Journal of Sustainable Tourism and Entrepreneurship (JoSTE)
ISSN: 2714-6480, Vol 7, No 2, 2025, 159-171 https://doi.org/10.35912/joste.v7i2.3488

Exploring the influence of cognitive knowledge on sustainable business outcomes: A multi-dimensional analysis of the forms of knowledge

Yilkes Danladi Nson[1*], Kwarsen Linus Polycarp[2], Fazing Lohnap Andrew[3], Awan Nathan[4]
Nigerian Defence Academy, Kaduna, Nigeria[1]
Plateau State Polytechnic, Barkin Ladi, Plateau State, Nigeria[2,3]
Nuhu Bamalli Polytechnic Zaria, Kaduna State, Nigeria[4]
nsonyilkes@gmail.com[1*], linuskwarsen145@gmail.com[2], andrewfazing8219@gmail.com[3], Nathan_awan@yahoo.com[4]

Article History
Received on 26 September 2025
1st Revision on 30 September 2025
2nd Revision on 25 October 2025
3rd Revision on 27 October 2025
Accepted on 29 October 2025

Abstract

Purpose: This study examines the influence of the four types of knowledge declarative, procedural, judgment, and wisdom knowledge—in achieving sustainable business outcomes in a dynamic and complex environment. It also highlights how these knowledge forms jointly shape decision-making, operational practices, and long-term sustainability among farmers in Plateau State.

Methods: This study adopted a heuristic qualitative methodology. A total of 27 farmers in Mushere, Bokkos, Plateau State were interviewed through semi-structured interviews, field observations, and follow-up phone calls. The data were coded, and heuristics were induced over multiple rounds to generate insight and meaning.

Results: The findings revealed that the four types of knowledge significantly influence sustainable business outcomes. Declarative knowledge provides factual information on sustainability concepts, while procedural knowledge translates these facts into practical actions that support sustainability objectives. Judgment knowledge offers strategic insight for making sound decisions, and wisdom knowledge ensures that decisions align with sustainability principles. Furthermore, the combination of these four forms of knowledge produces dynamic capabilities needed to achieve sustainable business outcomes.

Conclusion: The study concludes that cognitive knowledge plays an essential and multifaceted role in achieving sustainable economic, social, environmental, and governance outcomes. Each type of knowledge contributes uniquely yet interdependently to sustainability practices among farmers in Plateau State.

Limitation: This study used a heuristic qualitative methodology with a small sample size and was resource- and time-consuming due to extensive travel. It was also limited to examining four types of knowledge in Plateau State.

Contribution: The study provides useful insights for business leaders, entrepreneurs, researchers, and policymakers on how the forms of knowledge facilitate sustainable business outcomes and strengthen dynamic capabilities.

Keywords: *Knowledge, Sustainable Business Outcomes, Types Of Knowledge*

How to Cite: Nson, Y. D., Polycarp, K. L., Andrew, F. L., Nathan, A. (2025). Exploring the influence of cognitive knowledge on sustainable business outcomes: A multi-dimensional analysis of the forms of knowledge. *Journal of Sustainable Tourism and Entrepreneurship*, 7(2), 159-171.

1. Introduction

The fast-paced, global, and modern business environment is increasingly characterized by volatility, uncertainty, complexity, and ambiguity (VUCA), which compels businesses to rely less on traditional factors of production, such as land, labor, and capital, and more on knowledge as a significant strategic asset and a critical driver of sustainable business outcomes. The Knowledge-Based View Theory (KBVT) of the firm extends the resource-based view theory, positioning knowledge embedded in intellectual capital as a rare, valuable, and inimitable resource (Nson, 2024). It also includes dynamic capabilities theory, which integrates, builds, and reconfigures resources such as human capital, propelling and speeding innovation, operational efficiency, competitiveness, and long-term sustainability.

As businesses seek sustainable outcomes that integrate economic, environmental, and social performance, knowledge has emerged as a decisive factor in shaping business strategies and practices to achieve sustainability. Therefore, businesses that can effectively acquire, manage, and leverage knowledge are well-informed and better positioned to adapt to dynamic changes and innovatively maintain long-term business sustainability. Hence, we have often heard the popular saying "knowledge is power" (Gaventa & Cornwall, 2015), which means that knowledge can conquer the world. Acknowledging the power of knowledge, William Shakespeare submitted in his book that knowledge is the wing with which we fly to heaven (Feather, 2025).

