africa. These protests typically occur in response to perceived failures or gaps in the delivery of basic public services such as water, electricity, housing, and healthcare. Service delivery protests can be seen as a way for citizens to express their dissatisfaction with the government's performance in delivering these basic services. They often arise when citizens feel that their needs are not being met and that their voices are not being heard by those in power (Akinboade Mokwena & Kinfack, 2014; Mamokhere, 2020; Kalonda & Govender, 2021). However, Shaidi (2013) and Wasserman, Chuma, & Bosch (2018) indicated that the service delivery protests can also be seen as an important mechanism for highlighting service delivery gaps in South Africa. By drawing attention to these issues, protesters can put pressure on the government to take action to improve service delivery in affected areas. They can also raise awareness among the wider public and the media about the challenges faced by communities that lack access to basic services. In this way, Wasserman et al. (2018) posit that the service delivery protests can serve as a catalyst for change and can ultimately lead to improvements in service delivery and better outcomes for citizens. However, the researcher of this article argues that it is important that these protests are conducted peacefully and lawfully, and that all parties involved engage in constructive dialogue to address the underlying issues.

Pressurize government officials to act

These protests usually occur in response to dissatisfaction or grievances related to basic services (Mamokhere, 2020). Service delivery protests in South Africa can create pressure on government officials to respond to community demands for improved service delivery. Protests can draw media attention and generate public outcry, which can compel officials to take action to address the issues (Morudu, 2017; Ngcamu, 2019). Allan & Heese (2011) and Chiwarawara (2021) concur with the above scholars that indeed service delivery protests can certainly put pressure on government officials to act, as they are often seen as a sign of public dissatisfaction with government services and policies. These protests can lead to increased media attention, which can further highlight the issues at hand and create public pressure for action. In some cases, Chiwarawara (2014) and Chiwarawara (2021) indicate that the service delivery protests have been successful in achieving their objectives. For example, protests in Khayelitsha in 2013 resulted in the allocation of additional funding for housing and basic

services. However, in other cases, protests have been met with violent domination, and government officials have been slow to respond to the demands of protesters.

Increase public awareness and participation

Masiya, Davids & Mangai (2019) imply that service delivery protests in South African municipalities are typically triggered by frustrations over inadequate or non-existent access to basic services such as water, electricity, and housing. These protests are usually carried out by community members who feel that their needs are not being adequately addressed by the local government. While these protests can disrupt normal life and cause property damage, they also have the potential to increase public awareness of the challenges faced by communities in accessing basic services (Breakfast, Bradshaw & Nomarwayi, 2019; Mazele & Amoah, 2022). When these protests occur, media coverage is often extensive, and the grievances of the protesters are widely reported (Wasserman et al., 2018). Increased public awareness can lead to greater participation in service delivery planning processes. When citizens become more engaged in advocating for their needs and priorities, they can provide valuable input into the planning and implementation of services. This can help to ensure that services are better targeted towards the needs of communities and that resources are used more effectively (Curristine, Lonti & Joumard, 2007).

In addition to encouraging greater participation in service delivery planning processes, service delivery protests can also put pressure on the government to take action to address the underlying issues. When protests are sustained and widespread, they can become a significant political issue, forcing policymakers to take notice and act (Mamokhere & Meyer, 2022). Hussey (2023) indicates that "community participation helps governments improve the efficiency, legitimacy and transparency of their decision making. By embracing and encouraging participation, it enables policymakers to make more informed decisions by engaging with, and carefully mapping out the needs, opinions and visions of local communities on issues that matter to them. It promotes sustainable decisions by recognizing and communicating the needs and interests of all participants – including decision-makers. This increases acceptance of decisions and community commitment to outcomes as local knowledge from diverse groups shapes and creates inclusive, effective solutions and improves service delivery". Lack of community participation has been noted as one of the underlying factors towards service delivery protests in South Africa. Encouraging active public participation, according to Mamokhere & Meyer (2022) can contribute to sustainable delivery and minimize service delivery protests. Public participation is encouraged in many South African legislative frameworks such as the Constitution of the Republic of South Africa, 1996 and the Municipal Systems Act (32 of 2000). Thus, Modise (2017) argues that "the lack of knowledge about participatory democracy has restricted communication between the public officials and communities. This is demonstrated by individuals expressing their discontent through protests when they feel excluded from the decision-making processes (Brooks, 2017). The idea of participatory democracy is a significant obstacle to democratic South Africa as citizens do not have enough understanding of how local municipalities operate. The protests over service delivery show that participatory democracy is a major challenge in democratic South Africa, and consequently, insufficient public participation results in the underdevelopment of local government" (Modise, 2017; Msenge & Nzewi, 2021). From the discussion, it is clear that having active public awareness and participation can influence service delivery.

Overall, while service delivery protests can be disruptive and damaging, however, they can also serve as a powerful tool for citizens to advocate for their needs and priorities, and to ensure that their voices are heard in service delivery planning processes. This was witnessed during the #fessmustfall protest in 2015.

Inform policy development

Service delivery protests can have a substantial influence on policy development in South African municipalities. These protests often arise due to frustration with the lack of basic services such as water, electricity, and housing. They can be seen as a way for citizens to express their dissatisfaction with the quality-of-service delivery in their

communities (Burger, 2009); Shaidi, 2013; Morudu, 2017; Ngcamu, 2019; Mamokhere, 2020). In response to the protests, Matebesi & Botes (2017) indicate that municipalities are often forced to act and address the concerns of their citizens. This can include developing new policies and programs to improve service delivery, as well as increasing transparency and accountability in their operations. Nleya (2011) and Gamede (2021) indicate that protests can also bring attention to specific issues and highlight areas where policies and programs need to be improved. This can provide valuable feedback to policymakers, who can use this information to make more informed decisions and allocate resources more effectively. Furthermore, Shaidi (2013) and Chiwarawara (2021) posit that service delivery protests can also serve as a reminder to government officials that they are accountable to the citizens they serve. By highlighting the failures of service delivery, protests can increase pressure on officials to act and improve the quality of services provided. Mamokhere & Meyer (2022) indicate that service delivery protests in South Africa can inform the review of the Integrated Development Plan (IDP) by highlighting specific service delivery challenges and identifying areas where policy interventions are needed. For example, protests over water shortages can inform policy development around water management and infrastructure investment. In this manner, the researcher of this study argues that a service delivery protest is a powerful tool for influencing policy development in South African municipalities. Service delivery protests can influence the municipality to review the IDP and reprioritise community needs.

Resource allocation

Service delivery protests in South African municipalities can have a significant influence on resource allocation decisions (Gumede, 2014). Protests typically arise when residents feel that the local government is failing to provide basic services such as electricity, water, and sanitation (Allan et al., 2011; Morudu, 2017; Owusu, 2020), and can range from peaceful demonstrations to violent unrest (Mngxitama, 2016). The protests can have both short-term and long-term effects on resource allocation (Matshiqi, 2018). In the short term, protests can lead to increased funding being allocated to the affected municipalities to address the immediate concerns of the protesters (Maphunye, 2014). However, this increased spending may not be sustainable in the long term, as it may divert resources away from other areas of need in the municipality (Van der Veen, 2016). In the long term, service delivery protests can also influence resource allocation decisions by shaping policy priorities and budgets (Seekings, 2017). Municipalities may be forced to reassess their spending priorities and redirect resources towards addressing the underlying causes of the protests, such as poverty, unemployment, and inequality (Makgetla, 2018). For instance, this may involve investing in education, job creation programs, and social welfare services, which can have a more sustainable impact on improving living conditions and reducing the likelihood of future protests.

It is important to note that the influence of service delivery protests on resource allocation decisions can vary depending on a range of factors, including the severity and duration of the protests, the level of public pressure, and the responsiveness of the government. Ultimately, effective resource allocation requires a holistic understanding of the needs and priorities of the community, and a commitment to addressing these needs through sustainable and equitable policies and programs (Burger, 2009; Nleya, 2011). Service delivery protests in South African municipalities can indeed drive resource allocation to areas where services are most urgently needed as discussed above. For example, protests over the lack of housing can lead to increased investment in affordable housing initiatives in affected communities. The next section presents the research methodology adopted to achieve the aim of this article.

4. Research Methodology and Materials

The qualitative research method was used in this study. According to Denzin and Lincoln (2003), the qualitative method investigates things in their natural environments and tries to make sense of or interpret phenomena in terms of the meanings individuals assign to them. Because the research involves analyzing human behaviour in a unique situation, the qualitative research design was most appropriate. Because the chosen subject area is under-

researched in South Africa, an exploratory design was adopted. According to Bless, Higson-Smith, and Sithole (2013), exploratory designs are predominantly qualitative and frequently employ small, non-probability samples. This design assisted the researcher in investigating the influence of service delivery protests on service delivery planning, using Bolobedu South under Greater Tzaneen Municipality as a case study. In other words, the study has been empirically conducted at Bolobedu South in Greater Tzaneen Municipality, Limpopo Province, South Africa. The target population in this study was community members, and twenty (20) were used as a sample frame. They were sampled using the purposive sampling technique, which is understood as a process "where the researcher relies on his expert judgment to select units that are representative of the population," according to Burger & Silima (2006:663). Data collection in this study involved both primary and secondary data. In collecting secondary data, which is existing literature, the researcher has reviewed the literature using the study themes to search for and identify new themes. Different databases, such as Google, Google Scholar, Scopus, and university repositories, were used. On the other hand, primary data was collected using a semi-structured interview guide. Twenty (20) interviews were scheduled in 2020 as part of honours study and conducted with community members to share their experience with service delivery protests and their impact on them thereafter. From the participants interviewed, no demographic information was collected because they had no direct impact in the results of this study and South Africa's Protection of Personal Information Act of 2021 (POPIA) also discourage collection of such information. The data collected was analyzed using thematic content analysis. According to O'Leary (2014:300), "Thematic analysis is a method of identifying, analyzing, and reporting patterns (themes) within the data. It minimally organizes and describes the data set in detail. The benefit of utilizing thematic content analysis in this study is its ability and potential to further interpret and highlight emerging themes and aspects of service delivery protests". Lastly, to ensure the reliability and validity of the study, the researcher was not biased toward the topic under investigation, and the interview questions were tested against the study objective to ensure that the language used in the questions was appropriate and specific to the topic under investigation. The next section presents the empirical results and discussion.

