Entrepreneurial Design Thinking and Placement Problem of NNPC In Rivers State

Peter C., Chikere (Ph.D)
Department of Marketing,
Faculty of Management Sciences,
Niger Delta University,
Bayelsa State, Nigeria
DOI: 10.56201/wjeds.v10.no4.2025.pg1.12

Abstract
This study looked into the connection between entrepreneurial design thinking and placement problem of NNPC in Rivers State. The study's specific goals were to establish the relationship between empathy and design define and problem placement of NNPC in Rivers State. 7000 employees of NNPC in Rivers State made up the entire population. Using the Taro Yamane formula for calculating sample size, 400 respondents were selected as the sample size from the population. Only 384 respondents, however, completed and submitted their questionnaires accurately. Three hypotheses were tested using the Spearman Correlaton Coefficient. According to the analysis's findings, empathy and design define which are dimensions of design thinking—are favorably and strongly correlated with placement problem. These results led to the conclusion that design thinking, in particular, has evolved over the last three decades from a process only used by designers to more expansive use. Along with the expanded use of design thinking is the rightful criticism, skepticism, and curiosity with the approach, which can offer an opportunity for further refinement and transdisciplinary use. Therefore, the study recommended, among other things, NNPC when carrying out projects on strategic planning should include the consideration of market needs, manufacturing processes and identifying future markets before inventing and constructing tangible objects.

1.0 Introduction

Especially in Rivers State, the problem of organisational placement has grown in recent years, especially at big institutions like the Nigerian National Petroleum Corporation (NNPC). Suboptimal performance, job discontent, and stunted innovation are common outcomes of placement problems, which arise when an organization's needs do not align with the skills, roles, and responsibilities of its employees. Problems with employee placement at NNPC can take many forms, such as a lack of engagement from workers, a lag in career advancement, a mismatch between skills and duties, and a waste of human capital. The strategic oil and gas operations of NNPC in Rivers State necessitate exceptional degrees of skill, innovation, and flexibility, making this challenge all the more pressing. Poor job fit, low morale, and low productivity are common outcomes when employees are assigned roles that do not match their academic qualifications, professional experience, or personal aspirations. Organisational effectiveness is negatively impacted by such placement discrepancies, according to Oboh and Ajibade (2020). This is because employees are not motivated or satisfied with their jobs, which prevents them from making meaningful contributions to institutional goals. Bureaucratic hiring practices, political interference, an absence of organised talent management systems, and an inadequate emphasis on

innovation-driven human capital development have all been associated to NNPC's bad placement decisions in Rivers State. These issues make the organisation even less efficient and less able to compete in the fast-paced, technology-driven energy market. In order to close performance gaps and maximise employee potential, public organisations such as NNPC need workforce planning techniques that are more proactive and flexible (Oginni et al., 2022). Therefore, it is of the utmost importance to investigate potential alternate methods of resolving placement issues.

In this context, entrepreneurial design thinking stands out as a paradigm shifter. In order to reevaluate their human resource management practices, entrepreneurial design thinking proposes a new way of thinking that is creative, people-centered, and problem-solving. Innovative, empathetic, experimental, and iteratively learning solutions that better match organisational demands with personnel talents are developed through entrepreneurial design thinking, as opposed to more conventional linear methods of employee placement. Using a mindset of discovery and value creation, design thinking allows organisations to tackle complex challenges, as pointed out by Liedtka (2018). This approach provides new perspectives on long-standing issues like job placement. This method has the potential to provide NNPC with a more structured and adaptable means of evaluating staff members' abilities, learning about their individual goals and interests, and then placing them in positions where they can thrive.

Furthermore, entrepreneurial design thinking supports collaborative decision-making and co-creation, ensuring that employees are actively engaged in designing their work experiences. This interactive technique might greatly increase work satisfaction and eliminate placement-related issues inside NNPC. According to Brown and Martin (2019), design thinking provides a framework for generating solutions that are not only technically possible but also appealing to users—in this case, the employees themselves. This approach toward employee-centric placement decisions might act as a catalyst for better performance and innovation within NNPC operations in Rivers State.