Knowledge has made humans superior and sophisticated beings on this planet. Knowledge provides the competence essential for personal and organizational development. Knowledge empowers us to take charge of our lives, make decisions, and cope with the challenges of everyday life. Individuals and organizations must be ready not to be the illiterate of the 21st century, as described by the American businessman and futurist Alvin Toffler.Predicted more than 50 years ago, Toffler in his 1970 book "Future Shock" that' the illiterate of the 21st century will not be those who cannot read and write, but those who cannot learn, unlearn, and relearn" (Ahmed Farah, 2024; Kucuksuleymanoglu, 2025; Slattery, 2024; Toffler, 2006).

Toffler's learn, unlearn, and relearn is an adaptive cycle that helps individuals and business organizations acquire new knowledge (learn), discard obsolete information (unlearn), and then integrate fresh perspectives (relearn) that help individuals and organizations to be relevant and resilient in a dynamic environment. Despite the importance of knowledge, empirical evidence on its dimensional influence is lacking. There seems to be a neglect of the multidimensional role of the types of knowledge. The multidimensional nature of knowledge plays a distinct but interdependent role. Declarative knowledge (know-what) provides descriptive and factual information, such as knowledge of regulations, policies, and markets that informs planning.

Procedural knowledge (know-how) provides the skills and processes that ensure the efficient execution of plans. Judgmental knowledge (know when and why) provides insights for making refined decisions. Wisdom knowledge (knowing what is best) ensures that business growth is in tandem with ethical and sustainability principles. Businesses that collectively integrate, utilize, and balance these dimensions of knowledge underpin innovation, resilience, and competitiveness, ultimately achieving sustainable business outcomes. In Nigeria, sustainability has become a serious challenge due to insecurity, economic fluctuations, and environmental degradation. In the North Central zone, Plateau State is well known for its diverse mineral deposits, agricultural resources, and youthful workforce; however, it struggles with the challenges of insecurity, ecological, and socio-economic problems.

The state's business environment is shaped by factors such as Fulani herdsmen attacks, limited access to finance, weak infrastructure, and climate-related risks (Ali & Lar, 2024; Babarinde, 2021;

Ezeonwuka & Orizu, 2018; Ishola & Luginaah, 2025), which threaten the long-term viability of businesses. These problems underscore the importance of knowledge as a strategic resource for navigating uncertainty, leveraging opportunities, and fostering sustainable business outcomes. The dynamic nature of knowledge increases in value when it is shared, applied, and innovatively used (Castaneda & Cuellar, 2020; Elshaiekh, Shehata, & Al Hosni, 2024; Iqbal et al., 2025; Robertson, Caruana, & Ferreira, 2023; Vandavasi, McConville, Uen, & Yepuru, 2020).

Therefore, exploring the influence of cognitive knowledge dimensions on sustainable business outcomes in Plateau State is timely and relevant. It provides insights into how businesses in Plateau State will mobilize knowledge to grow and achieve sustainable business outcomes, including the United Nations Development Goals (SDGs). This research not only provides a theoretical understanding of the knowledge-sustainability link but also practical implications for policymakers, researchers, and businesses seeking to advance resilient and knowledge-driven enterprises in Plateau State and Nigeria.

1.1 Statement of the Problem

Although knowledge is widely recognized as a strategic resource for business sustainability, many businesses in Nigeria, particularly in Plateau State, continue to struggle with limited growth, weak innovative capability, and vulnerability to shocks arising from insecurity, infrastructural deficits, climate change, and environmental risks. These gaps limit business innovation and sustainability. Despite the state's huge economic potential in agriculture and mining, such as its distinctiveness in the production of potatoes in Bokkos, sugarcane, and Acha (fonio) in Mushere, a suburb of Bokkos. Business outcomes remain fragile because of the limited applications of different forms of knowledge that could foster resilience and sustainability. Extant research has highlighted the role of knowledge in organizational performance (Andrea & Wanyoike, 2024; Kordab, Raudeliūnienė, & Meidutė-Kavaliauskienė, 2020), but little is known about how declarative (factual), procedural (skill-based), judgment (decision-making), and wisdom (value-driven insights) knowledge specifically influence sustainable business outcomes in Plateau State.