5. Results and Discussion

To realise the objectives of this article, the themes were created from the data analysis process. The results are presented based on the study objective and the questions asked. The major themes identified are (i) experience with service delivery protests in the municipality; (ii) common issues that lead to service delivery protests in your municipality; and (iii) service delivery protests influence service delivery planning in the municipality. The results are presented below in a thematic format.

Experience with service delivery protests and Common Issues that lead to service delivery protests in the municipality

The researcher asked community members of Bolobedu South under the jurisdiction of Greater Tzaneen Municipality these questions: what is your experience with service delivery protests in your municipality and what are the most common issues that lead to service delivery protests in your municipality? The majority of the respondents indicated that *"They have personally been involved in several protests due to poor service delivery from the municipality. In recent years, many people in different communities were unhappy with the basic services they receive from their Greater Tzaneen Municipality, they then organize service delivery protests at the municipality offices. The protests are usually sparked by problems like not having enough clean water, electricity, housing, or sanitation services. Other respondents indicated that protests also happen when people are frustrated with things like high unemployment, corruption, or political issues"*.

While other respondents further indicated that even though they have never been personally involved in the actual protests themselves. They responded by stating that *"The occurrence of service delivery protests is not uncommon in municipalities across South Africa. In recent years, there have been several service delivery protests in Greater*

Tzaneen Municipality and other municipalities in the country. These protests can sometimes lead to disruptions in daily life, damage to public property, and clashes between protestors and Police officials”.

In this regard, municipalities need to take service delivery seriously and address the concerns of residents in a timely and effective manner to prevent service delivery protests from occurring. The finding above concurs with the finding from many studies that indicate that service delivery protests are often triggered by poor service delivery as stated in the study by Xolani et al. (2022). While Atkinson (2007); Managa (2012) and Masiya, Davids & Mangai (2021) argue that poor governance, lack of accountability and lack of participatory democracy, lack of institutional capacity, misuse of municipalities resources, unfulfilled promises by politicians, and poor administration of housing allocation are among the common issues of service delivery protests. On the other hand, Wasserman et al., (2018:1), directly concurred that “over the past few years, there has been a rise in service delivery protests in South Africa. These protests are a response to the insufficient provision of services, and they stem from the high levels of economic inequality that have left citizens feeling increasingly frustrated. Reasons cited for the protests include unemployment, housing, water and sanitation, electricity, corruption, municipal administration, health, and crime. The protests are often referred to as a 'rebellion of the poor,' and they serve as a means of communication for citizens who are dissatisfied with the status quo”.

Service delivery protests influence service delivery planning in the municipality

The question asked in this section was: Do service delivery protests influence service delivery planning in your municipality? In response to this question, the respondent indicated: *“Yes, we have been involved in many service delivery protests as a form of communication to the municipality. This has been the only mechanism that the municipality pays more attention to even though it is often characterised by many disruptive activities like damaging roads and other municipal infrastructure. Therefore, in my personal experience, this work best than other mechanisms because the municipality takes time to resolve simple issues but if we protest, the municipality often reprioritises the IDP and municipal budget. Other respondents indicated that in the protest we can hold the government accountable and resort the common decisions going forward”.*

Another respondent personally indicated that *“I can say that service delivery protests can have an impact on service delivery planning in a municipality. When residents protest, they are often drawing attention to specific issues or problems with the delivery of essential services such as water, electricity, housing, or sanitation. This can create pressure on local authorities to act and find solutions to address these issues. In response to these protests, municipal officials may review their service delivery plans and budgets to identify areas where they can allocate more resources or make improvements. They may also engage with community leaders and residents to better understand their needs and concerns, and to develop more effective strategies for delivering essential services”.*

In this regard, the researcher argues that service delivery protests can serve as a powerful tool for communities to advocate for their rights and demand better services. While they can be disruptive and even violent at times, they can also lead to positive changes in service delivery planning and implementation. Shaidi (2013) indicate that service delivery protests present both positive and negative impact. While Managa (2012) indicate that having active public participation can also be beneficial as the communities and municipalities can have common ground on service delivery priorities. “Protesters mostly express dissatisfaction and frustrations for being excluded from local government decision-making” (Managa, 2012). Section 16(1) of the Municipal Systems Act (Act 32 of 2000) “requires a municipality to develop a culture of municipal governance that complements formal representative government with a system of participatory governance. Municipal councils must encourage the involvement of the local community in the decisions that directly affect them”. The researcher of this study argues that the right of public participation in the governance process is a constitutional obligation and is protected by various policy frameworks governing local governments. Community participation is meant to provide information as well as improve public decisions, programmes, and projects among other things. Despite the

availability of mechanisms to promote public participation, “they are not always adequately implemented, and communities may use other channels to make their voices heard” (Jooste, 2012). Therefore, it is clear that having protests as a form of public participation can influence delivery service planning.

Conclusion and Recommendation

In conclusion, this study has adopted a qualitative research approach to achieve the objective of this study. The objective of this study was to assess the influence of service delivery protests on service delivery planning in South African municipalities. It is found that service delivery protests can have both positive and negative impacts on the planning and delivery of essential services. Service delivery protests have an influence or impact on service delivery planning in South African municipalities, as they can disrupt operations, delay projects, and damage infrastructure. The limitation of this study was based on geographical location. The study was only limited to one specific area under the Greater Tzaneen Municipality, therefore, future studies will address all the areas under the jurisdiction of Greater Tzaneen Municipalities. The future studies will go to an extent to develop effective model to mitigate the protests in South Africa as a whole. However, there are steps that municipalities can take to minimize the negative impact of these protests on service delivery planning. Here are some suggestions:

- The study recommends that it is essential to engage with the community regularly and ensure that they are aware of the municipality's plans and progress. This engagement should be ongoing and not just when protests erupt. When people feel that they are being heard and that their concerns are being addressed, they are less likely to resort to protests. It also recommends improving communication and engagement between the municipality and the communities they serve. This can involve regular meetings, consultations, and feedback mechanisms that allow community members to express their concerns and provide input on service delivery planning (IDP).
- It recommends developing a communication strategy. The municipality should develop a communication strategy to inform the public of its plans and progress. This strategy should include regular updates through social media, radio, newspapers, and community meetings. By doing this, the municipality can keep the public informed, and people will feel less frustrated and less likely to protest.
- It recommends that when grievances are raised, the municipality should address them promptly and transparently. This will help to build trust and prevent grievances from escalating into protests.
- It is important to prioritize service delivery. Municipalities should prioritize service delivery and ensure that they are providing essential services such as water, electricity, and sanitation. If people feel that their basic needs are being met, they are less likely to protest.

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**INTEGRATING ENTREPRENEURSHIP INTO CHEMISTRY EDUCATION - CAIRO UNIVERSITY
POST-GRADUATE STUDENTS' CASE STUDY***

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Abstract. Chemistry entrepreneurship is the technique of spreading knowledge about discoveries and chemical ideas to a larger audience outside of the classroom and evaluation. Graduates' ability to become job innovators with the potential to reduce unemployment and strengthen the economy is demonstrated by innovative ideas that are implemented with a social value. As a result, while attending college, chemistry students have the chance to apply what they learn in the classroom to a sustainable way of life. In this study, we have covered the breadth of classroom innovations, the "From Theory to Practice" gap, and different aspects that affect students' decisions to start and develop chemistry entrepreneurial ventures. a survey was conducted to find out more about post-graduate students' exposure to and opinions on using entrepreneurship to apply chemistry to the real world. After compiling data from an online survey consisting of 20 statements from 176 post-graduate chemistry students (Ph. D., M. Sc., and diploma) with their replies recorded on a Likert scale describing their experiences with assignments, it was possible to pinpoint areas where chemistry classes could be improved. In order to better understand how students view the use of entrepreneurship to apply chemistry to the real world, a study was conducted to look at the breadth of creativity, the gap between thinking and doing, and the factors encouraging students to select and build a chemical pilot project.

Keywords: Entrepreneurship-Chemistry education; Faculty of Science; Chemistry Curriculum; Post-graduate students

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1. Introduction

Science should be a purposeful and practical experience that helps them solve challenges, particularly economic ones. The goal of integrating concept of entrepreneurship into science education to foster the development of the entrepreneurial character through the merging of science study and entrepreneurship (Muhammad, 2018). Over the last few decades, researchers have become increasingly interested in the topic of entrepreneurship in education. This occurred as part of a larger revision of education's role and principles to reconsider the ultimate role of teaching. This revision included the introduction of new perceptions, such as the need for schools and education to promote students' acquisition of skills and competencies rather than limiting the curriculum to content knowledge (Blankesteijn et al., 2020). Introducing entrepreneurship as a subject in educational structures is a complex reform, innovation, and approach that affects many levels and aspects of schoolwork (Breslin and Jones, 2014). This is the main reason why it is challenging to define this concept in a widely accepted form (Fullan, 2007).