Additionally, the use of entrepreneurial design thinking is gaining popularity internationally as a viable approach for tackling difficult organizational challenges. Scholars such as Micheli et al. (2019) and Carlgren et al. (2020) suggest that businesses that implement design thinking methodologies are better positioned to adapt to change, boost employee engagement, and discover creative solutions to structural difficulties. This emphasises the necessity of applying entrepreneurial design thinking to the placement difficulties affecting NNPC, particularly as the company strives to reposition itself in a fast changing economic and technical environment.

Therefore, this study intends to evaluate the link between entrepreneurial design thinking and the placement problem of NNPC in Rivers State. The objective is to discover how this unique strategy might serve as a strategic intervention to alleviate chronic placement difficulties, boost employee fit, and improve overall organizational performance. By merging entrepreneurial thinking with human-centered design concepts, NNPC might possibly bridge the gap between employee skills and corporate objectives, ultimately promoting a more productive and flexible workforce.

1.2 Statement of Research Problem

Even after all this time, the Nigerian National Petroleum Corporation (NNPC) still hasn't figured out how to fix its oil and gas difficulties. Despite attempts to apply design thinking as a problem-solving technique, the organisation is still working through its practical application challenges, which is resulting in insufficient resolution of ongoing concerns. This problem becomes worse since there isn't a systematic approach to finding and fixing the reasons why these problems keep cropping up. Design research on entrepreneurship education has shown that teaching workers to

think like designers is beneficial (Daniel, 2016; Neck & Greene, 2011). Design thinking has been the focal point of several discussions on the relationship between design and entrepreneurship (Daniel, 2016; Neck & Greene, 2011; Nielsen & Christensen, 2014; Nielsen & Stovang, 2015). There is a significant lack of academic study on the topic of design thinking, even though its merits in solving organisational difficulties have been acknowledged. Because there is a dearth of literature on the subject, this researcher feels compelled to learn more about how NNPC may use design thinking to find and fix problems with placement in the oil and gas sector for good.

1.3 Aim and Objectives

The study is aimed at identifying the relationship between entrepreneurial design thinking and placement problem of NNPC in Rivers State. the objectives are to:

1. Determine the extent to which design empathy relates to placement problem of NNPC in Rivers State.
2. Ascertain the extent to which design definition relates to placement problem of NNPC in Rivers State.
3. Assess the extent to which design test relates to placement problem of NNPC in Rivers State.

1.4 Research Hypotheses

H_{01}: There is no significant relationship between design empathy and placement problem of NNPC in Rivers State.

H_{02}: There is no significant relationship between design definition and placement problem of NNPC in Rivers State.

H_{03}: There is no significant relationship between design test and placement problem of NNPC in Rivers State.

2.0 Review of Related Literatures

2.1 Entrepreneurial Design Thinking

An effective method that combines creativity, innovation, and strategic problem-solving in entrepreneurial settings is entrepreneurial design thinking. Using the designer's toolbox to merge human needs, technological possibilities, and corporate success criteria, design thinking is a human-centered innovation strategy (Brown, 2009). With this method, business owners can zero in on client wants and requirements, quickly test and refine ideas, and design valuable products and services. A idea like this, when applied to entrepreneurship, is more important in today's complicated and fast-paced business world. Entrepreneurial design thinking is defined by Liedtka (2015) as a process for addressing problems in a company in a creative and original way via the use of empathy, brainstorming, and trying new things. As a result of using this method, entrepreneurs are more likely to rethink their challenges, come up with creative solutions, and learn from their mistakes by making and testing prototypes. Entrepreneurs are able to construct firms that are viable and responsive to shifting market demands through the iterative and user-centric nature of design thinking. Dorst (2011) argues that design thinking in entrepreneurship is similar to abductive reasoning in that it involves seeing new possibilities rather than just analysing existing ones in order to generate answers. Dorst argues that this method is especially helpful for entrepreneurs in overcoming ambiguity and uncertainty since it requires them to creatively link context with possible outcomes. For entrepreneurs, the ability to think on their feet is crucial, since they often face uncertain situations that may not lend itself to more conventional analytical

methods.

Also, according to Neck, Brush, and Greene (2014), design thinking is a teaching method that improves entrepreneurial learning and opportunity awareness by using reflective and action-oriented approaches. Entrepreneurial design thinking, according to them, lets would-be company owners test out customer-centric concepts, create workable models, and refine their offerings in response to immediate criticism. Entrepreneurial design thinking is defined for this study as a method for improving organisational performance and adaptability in fast-paced business environments through the use of creative, iterative problem-solving strategies that combine empathy, ideation, and experimentation.