Furthermore, literature reviews reveal a lack of empirical evidence on the distinctive influences of these four forms of knowledge on achieving sustainable business outcomes. Therefore, a multidimensional analysis is required to understand how each of these cognitive knowledge types distinctively and interdependently contributes to sustainable business performance and to what extent they interact to shape decision-making, innovation, and long-term value creation of a business in Plateau State. Against this backdrop, this study examines the unique and interdependent influence of knowledge types on driving sustainable business outcomes in a dynamic and complex environment.

1.2 Objective of the Study

The main objective of this study is to examine the unique and interdependent influence of the types of knowledge on achieving sustainable business outcomes in a dynamic and complex environment. Specifically, this study seeks to:

1. To examine the influence of declarative knowledge on sustainable business outcomes in Plateau State, particularly in supporting informed decision-making.
2. To examine the influence of procedural knowledge on sustainable business outcomes in Plateau State, particularly in supporting the efficient implementation of sustainable practices.
3. To examine the influence of judgment knowledge on sustainable business outcomes in Plateau State, particularly in supporting effective decision-making in complex and uncertain situations.
4. This study examined the influence of wisdom knowledge on sustainable business outcomes in Plateau State, particularly in supporting long-term perspectives and promoting responsible decision-making.
5. To evaluate how the combination of declarative, procedural, judgment, and wisdom knowledge enables farmers in Plateau State to design and implement sustainable business strategies that drive long-term performance.

2. Literature Review

2.1 The Concept of Knowledge

According to Hou, El-Gayar, Rahman, and Nawar (2025), knowledge is defined as "valid and true information that helps guide actions. In his work, Zagzebski (2017) defined knowledge as beliefs arising from acts of intellectual virtue. Zagzebski (2017) further defines knowledge by acquaintance and proposition as cognitive contact with reality arising from acts of intellectual virtue. Knowledge is familiarity, awareness, or understanding of someone or something, such as facts, information, descriptions, or skills, which is acquired through experience or education by perceiving, discovering, or learning (Simao & Franco, 2018). Cognitive, educational, and social psychologists define knowledge as a collection of information or facts and their meanings in relation to each other, which are stored in the brain (Van Velzen, 2022).

This study, anchored on Plato's definition de Grefte (2023) and Rowett (2018) defined knowledge as justified true belief (JTB). This definition has led to its measurement using methods that rely solely on the correctness of the answers. Therefore, a correct or incorrect answer is interpreted to mean that a person knows or does not know something. Therefore, knowledge occurs in all cases, but not in all cases, when the JTB condition is met. Goman (2002) operationalized the concept of knowledge into four dimensions: declarative (knowing what), procedural (knowing how), judgmental (knowing when), and wisdom (knowing why). Meanwhile, Demir, Kiziloglu, Budur, and Heshmati (2023), eLeaP Editorial Team (2025), and Salaberry (2018) in their various work identified two dimensions of knowledge, namely, declarative and procedural knowledge. Therefore, this study incorporated the four dimensions of knowledge classified by Goman (2002) as follows:

2.1.1 Declarative knowledge

The concept of declarative knowledge (also called descriptive, formal, or propositional knowledge, knowing what or knowing-that) is defined as facts or information stored in memory and is, therefore, sometimes called declarative memory (Saks, Ilves, & Noppel, 2021). Saks et al. (2021) described declarative knowledge as events, processes, things, and their relation to each other. Also, Watson, Newman, and Morgan (2021) defined declarative knowledge as knowledge which is conscious, explicit and verbalized. According to Salaberry (2018), declarative knowledge, also known as descriptive or propositional knowledgeSalaberry (2018), is defined as processes, concepts, and information that can be stated or declared. Declarative knowledge comprises all concepts and cognitions that people can potentially draw upon to comprehend new information or make judgments and behavioral decisions.

Declarative knowledge refers to factual information, that is, knowing "what" something is (Hong, Pi, & Yang, 2018). Demir et al. (2023) suggested that declarative knowledge is theoretical, while Hong et al. (2018) related declarative knowledge to learning and recalling. In relation to declarative knowledge in business, it includes product specifications, market data, business industry regulations, and customer demographics. Business access to this type of knowledge helps sense opportunities, reduces risks, minimizes threats, and establishes a factual basis for decision-making. Therefore, this study adapted Yun (2025) recent definition of declarative knowledge as knowledge that can be expressed in terms of words or other systems of symbols, namely, knowledge that "knows what everything is." Declarative knowledge involves concepts, theories, principles, and schemas, such as names of places, people, terminologies, rules, and theorems.