Since chemistry permeates everything and is present everywhere, it provides more diverse commercial options than any other discipline for the growth of small and medium-sized firms. Professional chemists, including chemistry students, could start commercialising their discoveries to reap enormous financial benefits, create jobs, and positively impact the development of the nation's economy, particularly through small and medium enterprises. However, they would need little training in entrepreneurial skills. An area of academic entrepreneurship known as "chemistry entrepreneurship" deals with the process of turning advances in the field of chemistry into commercially viable products. By patenting and commercialising their work for financial advantage, it allows chemists to push their work beyond articles in scholarly journals.

The literature focuses mostly on importance of education of different types of entrepreneurships for graduations and students (Ead and Nassar, 2021; Ead et al., 2022; Ead, Hamed and Sahar, 2021; Ead, Hamed, et al, 2022) and not so much in integration on entrepreneurship in science education (Pittaway and Cope, 2007). As a result, in terms of its theoretical points, it must include ideas about entrepreneurship in education (Jones et al., 2014; OECD, 2015). In addition to its practical implementation strategies (EU, 2011) It should also include the relationship between entrepreneurship and science education (OECD, 2015; Blankesteijn et al., 2020).

The act of commercialising new chemical discoveries for a market or a client is referred to as chemistry entrepreneurship (Al-Shammari and Waleed, 2018). Due to the role that chemistry plays in everyday life, there are several opportunities for chemical entrepreneurs. To increase the potential for chemistry entrepreneurship, it was contending that only chemistry innovation can handle important concerns such as human health, food development, energy production and storage, safe and abundant water, climate change, and others, however, doing so requires bridging the already-existing gap between academia and entrepreneurship. (Confalone, 2014).

An academic research project is considered to have undergone marketing when it strives to be successful in the commercial market. University research and invention can benefit financially from a variety of tactics, such as copyrighting, licensing, and start-up inventions. (Pimentel, 2010; Zegeye, 2013; Garcia-Martinez, 2014; Oyeku et al., 2015; Sachse and Martinez, 2016; Al-Shammari and Waleed, 2018). Given the high demand for novel materials that are utility-based and serve a variety of purposes in modern civilization, the scope and significance of chemistry entrepreneurship are obvious. Few ground-breaking scientific and research ideas are motivated to be commercialised to generate revenue. (Gokhale, 2016) i.e chemistry graduate Frank Jaksch built his successful company Chroma Dex around the chemistry of natural goods (Siegel et al., 2007). Few institutions train students to select entrepreneurship or discover potential employers for this career path, while the majority of universities focus on increasing students' employability because finding a job after graduation is becoming a big worry Phan and Siegel, 2006; Jaksch, 2016; Chemistry at Illinois, 2022; Donthu and Gustafsson, 2020).

Conceptual clarity and practical comprehension are both crucial components of entrepreneurship education because they help students become competent decision-makers. Finding an idea that is commercially viable is a requirement. In addition, attitude and behaviour are important factors (Bomgardner, 2020). However, students only learn about chemistry in the classroom, where they are unaware of its importance and practical applications (Rajesh Parishwad, 2017). Students who identify problems and offer unique ideas frequently fail to produce something that can be marketed entrepreneurship (Al-Shammari and Waleed, 2018). It is a challenging task to take their labour and convert it into a marketable product. A theoretical understanding of entrepreneurship, market research, entrepreneurial skills, and institutional support is needed. Students can earn money while they are still in school by turning their discoveries, innovations, and breakthroughs into marketable commodities. Incubator cells in academic institutions also, help student-scientists transition from researchers to entrepreneurs in the scientific field (Inspiring women insights - Oxford Brookes University, 2022; Parker et al., 2018). The breadth of classroom innovations that promote entrepreneurship is impacted by many restrictions that restrict its development. It's crucial to remember that students base their career decisions on the exposure and experience they gain while earning their degree.

What are the goals of the "Chemistry/Entrepreneurship" course?

Raise the post-graduate students' awareness of technological entrepreneurship and innovation and support readiness, behaviour, and mentality for starting new technology-based businesses in the fields of chemistry and related scientific and engineering disciplines by providing education and skills using appropriate educational and training methods, tools, and materials following a "Theory-to-Practice.

1. Post graduate students also need to be ready to follow the best career tracks because of how swiftly the industrial world is changing.
2. The program's intrapreneurship component will outline the basic organisational alternatives for structuring industrial research and serve as a means of introducing students to the reality of innovation and R&D in contemporary businesses. An increase in the number of chemists, chemical engineers, and other scientists and engineers with the ability to innovate and commercialise technology, whether as entrepreneurs starting and growing new businesses or as intrapreneurs working within established businesses or research institutes in areas of innovation, research, and New Product Development (NPD).
3. Emphasising how they might increase students' creativity, personal attitudes toward change, entrepreneurial thinking, behavioural changes, decision-making under uncertainty and risk, and employability.
4. Students must understand that entrepreneurship is a way of life rather than merely a business, and it is important to emphasise self-direction.
5. Increase comprehension of the specific business jargon used in the context of entrepreneurship by all parties involved in commercialization-related activities as well as technical innovation, such as those working in market research, intelligence, and marketing, business analysts, investors, bankers, etc.

Factors working against Egyptian Chemistry Entrepreneurship

The same broad obstacles that prevent Egyptian researchers from commercialising their R&D findings also hinder chemistry entrepreneurship. The following list of elements, as listed by (Elemo Gloria et al., 2014) includes some of them:

1. The researcher lacked the financial resources to develop the idea and bring it to market.
2. The inability of the financial sector to transform the results of scientific research in chemistry or innovative ideas developed in partnership with the researcher into marketable goods.
3. Market factor: There is a general lack of interest in Egyptian-made products and technology, and Egyptian have high standards for imported items, especially imported technologies.
4. Egypt's support of research and development is inadequate.

5. The weak connection between academia and business.
6. Inadequate legal foundation for innovation protection and commercialization.

In the current study, a survey was conducted to learn what Egyptian post-graduate students believed about entrepreneurship in the field of chemistry. We must create a methodology to include chemical entrepreneurship in the curriculum for students based on the survey's findings. This seeks to fill the knowledge gap between developing an innovation that applies chemistry to the actual world and conceptualising chemical entrepreneurship. The ideation-action gap between innovation and entrepreneurship is highlighted in the current study. This paper calls for curriculum re-engineering to fully integrate entrepreneurship into the Chemistry curriculum at the degree level as well as to encourage researchers to make commercialization a part of their research agenda from the stage of project conceptualization.

2. Methodology

The sample was made up of a collection of post-graduate students. These individuals were chosen from the Chemistry Department of the Faculty of Science. A total number of 176 students, responded to questionnaires that were distributed to collect the data. Stages were identified as the strata, and the sample of 176 consisted of 22 Ph. D. students, 25 M. Sc. students and 130 represent diploma students. The number chosen for each stage was almost appropriate to the size of the stratum in relation to the entire students. During the process of data collection, the lecturers were asked for 15 minutes of their lecturing time. The questionnaires were distributed by the researcher, who waited for the respondents to complete the survey and collected them once they were completed, Figure 1.

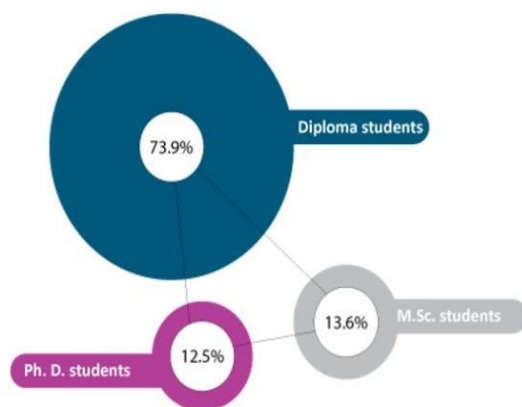


Fig.1. samples of post-graduate students
Source: Authors

A 5-point Likert-scale questionnaire was adopted from the studies of Al-shammari & Waleed (2018) to test the assigned relations. The survey consisted of 20 statements, Table 1.

Table 1. Statements of survey

EC1	I am familiar with chemistry entrepreneurship.
EC2	I think the selection would cover topics like marketing expertise and financial management for leadership in chemistry.
EC3	Chemistry entrepreneurship is driven by motivation and ambition.
EC4	I prefer Chemistry's Academic Study for Entrepreneurship
EC5	In my opinion, fostering entrepreneurship requires interdisciplinary or cross-disciplinary collaboration between students and peers.
EC6	It costs a lot to turn chemical ideas into commercially viable goods

EC7	I'm willing to take a chance on chemistry entrepreneurship.
EC8	I enjoy questioning established theories and practises and seeking for the best ones.
EC9	Seeking out effective strategies and tactics.
EC10	I am open to new ideas that come up in my work and studies.
EC11	I do my chemistry work fondly and persistently.
EC12	I have a strong drive and propensity for business in chemistry.
EC13	I have no hesitation about attempting to study entrepreneurship in chemistry.
EC14	Working in the chemistry industries allows me to face challenges and take risks.
EC15	I typically have faith in my chemistry abilities.
EC16	I am willing to take on any risk in my business.
EC17	When the work is extremely challenging, I try to give it my all.
EC18	I have the ability to give myself new options if I am forced to leave my job.
EC19	I don't hesitate to take part in chemistry projects that my friends propose.
EC20	I believe that the choices I make will help to mould my life.

3. Results and Discussion

Universities have the capacity to create courses that satisfy both student needs and those of rapidly changing industry. They provide a range of credentials, including postgraduate programmes, honours degrees, bachelor's degrees, and higher national certificates (Zegeye, 2013). A total of 176 students pursuing postgraduate courses and postgraduates who have completed their course in chemistry from the Faculty of Science, Cairo University, Egypt, between the age group of 25 and 35, responded to the survey on chemistry entrepreneurship.