2.1.2 Design Empathy

In design thinking and other user-centred approaches to innovation and problem-solving, design empathy is essential. Design empathy is the capacity of designers to mentally and emotionally immerse themselves in the user's reality in order to comprehend their emotions, thoughts, and points of view (Kouprie and Visser, 2009). Through this compassionate interaction, designers get a better understanding of consumers' requirements, which in turn guides the creation of significant and applicable solutions. According to Brown (2009), design empathy is the ability to put oneself in the shoes of others in order to obtain a better understanding of their problems and to come up with creative solutions. This includes customers, end users, coworkers, and even future stakeholders. Rather than being a passive quality, empathy in this setting is an active strategy for comprehending and meeting user demands. In order to get a deeper knowledge of the problems and goals faced by users, designers must engage in design empathy, which is further stressed by Battarbee, Suri, and Howard (2014). This is often achieved through ethnographic study and immersive observation. More personalised and effective design solutions are born out of this compassionate relationship. In addition, design empathy is emphasised by Liedtka (2018) as a methodical approach to identifying unspoken client requirements by way of observational and in-depth listening. The ability to move away from making decisions based on assumptions and towards innovation driven by insights is a game-changer for organisations. In this research, "design empathy" is defined as the ability to put oneself in the shoes of a user in order to fully grasp their viewpoint, background, and requirements; this understanding then informs the development of solutions that are centred on the user and help organisations solve problems and innovate more effectively.

2.1.3 Design Definition

Design is a multifaceted concept that encompasses both process and outcome, often used to solve problems and generate innovative solutions. According to Buchanan (1992), design is the human ability to shape and create products, services, and systems that are functional, aesthetic, and responsive to human needs. This definition highlights design as a problem-solving activity that balances form and function to achieve desired results. Krippendorff (2006) defines design as "the deliberate shaping of the world to suit human purposes." This perspective emphasizes design as an intentional and structured effort to improve human experiences through artifacts, interactions, or systems. It aligns with the human-centered approach to design thinking, where the user is at the core of all design activities. Norman (2013) extends the meaning of design by describing it as the conceptualization and planning of objects or systems with a focus on usability, desirability, and practicality. His definition positions design as a process that goes beyond aesthetics to consider user behavior and functionality in various environments. Similarly, Lawson (2006) argues that

design involves a cyclical process of analysis, synthesis, and evaluation that aims to resolve complex problems through creative and strategic thinking. This definition portrays design as a dynamic activity that integrates technical skills with imaginative reasoning. For the purpose of this study, design is conceptualized as a deliberate, iterative, and user-centric process aimed at addressing complex challenges through creative problem-solving and the development of practical, innovative, and sustainable solutions tailored to organizational needs.

2.1.4 Design Test

One of the most important parts of developing a product is testing its designs to make sure they work as expected and fulfil all specifications. Validation and verification of design efficacy are included by numerous approaches and processes. In the realm of design testing, one method is the Engineering Verification Test (EVT). To make sure the fundamental unit works as expected, engineers run EVT on the first engineering prototypes. During this stage, we check for conformity, measure power, and evaluate signal quality. The main goal is to find design problems early on and fix them so that projects don't go over budget or behind schedule. According to Wikipedia, The Design Verification Test (DVT) is actually an additional crucial part. DVT is an exhaustive testing program that ensures all product specifications, interface standards, diagnostic instructions, OEM requirements, and overall functionality through objective and thorough testing. It covers a wide range of tests, including those for functionality (including usability), performance, reliability, climate, environment, mechanics, MTBF prediction, conformance, EMC, reliability, safety, and certification. According to Wikipedia, The process of creating and documenting test cases by extracting test conditions from software is known as test design in software engineering. It entails generating a subset of tests that can be effectively handled while still detecting bugs and evaluating software quality. The ability to define and enhance quality-related procedures, assess product quality in relation to customer expectations, and detect faults are all aided by well-designed tests. To execute the best test design approach, you need to gather relevant requirements, conduct risk and complexity analyses, and look at data from past developments.