It encompasses facts, concepts, and information that can be explicitly verbalized or described verbally. For instance, knowing that two plus eight is ten, the earth is spherical in shape, and that Dangote is a businessman are forms of declarative knowledge. The concept of sugarcane farming in Mushere is declarative knowledge that can be verified through observation, evidence, or research. Therefore, in relation to sustainability, declarative knowledge is factual information that a business possesses regarding sustainability. This information includes knowledge of environmental regulations, climate variability data, social indicators, and best practices. This information informs decision-making, helps with strategic planning, and helps involve stakeholders.

Declarative knowledge can be divided into three primary types:

i. **Facts**: These are specific facts, verifiable pieces of information or data, such as historical events or scientific facts. For example, knowing that Kopyang is a village in Mushere, and that Mushere is a tribe as well as the name of a community and a district ruled by a king called "Miskhaham", located in Bokkos LGA of Plateau State, is a verifiable fact. The fact that the main aim of a profit-making organization is to maximize profits can also be verified. Arish potatoes are a vegetable that grows well in Bokkos. And the fact that Sugarcane and Acha (fonio) grow well in Mushere, a suburb of Bokkos Local Government of Plateau State, is declarative knowledge that can be verified.
   Imagine standing in front of the Government House, Little Rayfield Jos, Plateau State. You know it's in Jos, the seat of the Plateau State government. However, how do you know these facts? Although you cannot help yourself, you know the facts behind its construction. You have declarative and factual knowledge of this. From the moment we wake up to the second we fall asleep, we live in a world packed with knowledge of facts. They can recognize faces, recall historical events, and understand scientific principles and conditions. This incredible ability to store and retrieve information is the foundation of our understanding of the world. It helps us engage in meaningful conversations, make informed decisions, and continuously expand our horizons.
ii. Concepts refer to generalized knowledge that helps us understand broader patterns of behavior. Conceptual knowledge helps in understanding abstract concepts, theories, and principles (such as philosophical ideas and mathematical concepts). An example of economics is understanding the concept of supply and demand.
iii. **Beliefs**: These are personal or collective interpretations of the world around us, shaped by culture, experience, and social contexts. An example of this could be a belief about what makes an effective leader. Or a belief about what makes a successful businessman or woman.
   Declarative knowledge is vital to procedural knowledge. Knowing "what" to do will help know "how" to do it.

2.1.2 Procedural knowledge

Procedural knowledge refers to "knowing how" (Demir et al., 2023; Hong et al., 2018). These are the skills, processes, and methods used to accomplish a job or task. Procedural knowledge is the proactive ability to convert passive knowledge into practical knowledge (Hong et al., 2018). Saks et al. (2021) described procedural knowledge as practical knowledge or knowing-how that involves a person's skills and ability to accomplish an activity using certain strategies.

In another study, Chen et al. (2025) defined procedural knowledge as knowledge of skills, and strategic knowledge as procedural knowledge. Chen et al. (2025) further proposed the characteristics of procedural knowledge as structured flow governed by specific steps and rules, emphasizing a sequential progression. It is the practical, actionable skill Demir et al. (2023) to accomplish tasks. Such as an employee's procedural knowledge and skills in knowing how to successfully maneuver operational procedures to accomplish tasks. Being aware of how to perform tasks and having the skills and abilities to perform them represent employees' procedural knowledge. For example, PK includes processes related to achieving sustainability, such as manufacturing eco-friendly products, waste management and ethical sourcing.

2.1.3 Judgment knowledge

Judgment knowledge (know when) is the ability to make reliable and robust decisions in unpredictable conditions. Judgment knowledge refers to the ability to use declarative and procedural knowledge to effectively evaluate alternatives and make informed decisions. It evaluates potential risks and opportunities and provides feedback that refines declarative and procedural knowledge. Thus, JK helps businesses successfully navigate risks, wisely allocate resources, identify unethical practices, and seize opportunities that lead to profitability, productivity, and long-term strategic solutions or objectives. Muis and Etoubashi (2020) asserted that judgmental knowledge helps make sound financial decisions and navigate complex social interactions. It involves the ability to weigh information, consider different perspectives, and make informed decisions. It relies heavily on the knowledge an individual possesses

(declarative and procedural knowledge), as well as their skills and ability to analyze and synthesize information.