The weighted average is calculated and then described in the following table in order to have a better interpretation of the results of the analysis of the questionnaire responses and to best describe the five-level Likert item is 1. Strongly Disagree, 2. Disagree, 3. Neither Agree nor Disagree (neutral), 4. Agree, and 5. Strongly agree. The following table demonstrates that the respondents agreed with the majority of the questionnaire's statements.

Table 2. The respondents agreed with the majority of the questionnaire's statements

Likert Scale	Interval	Difference	Description
1	1.00-1.79	0.79	Strongly Disagree
2	1.80-2.59	0.79	Disagree
3	2.60-3.39	0.79	Neutral
4	3.40-4.19	0.79	Agree
5	4.20-5.00	0.80	Strongly Agree

The online survey consisted of 20 statements with students' responses recorded on a Likert scale, excluding the respondent's current course of study. The results of the survey are provided in figure 2 and in the Supporting Information. The 176 postgraduate respondents (current students of post-graduation courses and postgraduates (since 2019) with the same syllabus) have been introduced to 20 statements about chemistry entrepreneurship, as a stand-alone course.

The main objectives of this course focus on skills, basic knowledge of digital and technical requirements, and publication ethics in academic research along with a unit on chemistry entrepreneurship.

The first subunit on chemistry entrepreneurship introduces students to the steps involved in establishing a chemical factory based on innovation and its build-up. The second subunit covers the processes involved in carrying out a market survey for chemicals and chemical-based products. The third subunit explains the principles of designing a bench-scale generation and scaling up for chemical production. The unit further continues on digital modes and methods of analyses used in general that is, for academic research and market survey.

This survey has enabled to discuss the outlook of students with and without a prior introduction to chemistry entrepreneurship. The statements in the survey were based on our hypothesis on factors that influence the students' perspective on chemistry entrepreneurship. The results helped us validate these factors and to provide a suggestion for a holistic approach to learning chemistry entrepreneurship. The

results of this survey are presented in Table 2. The average response was calculated as $[\Sigma(\text{number of respondents} \times \text{rating})]/\text{total number of respondents}$. The value was corrected to one decimal place and given in terms of percentage in the last column.

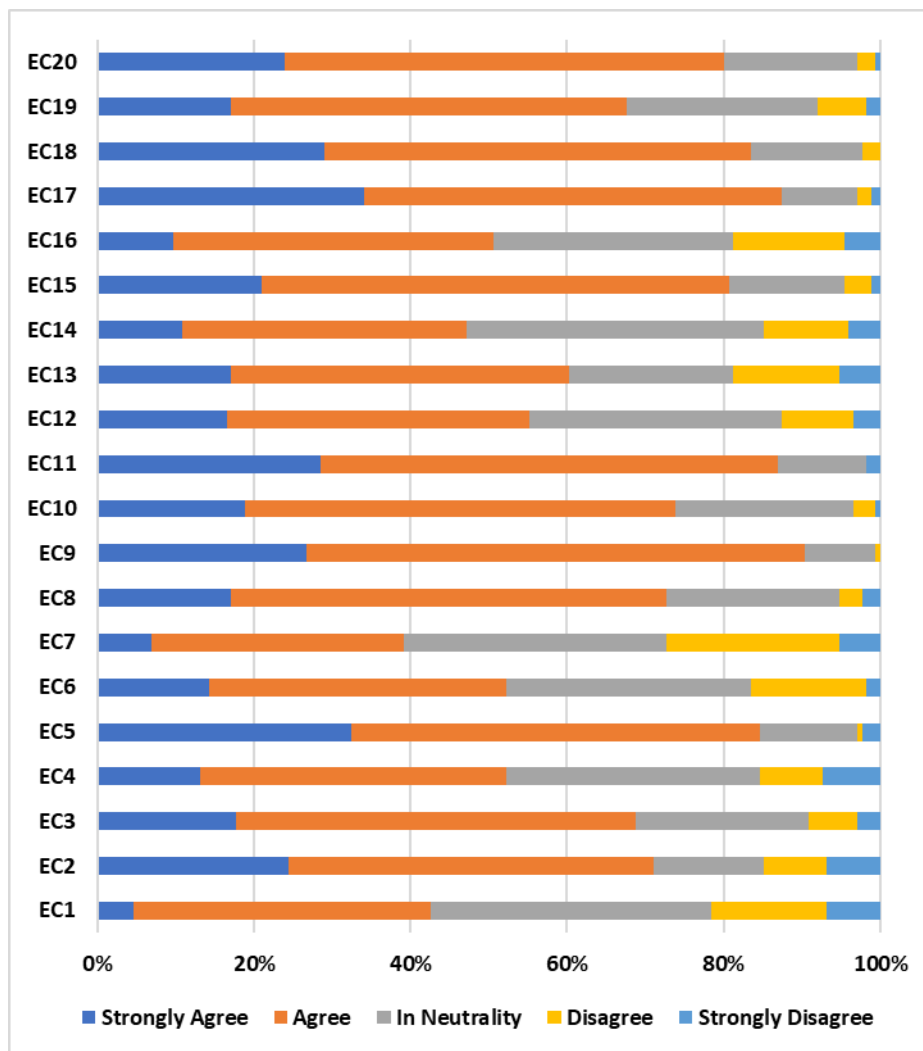


Fig. 2. Chart for all responses results

Source: Authors

Table 3. Weighted average 5-points Likert scale

	Sentence	Mean	St. d.	Decision
EC1	I am familiar with chemistry entrepreneurship.	3.19	1.09	Neutral
EC2	I think the selection would cover topics like marketing expertise and financial management for leadership in chemistry.	3.74	1.25	Agree
EC3	Chemistry entrepreneurship is driven by motivation and ambition.	3.74	1.02	Agree
EC4	I prefer Chemistry's Academic Study for Entrepreneurship	3.43	1.18	Agree
EC5	In my opinion, fostering entrepreneurship requires interdisciplinary or cross-disciplinary collaboration between students and peers.	4.12	0.91	Agree
EC6	It costs a lot to turn chemical ideas into commercially viable goods	3.48	1.08	Agree

EC7	I'm willing to take a chance on chemistry entrepreneurship.	3.14	1.12	Neutral
EC8	I enjoy questioning established theories and practices and seeking for the best ones.	3.82	0.92	Agree
EC9	Seeking out effective strategies and tactics.	4.16	0.66	Agree
EC10	I am open to new ideas that come up in my work and studies.	3.89	0.84	Agree
EC11	I do my chemistry work fondly and persistently.	4.12	0.82	Agree
EC12	I have a strong drive and propensity for business in chemistry.	3.56	1.10	Agree
EC13	I have no hesitation about attempting to study entrepreneurship in chemistry.	3.53	1.21	Agree
EC14	Working in the chemistry industries allows me to face challenges and take risks.	3.39	1.07	Neutral
EC15	I typically have faith in my chemistry abilities.	3.96	0.86	Agree
EC16	I am willing to take on any risk in my business.	3.37	1.11	Neutral
EC17	When the work is extremely challenging, I try to give it my all.	4.18	0.85	Agree
EC18	I have the ability to give myself new options if I am forced to leave my job.	4.10	0.80	Agree
EC19	I don't hesitate to take part in chemistry projects that my friends propose.	3.75	0.97	Agree
EC20	I believe that the choices I make will help to mould my life.	4.01	0.83	Agree

For the first statement, the post-concept responses showed 76% of respondents to be aware of/exposed to chemistry entrepreneurship. It was found that, the responses did not reach to 100% responses due to the reduced impact and uncertainty of the topic among students who completed their post-graduation course. While the pre-concept response to statement 1 is 46%, which can be due to the awareness of entrepreneurship that students of undergraduate courses have gained through the newly instituted ideation club in the college (in 2020). This shows that recent developments in the institution have promoted interest in and awareness of entrepreneurship. Additionally, knowledge about various social events and schemes that nurture entrepreneurial ventures can also contribute to increased awareness among the younger generation.

A total of 96% of (post concept) respondents prefer to learn revenue management and marketing skills involved in the monetization process. This is 30% higher than the pre-concept responses. It can be inferred that students are curious to learn more than the existing curriculum, about the financial skills required in building an enterprise. Both groups of respondents perceive chemistry entrepreneurship to be a skill/career developed through self-interest and motivation.

This survey has given us the opportunity to talk about the perspectives of students who have already been not engaged to chemistry entrepreneurship. The claims made in the survey were based on our hypotheses regarding the variables that affect students' perspectives on chemistry entrepreneurship. The findings enabled us to confirm these elements and offer a recommendation for an all-encompassing strategy for learning chemical entrepreneurship. In Table 2, the survey's findings are displayed. Using the formula [(number of respondents rating)]/total number of respondents, the average response was determined. The value was updated to one decimal place and displayed in the final column as a percentage.

The first statement, EC1, revealed that 4.55%+35.07% of respondents had heard of, had experience with, or had exposure to chemistry entrepreneurship. This indicates how recent modifications to the institution's entrepreneurship course have increased interest in and awareness of entrepreneurship. The students' awareness might also be boosted by learning about numerous social occasions that support entrepreneurial endeavours. 13.07%+39.50% of those surveyed said they would like to acquire the marketing and revenue management skills that are part of the EC3, EC4, and EC5 commercialization processes. Students' desire to learn more about the financial abilities necessary to start a business than is covered in the current curriculum is evident. The respondents believe that self-interest and motivation are what drive chemistry entrepreneurship as a talent or vocation.