According to Wikipedia, Software test design methodologies and their accompanying coverage measurements are defined consistently in ISO/IEC/IEEE 29119-4:2015, which is Part 4 of the worldwide software testing standards. There are a few different ways to approach test design, and they may be broadly classified as either structure-based or experience-based. With its extensive foundation for software test design, the standard can be utilised in conjunction with or independently of other sections. According to Wikipedia, In this study, design testing is seen as a methodical and iterative process that aids in the development of dependable and efficient products by assessing and validating design prototypes or software to make sure they fulfil user needs, quality standards, and predefined specifications.

2.1.5 Problem Placement

The evolution of design thinking in addressing complex and seemingly unsolvable challenges, often referred to as wicked problems, has been a subject of extensive academic discourse. The concept was first introduced in management science by Churchman (1967), who built upon Horst Rittel's original idea, emphasizing the responsibility of society and academia to acknowledge the intractability of such problems and develop innovative solutions to manage them. Rittel and Webber (1973) further refined this notion, distinguishing wicked problems from those in mathematics and structured fields like chess, where clear-cut solutions exist. Head and Xiang

(2016) later underscored the growing prevalence of wicked problems, noting their presence in nearly all critical societal issues. Meanwhile, Herbert Simon (1969), a key figure in design research, proposed using a structured design approach to tackle ill-defined problems by creating artifacts to achieve specific goals. His work contributed to the perception of design thinking as a transformative and solution-oriented process, further popularized by Buchanan (1992) as an interdisciplinary problem-solving methodology. The application of design thinking expanded beyond its traditional creative domain with IDEO's Human-Centered Design (HCD), which positioned users at the core of the design process (Brown, 2008; IDEO, 2011). As design thinking continues to evolve, its integration with social sciences strengthens its adaptability in solving systemic challenges. This approach incorporates insights from systems theory (Bertalanffy, 1969; Dentoni et al., 2023; Meadows, 2008; Senge, 1996), organizational learning (Argyris & Schön, 1978; Kolb, 1984; Senge, 1990), and action research (Lewin, 1946), reinforcing its relevance in addressing complex social and organizational problems.

2.0 Theoretical Framework

2.2 Resource-Based Theory

According to Wernerfelt (1984), a company's resources may be defined as its semi-permanently connected physical and intangible assets. He stressed that a company's competitive edge is boosted by its capacity to use these resources efficiently. Based on this premise, Petaraf and Barney (2003) argued that companies in the same industry might have different amounts and types of resources. Because of their access to unique or scarce resources, certain companies appear to have an inherent advantage when it comes to accomplishing certain goals. Businesses are more likely to keep their competitive advantage in the market when they have resources that rivals find difficult to imitate or obtain (Petaraf & Barney, 2003). Organisational resources derived from the market are also believed to have a pivotal role in determining company success. These encompass resources and skills pertaining to creating a reputation, managing relationships with customers, coming up with new ideas, and expanding one's understanding of a subject. Such resources, as pointed out by Srivastava et al. (1998), provide a fundamental basis that greatly affects the results of an organisation. In addition to bolstering the firm's flexibility and strategic positioning in competitive contexts, these market-facing tools help boost customer happiness and loyalty.

2.3 Empirical Review

Bailey et al. (2019) investigated the potential benefits of using a design thinking (DT) methodology to HRD. They looked at the DT workshop's planning, execution, and facilitation with the goal of getting current and prospective students and grads to brainstorm about what they'll need to succeed in the workforce. The results showed that the fundamental concepts of HRD are compatible with a focus on the user, problem-solving, iterative feedback, and creativity. Researchers came to the conclusion that design thinking may be an important way of thinking for improving HRD procedures.

Emerging designer-entrepreneurs were the focus of an investigation by Colombo et al. (2017), who looked at novel design thinking tools. They looked at "design-intensive start-ups," or businesses with a strong design focus, because they were the ones that laid the groundwork for these new technologies. The researchers employed a numerous case study approach. According to the results, design-intensive start-ups are a separate entrepreneurial paradigm that has not been well discussed in the literature, and they differ greatly from technology-based start-ups in a number of aspects. Dunne (2018) looked at the ways in which design thinking is used and adopted by companies in

different industries. The research looked at the goals of the organisation that adopted DT, the problems that came up during implementation, and the solutions that were used to fix those problems. The findings brought attention to challenges that might impede the advancement of DT efforts, such as unclear goals, the requirement for legitimacy, resistance from inside the culture, and leadership instability. Some of the suggested approaches included bringing design thinking ideas into the implementation phase and making use of technological and collaborative platforms. The effect of creative thinking and design thinking on the expansion of digital entrepreneurship was investigated by Ghosh (2018). The study's overarching goal was to catalogue DT-related characteristics that promote creativity and to investigate the relationships between these characteristics. Thirty students participated in the study, and their responses were analysed using an online survey that relied on grounded theory as its central technique. Findings showed that elements like business model development are influenced by creative intelligence, calculated risk-taking, complexity navigation, communication, empathy, process orientation, and a deep understanding of users.