For statements EC6 and EC16, Students believe that developing chemical ideas into commercially viable goods is an expensive process. This fear may arise from the failure of pioneering ideas or a lack of funding to begin prototypes or assist in market entry. The statements from EC7 to EC15 It shows students' eagerness to seize the opportunity of entrepreneurship in the field of chemistry and seek out effective strategies and tactics. The responses also demonstrate the students' conviction that they must continue in the field of chemistry through entrepreneurship and that working in the chemical industries allows them to face challenges and risks. The statements from E17 to E20 showed that, a noticeable shift in students' thinking after studying entrepreneurship, which is reflected in their responses, as the students indicated that they possess some personal characteristics required for entrepreneurship, such as the ability to leave a traditional job, share ideas with friends, and research new options.

Conclusion

University curricula frequently place a strong emphasis on subject-specific knowledge, with employability sometimes being seen as an "add-on feature" typically handled by a central university department. The task presented here gave students a chance to use their imaginations to address a commercial requirement and gave them experience working in a multidisciplinary environment. The students, however, spent too much time being obsessed with actual results and found it difficult to understand the concept of presenting an idea on paper since they were unfamiliar with being given the opportunity for freedom in thinking and exhibiting business acumen. The group students, however, appreciated and welcome the chance to learn new information and use their specialised skills. To emphasise the significance of these subjects, data suggests that these learning opportunities should be offered throughout B. Sc. program.

Chemistry/technology entrepreneurship is needed to take the nation to the next level of industrialization through small and medium enterprises most especially the attainment of Egypt's Vision 20/30 and the national Transformation Agenda. Even though Chemistry entrepreneurship is a personal choice of individual Chemists or researchers, this paper makes a clarion call for chemistry entrepreneurship for the sake of Egypt; the economy is nose-diving at an alarming rate! We probably cannot boast that 20% of graduates of Chemistry from various Universities are gainfully employed! This is the time for the nation just like it was done in the US to turn to its universities and research institutes to bail it out. The onus, therefore, lies on the universities and research institutes to start devising solutions and workable programs that will take them out of the economic doldrums.

Developing countries must begin to take research and development very seriously and imbibe the culture of solving national problems including economic problems using the instrument of science and technology. The education and the economy of the 21st century must be driven by entrepreneurship. The education and the economy of the 21st century must be driven by entrepreneurship.

As Cairo University is taking the lead in promoting entrepreneurship and Critical Thinking education in higher education in Egypt, along at the same time the Government had begun to have specialized universities: research-based, teaching-based, and entrepreneurial universities.

At this critical state of the economy in the whole world, what is needed is more entrepreneurial universities and adequate motivation of scientists (academic staff and students inclusive) to move their innovations from the laboratories to the marketplace through patenting of innovations. So, the students must learn the fundamentals of innovation, potential markets, entrepreneurial skills, investments/investors, and product development. The coursework can be evaluated by periodic tests throughout the semester and a final examination, similar to the major coursework for all students.

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GOVERNMENT POLICY: MEANING, TYPES, MANIFESTATIONS, THEORIES, AND POLICY CYCLES

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Abstract. In any democracy, it is strongly advised that effective policies be created since they are crucial to how democracies operate. Government policy definitions and categories were widened. Government policy types were discussed concerning the sectoral groups comprising each given government. This is important because a policy's or its objective elements frequently suggest different meanings for different stakeholders. Policymaking is a process impacted by socio-political and other factors and is not a governmental function. Thus, there is a need to comprehend the theoretical underpinnings on which government policymaking and its execution may be evaluated and characterized. According to the elite/mass hypothesis, there are two groups in society: those who occupy positions of power and those who do not. Government policy is more influenced by those with access to knowledge and influence. It is a remarkable characteristic of group theory which is ideally in line with the legislative because the legislatures are where the voices of the people are expressed. Governmental institutions and government policy are closely related, claims institutional theory. The rational choice theory may need to be more accurate since participants in government policy must have access to all information to make informed judgments. The systems theory offers a more straightforward method for categorizing and comprehending the contributions and interrelationships made by institutions and policy players, including the function played by the external environment in policy formulation. Lastly, since democracy is a system of governance built on extensive public engagement, any ideology that supports any type of citizen participation (particularly in a democracy) should be endorsed by both politicians and public officeholders.

Keywords: Government policy; Policy manifestations; Policy execution; Policy underpinnings; Policy context and consequences

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JEL Classifications: J58, J68, J78

Additional discipline: Government policy

1. Introduction

Each democracy needs sound policies. Additionally, in a democracy, the proper application of those policies is crucial. According to Delamaza (2015), democracy is a kind of government. Under a democratic political administration, among the issues facing governance is erecting a foundation that enhances the practice of democracy without undermining the freedom to embark on purpose and functions and to ensure that social demands and conflicts arising from various interest groups and civil societies are tackled is one of their tasks (Dunne, 2021; Forcher-Mayr and Mahlknecht, 2020).

Given that both government policies and how they are carried out may strengthen a democracy, there is a need to define government policy more broadly and the ingredients of government policy execution (GPE) (Adeniran, 2016; Delamaza and Palma, 2022; Matuku-Mphahlele and Zandamela, 2022). These terminologies are essential due to the elements involved in the execution of government policy. Hence, the word government policy execution is a subset of the primary term government policy. Government policy may be described as a cycle or process with several steps to be taken before achieving a policy's goals. Typically, there are four or five stages:

- a) Stage for issue/ problem identification;
- b) Stage for setting agenda;
- c) Stage for policy formulation or policymaking;
- d) Stage for policy execution; and
- e) Stage for policy evaluation.

Policy phases will be significantly influenced by the particular technique employed (Zeb-un et al., 2021). Government policy is, first and foremost, a persuasive art, as Deygers and Vanbuel (2022) claimed. It is so named because it calls for the selection, enactment of legislation, and consultation of all relevant parties (Kofele-Kale, 2006; Nunes et al., 2019). According to Oyadiran and Akintola (2014), one objective of government policy is to guarantee that persons responsible for carrying out significant decisions in society, regardless of their position, are well-trained. This opinion was also agreed upon by Myrczik et al. (2022), De-Marchi, Lucertini and Tsoukiàs (2014), and Ozturk (2015).

According to Galli (2015), government policy should be viewed as both a declaration of goals and a negotiated outcome resulting from the execution process. One of government policy's most distinguishing features is how unstable and changeable it is (Deygers and Vanbuel, 2022). The assertion that proposed or envisioned government policies lacks any evident beginning or end is maintained in the study of Ashmore et al. (2020), which noted that they should be understood as analogous to seashells or jelly. It flows almost circularly at times. Myrczik et al. (2022) assert that when the policy is discussed, it implies addressing pertinent issues germane to human existence.

Falk and Tally (2016) identified the features of government policy, such as the intended direction that the legislator would want to guide the public, including the description of how the country's resources are to be used (Díaz-Llamas et al., 2023). It was also revealed by Oyadiran and Akintola (2014) that several variables might influence the overall government policy process. These include the legislators in charge, noting what the Constitution stands for. The issues that need to be resolved should be known to politicians or bureaucrats Koelble and Siddle (2014).

Also, a significant portion of those involved in the government policy process are local (government excluded). Consequently, it is crucial to get in touch with these influential individuals who know the community's situation, their challenges, and the issues that need to be fixed. The act of fashioning, enacting, monitoring, reviewing, or revising government policies is covered by Imenda (2014). Nokele (2022) argues that because it is crucial to the efficacy and reach of government policies, its execution should be the primary emphasis of the whole process.

Macheridis and Paulsson (2019) noted that government policies are centred on presumptions about what governments can do and what the effects of those actions would be since they would otherwise be the product of political activity and would, as a result, have political ramifications (Mellaard and van Meijl, 2017). Maggetti and Gilardi (2016) assert that it is uncommon to get a thorough explanation of the assumptions underlying government policy as a theory or model, much alone the context in which those assumptions must be employed or understood. But, as with every procedure, an idea or model is always presupposed (McCann and Ward, 2013).

Every story has two sides, and the government policy level confirms this truism. Government policy is two-dimensional or contains two storylines; given that politics and administration are a component of it, it has a two-dimensional structure. Creese, Dutton and Esteve-Gonzalez (2021) refer to this reality as the more significant number of pertinent legislative and administrative operations. Knill and Tosum's viewpoints on government policy may be contrasted to show how interdependent politics and the administrative side are. Government policy and politics should adhere to the same course (Molossi et al., 2023).

The role that legislators play in deciding the resource utilization of a country in the government mentioned above policy is regarded as the political side of the government policy process (Gray, 2018). On the other hand, the administrative side of the government policy process focuses on the executive and their actions to realize the stated objectives established by the government (Mellaard and van Meijl, 2017). The administrative side of the public process is responsible for ensuring that the adopted policy will persist throughout time, according to Deygers and Vanbuel (2022). Policymakers, administrators, and bureaucrats should encourage all significant stakeholders of the necessity of a specific policy and the reasons for that requirement for that execution to take place (Purtle *et al.*, 2023; Mellaard and van Meijl, 2017).

2. Literature Review

2.1. Manifestations of Government Policy

Everyday life is a manifestation of government policy. Also, it starts in casual conversations when regular people talk about things like how to improve government policy. As stated in the introduction chapter, creating government policies is a complex, multi-layered process (Mellaard and van Meijl, 2017). For the creation and execution of government policy, two guiding concepts (or significant areas of study) are essential. Public administration and political sciences/studies fall under this category. According to Andrews-Speed (2021), government policy encompasses several political science subfields. Implementing government policies, which come from the political (or policymaking) facets of government and are backed and endorsed by political administrators, is the priority over public administration's primary goal (Uddin et al., 2023).