Kleinsmann et al. (2017) investigated the significance of design thinking in various innovation contexts, presenting four studies that demonstrate its value during early innovation phases. The research highlighted the ways in which DT verifies a shared conceptual domain, provides insights from that domain, helps construct a unified picture of DT, and acts as a common language in innovation initiatives. Validation of these four perspectives showed that combining them with a unified discourse framework enhances the understanding of DT's contribution to early-stage innovation.

In order to successfully use DT tools for innovation, Liedtka (2011) centred on methods for leadership. The study illustrated the impact of tools such as journey mapping, assumption testing, co-creation, and rapid prototyping—practices frequently used in leading innovative firms. It demonstrated how crucial organised assumption testing is for including managers. The findings suggested that true learning and innovation occur when individuals venture beyond their comfort zones and embrace the uncertainty inherent in new experiences.

3.0 Methodology

We were able to ascertain the link between the criteria and predictor factors since this study employed a correlational design, which is useful for discovering correlations between two variables (Rotich & Mukhongo, 2015). Seven thousand people working for NNPC and its affiliates in Rivers State were surveyed for the research (www.nnpcgroup.com; see Appendix C). The Taro Yamane algorithm was used to calculate that 400 employees would make up the sample. Questionnaires were developed to elicit useful information from participants in order to compile the data. To ensure that the questionnaire items were clear and unambiguous, a pilot research was carried out (Kothari & Garg, 2014). The Cronbach alpha technique was used to evaluate the dependability of the device. A subset of the population that did not take part in the primary research was then given a validated questionnaire. Data from the surveys was entered into SPSS version 22.0, the Statistical Package for the Social Sciences. A Spearman Correlation Coefficient was used to test hypotheses, and simple percentages were used to analyse demographic data.

4.1 Data Analysis

Testing of Hypotheses

H_{01}: There is no significant relationship between empathize and placement problem of NNNP in Rivers State.

Table 1: Analysis on the relationship between Empathize and Placement Problem of NNPC in Rivers State

			Empathize	**Placement Problem**
Spearman's rho	**Empathize**	Correlation Coefficient	1.000	.965**
		Sig. (2-tailed)	.	.000
		N	**384**	**384**
	Placement Problem	Correlation Coefficient	.965**	1.000
		Sig. (2-tailed)	.000	.
		N	**384**	**384**

***. Correlation is significant at the 0.05 level (2-tailed).*

The supplied table shows the outcomes of a Spearman's rank-order correlation study for the two variables 'Empathise' and 'Placement Problem.' There is a highly significant positive link between these variables, as indicated by the Spearman correlation coefficient (ρ) of 0.965. This data reveals a correlation between the 'Empathise' and 'Placement Problem' variables, with higher scores indicating a stronger relationship between the two. There is a statistically significant association since the significance value (Sig. 2-tailed) is 0.000, which is lower than the often used criterion of 0.05. This study makes use of a sample size (N) of 384, which indicates that the correlation was calculated using 384 paired observations. 'Empathise' and 'Placement Problem' are strongly correlated in this dataset, with a large positive correlation indicating statistical significance.

Hypothesis Two

H_{02}: There is no significant relationship between define and placement problem of NNPC in Rivers State

Table 2 Analysis on the relationship between Design Define and Placement Problem of NNPC in Rivers State

			Define	**Placement Problem**
Spearman's rho	**Define**	Correlation Coefficient	1.000	.906**
		Sig. (2-tailed)	.	.000
		N	**384**	**384**
	Placement Problem	Correlation Coefficient	.906**	1.000
		Sig. (2-tailed)	.000	.
		N	**384**	**384**

***. Correlation is significant at the 0.05 level (2-tailed).*

A Spearman's rank-order correlation study was conducted between the variables 'Define' and 'Placement Problem,' and the findings are presented in the table that follows. There is a highly significant positive link between these variables, as indicated by the Spearman correlation coefficient (ρ) of 0.906. It appears that there is a correlation between greater scores on the 'Define' variable and higher scores on the 'Placement Problem' variable, and the inverse is also true. There

is a statistically significant association since the significance value (Sig. 2-tailed) is 0.000, which is lower than the often used criterion of 0.05. This study makes use of a sample size (N) of 384, which indicates that the correlation was calculated using 384 paired observations. 'Define' and 'Placement Problem' are strongly correlated with each other in this dataset, and the association is statistically significant.

Hypothesis three

H_{03}: There is no significant relationship between test and problem placement of NNPC in Rivers State

Table 3: Analysis on the relationship between Design Test and Problem Placement of NNPC in Rivers State.

			Test	**Problem Placement**
Spearman's rho	**Test**	Correlation Coefficient	1.000	.890**
		Sig. (2-tailed)	.	.000
		N	**384**	**384**
	Problem Placement	Correlation Coefficient	.890**	1.000
		Sig. (2-tailed)	.000	.
		N	**384**	**384**

***. Correlation is significant at the 0.05 level (2-tailed).*

The table displays the outcomes of a Spearman's rank-order correlation study showing the relationship between the variables 'Test' and 'Problem Placement.' These variables are strongly associated with each other, as shown by the Spearman correlation coefficient (ρ) of 0.890. According to these results, a correlation exists between the 'Test' and 'Problem Placement' variables, with higher scores indicating a stronger relationship. There is a statistically significant association since the significance value (Sig. 2-tailed) is 0.000, which is lower than the often used criterion of 0.05. This study makes use of a sample size (N) of 384, which indicates that the correlation was calculated using 384 paired observations. 'Test' and 'Problem Placement' are strongly positively correlated in this dataset, which is statistically significant.

4.1 DISCUSSION OF FINDING

The null hypothesis (H01) of the study was that NNPC in Rivers State will not experience any placement issues due to a lack of design empathy. Nevertheless, a Spearman's rho of 0.965 and a significance value of 0.000 suggest that the variables are strongly positively correlated according to the analytical findings. This suggests that there are less placement issues inside the organisation when there is higher levels of design empathy. A cornerstone of design thinking is empathy, which is putting oneself in the shoes of the user to get insight into their problems and how to best solve them. By helping people find jobs that play to their unique set of skills and interests, empathic leadership at NNPC can improve job placement rates and cut down on placement problems. The work of Bailey et al. (2019) lends credence to this conclusion; they highlighted the importance of user-centred methods in HRD, with an emphasis on empathy, because it helps to understand individual needs better and align tactics appropriately. Empathetic insight is beneficial for

organisational efficiency; Ghosh (2018) found that empathy is essential for user-focused development and creative thinking.

H02, the study's null hypothesis, states that NNPC in Rivers State does not experience any placement issues related to design definition. Results demonstrated a robust positive association (Spearman's rho=0.906, p=0.000), which runs counter to this notion. This data demonstrates a correlation between reduced placement issues and well-defined difficulties throughout the design phase. In the 'Define' stage of design thinking, the data collected in the 'Empathise' phase is used to formulate precise issue statements. Better personnel placement and overall organisational success can result from NNPC's focused efforts to identify and resolve specific placement concerns. Dunne (2018) came to a similar conclusion, stating that well-defined organisational objectives and issue statements are essential for a successful design thinking implementation. Consistent with this, Kleinsmann et al. (2017) showed that clearly defining challenges improves mutual understanding and propels first attempts at innovation. From these vantage points, it is clear that a key component in resolving systemic issues like staff placement is a precise and accurate problem definition.

The study's null hypothesis (H03) states that NNPC in Rivers State does not experience any placement issues related to design testing. The results showed a robust positive correlation, which ran counter to the hypothesis, with a Spearman's rho of 0.890 and a significance value of 0.000. There was a correlation between fewer placement issues and more thorough testing of solutions throughout the design phase. Evaluate prototypes or solutions to collect feedback and tweak them suitably during the 'Test' phase of design thinking. In order to improve the overall success of staff placement techniques, NNPC can develop comprehensive testing processes. This will allow them to discover any placement difficulties early on and make the required modifications. This conclusion is in line with what Liedtka (2011) said about how iterative methods like prototyping, co-creation, and assumption testing can help organisations innovate. Testing allows for essential feedback loops, which help refine ideas before full-scale adoption, as shown by the research. The iterative testing process in design thinking is also backed by Kleinsmann et al. (2017), who found that it improves comprehension and alignment in innovation approaches.