Wilson's dualism (quoted by Guidi et al., 2020) contends that politics and administration cannot be divided into distinct roles when determining government policy from both the structural and functional perspectives. There, the line thins out to the consistency of a spider's web thread. According to Simeon (1976), institutions and practices that are exposed in and through economic, social, and political dynamics shape government policy. Government policy can also result from issue articulation (acknowledging a policy challenge), finding alternatives, and the political processes (Crabolu, Font and Eker, 2023).

According to Bertram (2020) the focus of political studies on government policy has been around for a while. Mellaard and van Meijl (2017) contend that the academic study of the government policy process is a part of political studies/sciences since politics deals with who gets what, when, and how. Political science may be necessary to government policy issues while maintaining its dedication to scientific investigation (Mellaard and van Meijl, 2017; Deygers and Vanbuel, 2022; Fischer et al., 2015). Politicians, pressure organizations, and 'passive beneficiaries of policy' are only a few stakeholders engaged in the government policy process (Jiang, 2018).

2.2. Underpinnings of Government Policy

Government policy is often regarded as being first and primarily a course of action (Makhetha, 2015). This course of action must demonstrate logical decision-making, as doing so will lead to responsible behaviour (Daniell, 2014). Wu (2022) define government policy as the process or series of actions taken by the government to solve a particular societal issue that was originally recognized. According to Guidi et al. (2020), the people whose lives will eventually be impacted by the outcomes of policy action are represented in the specialized policy subsystems where government policy is developed, implemented, and evaluated.

According to Paulsson and Macheridis (2022), who also concurs with Makhetha (2015) and Wu (2022), government policies are the result of a combination of systematic forces, political processes, institutional influences, rivalry among groups, elite preferences, belief in or advocacy of change through small steps, and rational planning (Fischer et al., 2015; Deygers and Vanbuel, 2022). Whatever decisions the government agrees on will fall under this (Kharel and Kharel, 2020; Jakonen and Sokka, 2022). Simeon (1976) concluded that policies are the climax of a complicated negotiation process and the outcome of several modest judgments made by decision-makers. Yet, Simeon (1976) maintains that ideology is at play both in the formulation of policies and during the policymaking process, suggesting that government policies indeed reflect ideology (or have a symbolic repertoire; Steven, 2021; Molossi et al., 2023).

The socioeconomic circumstances present in a particular geographic area that the government policy must address impact how the framework of government policies is developed claims Kharel and Kharel (2020). However, several factors, such as institutional frameworks, a country's party system, or the overall relationship between the government and the populace, can affect the process of formulating government policy (Díaz-Llamas et al., 2023). Government policy also incorporates a society's dominant ideas, dogmas, and beliefs (Simeon, 1976). Because of this, these components offer a framework for the underlying assumptions and arrangements that permit the examination of policies (Simeon, 1976).

Recognizing social issues and how societies choose to handle and solve them are essential elements of government policy, according to Parsons (2002) and Steinert (2016). Government facilitates reducing or removing these issues that society has identified (Parsons, 2002; Crabolu, Font and Eker, 2023). Guidi et al. (2020) assert that two features or functions, namely structural terms and/or functional words, can be used to conceptualize government policy. The structural component of government policy includes the interactions that may occur between the governments' policy players in the setting of the several specialized areas of the subject (Guidi et al., 2020). The many policy types considerably influence how government policy is framed (Crabolu, Font and Eker, 2023).

2.3. Types of Government Policy

Government policies can be created in several styles and/or types to address the need on the policy agenda. Lowi refers to this classification of policies as a policy categorization (1972). As a specific policy type would be associated with a variety of politics, categorizing policies is essential for studying politics (Oyadiran and Akintola, 2014; Aritz et al., 2017). Hence, a politically appropriate policy classification has been developed (Oyadiran and Akintola, 2014). The classification of policies must, however, be founded on intellectual and theoretical considerations that have an influence on actual political situations (Oyadiran and Akintola, 2014). The policy categorization aims to ensure that it supports the study of politics while avoiding omitting the public administration component or having a detrimental impact on the political environment as a whole (Oyadiran and Akintola, 2014).

The aim of government policy classifications or taxonomies⁵, according to Bertram, Maleki and Karsten (2019), is to comprehend the basic contrasts between policies and the political settings that influence the various types of

policies in place. It is simpler to express the typifications that role-players typically utilize to characterize government policies when approaches are categorized, according to Aritz et al. (2017). This suggests that using policy taxonomies makes it possible to accurately describe government policies (Aritz et al., 2017). Sol (2023) claims that employing policy taxonomies may assist in determining the scope and presentation of a policy.

According to Simeon (1976), policy taxonomies offer the chance to consider the amount of coercion and the equilibrium between individual and collective activities leisurely. Simeon (1976) thinks Lowi's (1972) proposed policy taxonomies are essential and fundamental for political science students. According to Munzhedzi (2020), there are four types of government policies, or policy taxonomies: distributive, redistributive, regulatory, and component government policies. Some taxonomies or classifications are considered to be governmental functions. According to Nico (2015), these policy categories may be used to pinpoint the specific effects of a policy, which might promote political discourse about how decisions are made and how to execute policies.

Also, the sectoral categories or clusters should serve as the foundation for policy classifications (Ahmad et al., 2021). The terms types and categories of policies were used interchangeably throughout the study. For instance, there may be a collection of regulatory or protective policies.

2.3.1. *Distributive government policy*

Guidi Guardiancich and Levi-Faur (2020) claim that the primary objective of distributive policies is issue-solving; as a result, they typically function in the most supportive political climate. The strong clientele, knowledge, leadership, and coherence characterize the context in which distributive policies are carried out (Rakšnys and Valickas, 2023). It involves acting to address issues facing the general population (Rakšnys and Valickas, 2023). Significantly, distributive policies may also be described as dealing with how additional resources, expenses, and advantages from the government are distributed to specific population demography (Díaz-Llamas et al., 2023). Bertram, Maleki and Karsten (2019) revealed that distributive strategies address Lasswell's (1936) maxim of who receives what, when, and how.

According to Bertram, Maleki and Karsten (2019), distributive policies use general public funds (instead of user fees) to help a particular segment of a social group without considering resource limitations or financial constraints (Rakšnys and Valickas, 2023; Díaz-Llamas et al., 2023). As shown in election manifestos, when different political parties seek voters to approve of the resources and services they can deliver to them if they are elected to power (or held in power), the constituencies of elected politicians also benefit from distributive policies (Kraft and Furlong, 2013).

2.3.2. *Redistributive government policy*

Allocative government policies, sometimes referred to as redistributive government policies, deal with necessities like the funding of the welfare system, health care system, and education system (Ahmad et al., 2021). Guidi Guardiancich and Levi-Faur (2020) claim that redistributive policies occur when the government levies taxes on one group of people to benefit another. These resources are distributed between the wealthy and the socially disadvantaged and destitute groups (Díaz-Llamas et al., 2023). A redistributive strategy can be implemented despite ideological cleavages, following Guidi et al. (2020).

Concerning the aforementioned, Guidi Guardiancich and Levi-Faur (2020) assert that direct taxation and the transfer of resources from one socioeconomic group to another lead to the emergence of a distinctive characteristic that distinguishes distributive and redistributive policies from one another. A dispute is this trait (Jutta, 2016). Redistributive policies are exceedingly political, difficult, unfavourable, and polarizing to design and implement, which causes this conflict. They cause disputes that polarize the population along party lines (Rakšnys and Valickas, 2023). Redistributive programs face this challenge since one group gains at the expense of another (Yanow, 2015). The discussion around distributive government policies is heightened because they

explicitly allude to an ideology or a class war. According to Donnelly (2015), the disadvantage of redistributive policy is that the government typically lacks the means to implement such a program.

2.3.3. Regulatory government policy

Regulatory policies, according to Munzhedzi (2020), typically address the need for policies relating to transportation, infrastructure, health, and other regulations and standards, or they prohibit people from acting in certain ways, such as selling illegal goods like dangerous drugs, participating in unfair competition in the market (Rakšnys and Valickas, 2023). According to Anyebe (2018), regulatory policies are laws carried out by government agencies without any interference or money inducement.

A regulation policy can be a form of competitive regulation to regulate individual industries and their activities. It can also be a protective regulation meant to protect the general public. Bertram, Maleki and Karsten (2019) contend that regulatory approaches are questionable because they let the government meddle in private enterprises and people's daily lives. Another disadvantage of regulatory government policies, according to Creese, Dutton and Esteve-Gonzalez (2021), is that they significantly impact how much money is spent and how much assistance from other social actors is needed.

2.4. Constitution government policy

Oyadiran and Akintola (2014) developed the component policy as a subset of constituent policy. Both the government and/or the nation as a whole are considered to be two constituents of government policy, according to Oyadiran and Akintola (2014) and Guidi Guardiancich and Levi-Faur (2020). According to Meier's additional definition from 2007, constituent policies aim to advance the interests of the nation-state and the broader public. Constituency policies are portrayed by Guidi Guardiancich and Levi-Faur (2020) as being exceedingly detailed, meticulous, and in charge of significant initiatives. Meier's (2000) notion of component policies may be used to depict the presidential department where policies are executed, monitored, and coordinated. Constituent policies also cover governmental operations, including defence and foreign policy (Rakšnys and Valickas, 2023).