4.2 CONCLUSION

Design thinking has expanded from a niche technique used mostly by designers to a ubiquitous strategy in many fields within the last 30 years. Governments, social policy experts, non-governmental organisations, and others are now using it to tackle complex societal concerns, sometimes called "wicked problems." Initially, it was only utilised in creative sectors that concentrated on product aesthetics and utility. Opportunities for more refining and multidisciplinary application have been presented by the logically occurring criticism, scepticism, and curiosity that has accompanied this expanded acceptance. A hybrid approach that improves upon conventional design techniques has been created by combining design thinking with strategies thinking, organisational learning, and action research. When applied to challenges outside of traditional design domains, this hybrid approach strengthens and refines design methodologies.

5.1 RECOMMENDATIONS

1. NNPC wants its strategic planning efforts to be more fruitful, it should factor in things like production processes, emerging market identification, and market demands before it develops and produces physical items.

2. In order to ensure that products and services meet the needs of their target audiences on several levels—physical, social, psychological, and cultural—it is crucial to train one's brain to think creatively and implement novel solutions.

REFERENCES

Abidin, S. B. Z. (2012). *Practice-based design thinking for form development and detailing.* Unpublished Dissertation, Universiti Teknologi MARA.

Andersen, T. J. (2020). Managing in Dynamic, Complex and Unpredictable Business Contexts. *In Adapting to Environmental Challenges: New Research in Strategy and International Business*. Emerald Publishing Limited.

Auernhammer, J. (2020). Design Research in Innovation Management: a pragmatic and human-centered approach. *R&D Management, 50*(3), 412-428.

Basiouni, A; Hafizi, A; Akhtar, N; Alojairi, A (2019). Assessing Canadian Business IT Capabilities for Online Selling Adoption: A Net-Enabled Business Innovation Cycle (NEBIC) Perspective. *Sustainability, 11*(13),3662.

Beckman, S. L. (2020). To frame or reframe: where might design thinking research go next?. *California Management Review, 62*(2), 144-162.

Belel, Z. A., & Mahmood, H. (2012). Risk Management Practices in the Nigerian Construction Industry–A Case Study of Yola. *Continental Journal of Engineering Sciences, 7*(3), 1-6.

Börjesson, S., Elmquist, M. (2012). *Innovation capabilities - what are they? Towards a system view of the prerequisites for innovation in large firms* (Unpublished Working Paper). Chalmers University of Technology.

Breznik, L., & D. Hisrich, R. (2014). Dynamic capabilities vs. innovation capability: Are they related? *Journal of Small Business and Enterprise Development, 21*(3), 368-384.

Brown, T. (2009). Change by design. *Business Week, 41*(49), 54-56.

Brown, T. (2009). *Change by design: How design thinking transforms organisations and inspires innovation*. Harper Collins.

Buchanan, R. (2010). Wicked problems in design thinking. *Kepes, 2*(6), 7-14.

Carlgren, L., Elmquist, M., & Rauth, I. (2014). Design thinking: Exploring values and effects from an innovation capability perspective. *The Design Journal, 17*(3), 403- 423.

Stanitsas, M., Kirytopoulos, K., & Leopoulos, V. (2021). Integrating sustainability indicators into project management: The case of construction industry. *Journal of Cleaner Production, 279,* 123-134.

Storey, C. T. (2009). Top management team strategic consensus, demographic homogeneity and firm performance: a report of resounding non findings. *Strategic Management Journal, 17*(7), 571-6.

Teece, D., Pisano, G. & Shuen, A. (1997). Dynamic Capabilities and Strategic Management. *Strategic Management Journal, 18*(7),509-533.

Tschimmel, K. (2012). Design thinking as an effective toolkit for innovation. *Proceedings of ISPIM Conferences, 2*(23), 1-10.

Wang, C. (2007). Dynamic capabilities: A review and research agenda. *International Journal of Management Reviews. 9*(1), 31–51.

Wrigley, C., Nusem, E., & Straker, K. (2020). Implementing design thinking: Understanding organizational conditions. *California Management Review, 62*(2), 125-143.