The present democratic society can be classified under constituent policies because of their method of operation and provision for election laws (Yanow, 2015). According to Creese, Dutton and Esteve-Gonzalez (2021), there is a fact that constituent government policies only have an impact on the executive branch of government. As was said above, Oyadiran and Akintola (2014) identified the many kinds of government policies and found just four policy taxonomies. Not all government policies will fall within Lowi's (1972) taxonomy of approaches, as (Rakšnys and Valickas, 2023) indicates. These policy taxonomies thus have the disadvantage of excluding alternative policies that might not fit the policy classification. A few new categories of approaches have been included in the classification of procedures since Lowi's (1972) policy taxonomies were first introduced.

The following section briefly discusses one more policy type that is mainly referred to as substantive government policy.

2.5. Substantive government policy

Government policies are crucial in a wide range of substantive sectors, according to Paulsson and Macheridis (2022). These substantive sectors include, but are not limited to, environmental issues, economic development, security, public service, international relations, primary education, social development and domestic affairs (Fischer et al., 2015). A substantive policy focuses on what the government should do (Simeon, 1976). A substantive policy may incorporate specific overarching goals (such as describing the anticipated results of the policy while it is being produced, for example) (Marie-Kim and Marie-Hélène, 2020). It might also consist of more concrete objectives the policy must achieve. Yudiantmaja et al. (2022) conclude that successful substantive solutions can resolve a policy issue.

2.6. Government policy Execution

The policy as it is carried out is the genuine policy of a government, according to Peters (2001). One of the main reasons why government policy execution is one of the most crucial stages in the whole government policymaking process is because it refers to the point at which a policy is implemented (Díaz-Llamas et al., 2023; Aguerre and Hernan, 2015). According to Peters (2001), one of the main issues with our current political systems is how government policies are carried out. Many behaviours in the administrative and political settings where government policy is being implemented are taken into account throughout the execution process, claims Hurel and Rocha (2018). According to Galli (2015), politics substantially influences every action or step taken during the cycle of policy execution, with both a macro and micro political context (Galli, 2015).

The macro-political backdrop, which includes factors like legislation, economy, and what is happening or moving worldwide, is what Galli (2015) refers to as the external environment. On the other hand, according to Galli (2015), the micro-political context comprises things like the policy's mission, the competencies needed, the organizational culture, and the external environment. GPE is rather challenging since several factors must be considered, some of which the implementers have influence over and others of which they do not. Falk and Tally (2016) argue that it is incorrect to assume that implementing government policy only entails putting previously developed procedures into action since there is more to it than that. Implementing government policy involves using important inherent information.

Creese, Dutton and Esteve-Gonzalez (2021) assert that GPE bridges policymakers and policy addresses. The implementers aid this relationship. This GPE phase is essential because it makes it possible to execute the proposed or envisioned policy (Steven, 2021). This suggests that the result of the policy is transformed into its production. Aguerre and Hernan (2015) contend that policies and practices must be separated to understand the whole process of producing policies. As mentioned earlier, the role-players in charge of implementing the policies must thus not act entirely independently. As a result, they offer guidelines for applying already created and authorized policies.

3. Theoretical Review

Government policy theories are essential in the social, environmental, technological and engineering literature. These theories offer unique characteristics of political and human development. Among the theories of government policy are the political systems theory, group theory, institutional theory, rational choice theory, and the policy process model.

Many of the previous and present policies are formulated and implemented because they are influenced by systemic variables, political processes, institutional influences, game-playing, incrementalism, interest group, rational planning, elite preferences, and interest group interests. These theories will pose further issues regarding government policy and the primary channels from which sound decisions are formed. The following section will cover these theories.

3.1. The elite/mass theory

The elite notion holds that a small elite group controls the bulk (Zeb-un et al., 2021). This idea works best in the countries of Africa. Because the interests and well-being of the elite are prioritized under this theory, elite viewpoints that diverge from those of the general public can affect the development of government policy (Zeb-un et al., 2021; Jutta, 2016). The elite thesis is based on the notion that because the general public is allegedly uninformed and indifferent, their opinions shouldn't have any bearing on how government policy is formulated (Fischer et al., 2015).

The elite notion holds that only a caste that is acknowledged throughout society should influence government policy (Kraft and Furlong, 2013). This elite caste includes members of the governing class, political parties, business executives, wealthy individuals, and educated segments of society (Jutta, 2016). One way that the elite ideology is implemented is by whom the most influence over how government policy is decided (Jutta, 2016). Not all elites have an outsized impact on shaping government policy. Each elite aims to have a significant effect on a specific niche market. For instance, business executives would want to weigh in on decisions regarding tax legislation and import and export laws. The governing class, however, would like to have a voice in how the general public is governed, how money is allocated, and how resources are utilized.

It's also conceivable that these two exclusive groups come into contact with one another and interact as they use their influence and power. Zeb-un et al. (2021) assert that public administrators' perceived importance is influenced by the idea that they are members of the ruling class rather than citizens' servants. This idea may be explained as a small elite making decisions that cascade down to an uneducated civil society (Fischer et al., 2015). Zeb-un et al. (2021) assert that political power influences these decisions and that the bureaucracy is necessary to carry them out. The idea holds that only a select group of experts possess the authority.

3.2. Group theory

Politics is characterized by the interaction of groups, and the group theory incorporates organized interest groups in the creation of government policy (Jutta, 2016). These actors are shown as tenacious voice-hearing warriors. In light of this, it is possible, to sum up group theory as a battle between the voices of organized interest groups. Group theory includes, for example, individuals working in the agriculture sector and companies producing music. Organizations should be allowed to make a major contribution and have a say in determining government policy. In order to dispute the abuse, poor administration, and fraudulent execution of policies, as well as hold those responsible accountable, people should be able to challenge laws that are thought to be illogical, unsuited, or ineffective for the intended purpose.

Organizations ought to promote justice, transparency, the participation of the citizenry, and awareness in policymaking. The group theory is crucial and pertinent to government policy as a result. This is done so that organizations may play a big part in setting policy and assisting with enforcing previously approved or ratified legislation like the Constitution. Groups have an impact on government policy, whether it be a policy regarding environmental concerns or the welfare of the populous as a whole. This exemplifies how several interest groups from diverse socioeconomic domains may all voice their opinions on the policies they believe the government should adopt or reject and play a significant role in their creation. According to Zeb-un et al. (2021), group theory has some implications for political decisions. For instance, the dynamics of the cabinet are changed.

The disadvantage of the group theory is that it rewards more organized groups, has more members, has access to resources, has political allegiances, is well-liked, and has built ties with decision-makers (Galli, 2015). The less fortunate members of society lack all of the aforementioned resources and are at the other extreme of the spectrum (Jutta, 2016). According to Bertram, Maleki and Karsten (2019), group theory is criticized by academics studying government policy for giving organized interest groups too much sway and leaving it up to them to decide policy (Oyadiran and Akintola, 2014). Government employees also seem to be left on the side of the road (Tacon and Hanson, 2011).

Researchers in government policy believe that the degree of impact that organized interest groups have on policymaking tends to worsen the complexity and dynamic character of policymaking that is already present (Kraft and Furlong, 2013). It is also important to acknowledge that the elite/mass does have some roots in group theory (Carroll and Common, 2013). Although all groups (regardless of socioeconomic level or prominence) may be accommodated under the group theory, those with access to more resources are often the ones whose opinions

are heard when policies are being developed (Chaudhary, 2018). Their voices tend to be aristocratic. The voices of those groups that lack access to the same resources as the privileged are so muffled.

The term "extra influence" refers to the elite groups' intrusion into group theory and the creation of government policy. This is characterized by Guidi Guardiancich and Levi-Faur (2020) as having a solid clientele, knowledge, and leadership. Also, this increases the pressure on public servants and policymakers, which tips the balances in their favour when deciding the course of government policy.

3.3. Institutional-based theory

This theory is often known as the "classical theory" since it is interpreted classically to study government policy (Zeb-un et al., 2021). It is not a coincidence that Minkman, van Buuren and Bekkers (2018) state that the institutional approach arose as awareness of the importance of enshrining government policy-making in the framework of institutions expanded. This implies that the government's concerns about welfare should take precedence over other issues (Zeb-un et al., 2021). Institutional theory is deeply rooted in the formal and legal aspects of the governmental system (Díaz-Llamas et al., 2023). The institutional model's purpose is to evaluate the structures that regulate how the government is structured, its legal power and the norms of behaviour it adheres to while making decisions (Dunne et al., 2021). The institutional theory focuses primarily on the public's access to decision-making, government transparency, and, eventually, the separation of powers between the various levels of government (Zeb-un et al., 2021).

The institutional theory rationally asserts that the structures and codes of conduct that regulate the government and its departments significantly impact the various types of policy processes that take place, as well as how role-players in those processes will ultimately affect those processes (Kraft and Furlong, 2013). Political, economic, and sociological institutionalism are the three frameworks that institutional theory embraces (Minkman, van Buuren and Bekkers, 2018). Economic institutionalism stresses applying economic analysis to political institutions and government policy, whereas political institutionalism looks beyond the traditional forms of institutions to pay more attention to (Díaz-Llamas et al., 2023). The institutional theory is essential in ensuring government policies' legitimacy, applicability, and coerciveness (especially true of regulatory laws, which impose obligations on the general populace) (Díaz-Llamas et al., 2023).

3.4. Rational choice theory

This is a contemporary theory used in social sciences. The public choice theory is another name for the theory of rational choice (Cagnin, 2017). It has a strong economic foundation (Jutta, 2016). Generally, it uses complex mathematical modelling, which has only been moderately helpful in evaluating marginal behaviours in competitive circumstances and is typically seen throughout an election period (Ashmore et al., 2020).

This theory is thoroughly developed and rigorous, and it could be used to address many government policy-related issues (Kraft and Furlong, 2013) and used to conclude. Opponents of this theory claim that the decisions made based on rational choice are faulty, unrealistic and unworkable.

Cagnin (2017) identified two distinct features of the rational choice theory. Its main focuses are methodological individualism and the assumption that people are reasonable. The sensible perspective contends that the ability to make decisions indicates a person's capability for logical reasoning. On the other hand, Ashmore et al. (2020) argue that a broad account of human behaviour supports all rational choice theories. According to Ashmore et al. (2020), the basic hypothesis holds that individuals are complicated, flawed mortals who strive for perfection despite whatever challenges they may encounter.

3.5. Political systems theory

This theory is the most complete among popular approaches (Kraft and Furlong, 2013). The theory aids government initiatives and institutions in transforming public inputs (such as environmental needs) into policy outputs (such as public opinion and pressure from interest groups) (Cagnin, 2017). The theory was designed to raise public awareness of policy issues and give the populace a platform to express grievances (Cagnin, 2017), allowing for the problems to be presented on the government's policy agenda (Uminska-Woronecka, 2022).

Moreover, it represents the wider, shared socioeconomic, cultural, and political framework that serves as the foundation for decisions on politics and policy (Jutta, 2016). According to Bertram, Maleki and Karsten (2019), the language employed in political and policy studies has expanded as a result of the systems theory.

3.5.1. Government policy Cycle

In accordance with the four government policy functions, the policy process model (Jutta, 2016) recommends an analytical progression of the occasions that impact the formulation of government policies (Guidi et al., 2020). At each level of the policy process model, the connections between policy players are shown (Jutta, 2016). According to Appiah-Agyekum (2020), the policy model explains how decisions were made, makes understanding the timeline of events simpler, and supports the pragmatic nature of government policy (Guidi et al., 2020).

Moreover, it explains how these results in the understanding that can be applied to any political system and its decision-making procedures (Jutta, 2016). The best method to begin a discussion of policy theories and a strategy to organize the study of policymaking, according to Cagnin (2017), is to use the policy cycle. According to Bertram, Maleki and Karsten (2019), the traditional model is cyclical since formulating policies is continuous and always in "motion" as a rolling wheel.

The policy cycle's main lesson is that just because an issue has been identified and a decision has been taken, it doesn't mean everything has been fixed (Cagnin, 2017). That only denotes the beginning of the policymaking process. The model's stages are linked to each other like links in a chain cycle (Appiah-Agyekum et al., 2022). As Bertram, Maleki and Karsten (2019) noted, no policy decision or solution is ever final. The policy process model does succeed in capturing the essence of policymaking despite all of its flaws, and as a consequence, it correlates to political reality.

According to Lerma, Díaz-Baca and Burkart (2022), the conventional model of the policy process consists of four functional processes or phases:

- i. Agenda setting;
- ii. Policy development;
- iii. Policy execution; and
- iv. Policy assessment

Two additional steps that Bertram, Maleki and Karsten (2019) add to the concept of the policy process are:

- i. Policy legitimization; and
- ii. Policy modification.

Guidi et al. (2020) postulate the results of policies and the related subsystems that must be implemented. This suggests that the stages theory serves as an example of how a government policy develops (or comes into existence). Guidi et al. (2020) assert that knowledge and information are the main forces behind policy construction.

In a significant sense, this is the reason why everyone involved in the policy process has to be sufficiently informed of how government policy is produced, as well as possess the knowledge, skills, and competence necessary to see the process through to the end (Rakšnys and Valickas, 2023). Moreover, it serves as a tool for

guiding and educating decision-makers on the procedures involved in carrying out government policy (Cairney 2012).

3.5.2. Agenda setting

Any social issue that the public brings up should be taken seriously (Aguerre and Hernan, 2015). But more importantly, agenda-setting in democracies is expected to be characterized by a high level of citizenry participation (Blackstock et al., 2020). Various media influences can manage, shape, and define the issues on the policy agenda (Fischer et al., 2015).

The topics included on the policy agenda can be influenced, controlled, shaped, and defined using these platforms or the participation of experts from a particular subject (Crabolu, Font and Eker, 2023). These are the three steps that makeup agenda setting:

- a) Identification of issues;
- b) verifying which problem is of significant essence; and
- c) Outlining the dynamics of an issue (Cagnin, 2017).

According to Díaz-Llamas et al. (2023) and Falk and Tally (2016), only one element determines whether policymakers should pay attention at this early stage of the policy process. That aspect is the availability of information about social issues/issues. According to Steinert (2016), the public media's assessment and awareness of a societal issue has an effect on agenda shaping. This is due to the possibility that the press might impact public opinion, given the variety of media outlets available (Chetty, 2015).

3.5.3. Policy formulation

Before creating a policy, one must create a strategy for responding to the suggestions made during the first phase of the policymaking process. According to Cagnin (2017), creating policies entails defining goals, estimating costs, and assessing the specific outcomes this policy will produce. As a result, the suggested course of action and the policymaker's (s) ' intentions are both stated at this point in the policy cycle (Steven, 2021). Rational, logical solutions are chosen. Following the conclusion of this process, crucial policy instruments are selected (Cagnin, 2017). Falk and Tally (2016) assert that all necessary stakeholders, such as interest organizations, elected officials, legislators, and the public, should participate in policy development.

3.5.4. Policy execution

Only the events in the early stages of the policy process result in government policy. At this stage, it may be anticipated that a government policy will undergo changes, such as revision; the government policy may even be rejected at this stage (Kustec and Mcardle, 2012). A significant feature of government policy execution is that it may take on many shapes and forms depending on the institutional and cultural context (Welsh, 2019). Attention was called to an essential facet of carrying out government policy, especially given that it operates or is carried out at a time when "government" procedures are seen as having been transformed into "governance".

Moreover, Jaishia et al. (2023) classify government policy execution research as a political science and administration subject. This suggests that overly-simplistic hierarchical models are being abandoned and that a broad spectrum of stakeholders is starting to participate in policymaking (Iroulo and Boateng, 2023). Also, politics ends when administration begins. Politics and administration are related. According to Mügge and Alenda-Demoutiez (2019), the institutions of democracy and the rule of law have entrenched a tight hierarchy in the relationship between these two disciplines.

3.5.5. Policy Outcomes and Evaluation

At this stage, a policy is evaluated to determine its success (or failure) (Cagnin, 2017). The effective execution of the procedure, the judgments taken about the policy, and whether the policy generated the intended results as described in the stage of defining the agenda and formulating the policy are all crucial factors to take into account when evaluating policies (Cagnin, 2017; Steven, 2021). Lessons will be drawn from this, recognized, and

typically serve as the basis for future policy choices (Appiah-Agyekum et al., 2022; Cagnin, 2017). This is done by carefully reviewing all of the information gleaned from evaluating the policy's outcomes (Mügge and Alenda-Demoutiez, 2019).

Many government policy actors, such as think tanks, government organizations, external consultants, nonprofit groups, the media, and the general public, can engage in this activity (Fischer et al., 2015). When this process is finished, the policy can be sent back to the legislator, who can then choose whether to change it (possibly signalling the start of a new policy cycle) (Steven, 2021).

The policy cycle is advantageous. Welsh (2019) identified the main reasons for this:

- a) Since it is a logical process that may depict the variety of reality, it is plain and easy to grasp.
- b) Each phase disseminates knowledge to a particular section of the setting in which government policy is produced (Welsh, 2019). This could aid the policymaker in selecting the many variables and tactics available.
- c) The policy cycle shows that policymaking is flexible.
- d) The process of establishing policies follows a chronological order.

The policy cycle also identifies the point at which the policymaking process should start, which makes it a helpful tool for the decision-maker.

Conclusions

Definitions and classifications of government policy were expanded in this study. It is essential to keep in mind different types of policies are defined in different ways but must be simple to comprehend. As the objective of a policy is more likely to shape society, the distributive or substantive policy may be seen by one group of participants as a regulatory policy. Still, another group may not see it as such. Therefore, policy classifications aid in outlining the various ways that policy stakeholders frequently describe policies and the development of practicability and reality of the policy that will be implemented.

The elite/mass idea holds that society is divided into two groups: those in positions of authority and those who do not. Those with access to and influence take a more active role in creating government policy, which is in line with the elite/mass theory. The exciting aspect of group theory is that it aligns more with the legislative branch of government than the bureaucracy. This could be because the legislature is where the general population's opinions are represented.

For the institutional theory, it was revealed that institutions and policy are closely related. The institutional theory's foundation is procedural legislation and how it could help or impede political goals in various governmental structure sectors. Although the rational choice theory assumes that government policy actors have access to all the information necessary to make well-informed decisions, this theory can be misleading and unrealistic because it believes that government policy actors will have the knowledge and ability to make rational decisions.

To categorize and understand the contributions and linkages made by institutions and policy players and the role played by the external environment in producing policy, however, the systems theory offers a more understandable method. It was contended that as democracy is an administrative system built on broad public involvement, politicians and people in public office should support any concept that fosters citizen engagement in any form (especially in democracies).

The participation of the citizenry at all proper steps of the policy cycle is only fair because government policy is created with the general public in mind; nonetheless, caution against dismissing any of these models or theories.

They provide different viewpoints on politics and government policy and information on how these two function in the institutional and political domains. They directly give rise to theories of politics and government policy, which provide light on how issues are discussed during policymaking.

It is essential to remember that government policy and how it is carried out are about ‘outcomes’ for the policies being implemented. It entails gathering all the inputs (needs) from the community and rating each demand according to priority. These inputs from the community or other role-players decide the issues listed on the policy’s agenda. Second, the bureaucracy must recognize the outside world since external variables, except for the community, significantly impact government policy. Laws, the environment on a global scale, technology, traditional views, politics, diversity, and complexity are some of these external elements.

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