Good judgment is essential for effectively applying knowledge in decision making and problem solving. Judgment skills are abilities and mental tools that enable effective decision-making in critical situations or dilemmas. The use of these skills can include the evaluation and prioritization of factors, making calculated decisions, arriving at a conclusion, and forming subjective opinions. Exercising good judgment can help meet deadlines and effectively plan projects. For example, achieving sustainability means making trade-offs between social, environmental, and economic impacts for business leaders and decision-makers.

2.1.4 Wisdom knowledge

The concept of wisdom is an action-oriented concept geared towards applying appropriate organizational knowledge during the planning, decision-making, and implementation stages. Bierly III, Kessler, and Christensen (2000) defined wisdom as the ability to best use knowledge to establish and achieve desired goals and learn about wisdom as the process of discerning judgments and actions based on knowledge. Zhang, Shi, Wang, and Ferrari (2023) defined wisdom as actionable behaviors and psychological traits. Wisdom knowledge guides businesses to be profitable and socially and environmentally sustainable. Wisdom is the ability to consider the long-term outcomes and ethical implications of applying accumulated experience, knowledge, and sound judgement to make sound, insightful, and practical decisions.

2.2 The Concept of Sustainable Business Outcomes

The concept of sustainability has emerged as a major issue for everyone; hence, modern businesses cannot ignore its relevance. Intezari (2015) asserted that sustainability is not only a necessity but also inevitable. Nosratabadi et al. (2019) described the concept of sustainable business as the rationale of how an organization creates, delivers, and captures value, in economic, social, cultural, or other contexts, in a sustainable way. Having understood the concept of sustainable business, we assessed sustainable business outcomes as the positive economic, social, and environmental impacts a business achieves by integrating environmental, social, and governance considerations into its strategy, with the sole aim of achieving long-term benefits for the business and society as a whole without compromising future generations' ability to meet their needs. Sustainable business outcomes are measured by economic, environmental, social, and governance performance.

2.3 Theoretical Review

This section deals with the underpinning theory that supports the topic of the discussion. For this study, the most relevant theory is the knowledge-based theory, which is explained below:

The knowledge-based, resource-based, and (dynamic) capabilities theories of the firm were used in this study to guide and explain the relationship between the aforementioned forms of knowledge and sustainable business success. Resource-based theory emphasizes the role of physical and intangible resources in determining an organization's competitiveness. The intangible resources stated by the RBT in this study are used in terms of knowledge, which has been explained by the knowledge-based theory as essential resources of an organization.

In addition, the Knowledge-Based View theory (KBVT) of the firm extends the resource-based view theory and positions knowledge embedded in intellectual capital as a rare, valuable, and inimitable resource (Nson, 2024) that propels and speeds innovation, operational efficiency, and long-term sustainability. The knowledge-based theory posits that knowledge is the most strategically essential resource for creating an organization's sustainable competitive advantage (Schoenherr, 2022). Therefore, businesses that can effectively acquire, manage, and leverage knowledge are well-informed and positioned to adapt to dynamic changes and innovatively maintain long-term business sustainability. As such, "knowing that or what", "" "knowing how"," "knowing when", and "knowing why" serve as unique sources of sustainable business success. Knowledge-based theory can be used to

examine how individuals, businesses, organizations, and entrepreneurs can succeed only to the extent of their ability to obtain, generate, store, and use knowledge better than their competitors.

Dynamic capabilities theory by David Teece extends the RBV by emphasizing how an organization integrates, builds, and reconfigures resources (internal and external) to adapt to dynamic changes in the environment (Li, Teece, Baskaran, & Chandran, 2025; Nson, 2024; Teece, 2025). DCT involves an organization's ability to sense, seize, and reconfigure resources and capabilities to adapt to dynamic and changing environments. Dynamic capabilities theory underscores the relevance of an organization's ability to continuously learn, adapt, and innovate to sustain competitiveness.

In view of this comprehensive perception of the given theories, this study attempts to feature the correlation between the four forms of knowledge and sustainable business performance within the tourism industry. This study highlights ways in which these theories can be integrated to supply a more holistic understanding of this relationship, especially in the study areas of tourism managerial micro-economics, tourism competitiveness, and organizational knowledge management, aimed at impending application in particular to enhance the sustainability of tourism business enterprises.

2.4 Conceptual Framework

Based on the literature reviewed on knowledge and on-the-field research, a model of a conceptual framework is developed below to investigate the relationship between knowledge types and sustainable business outcomes (Figure 1). The model depicts the influence of knowledge type on sustainable business outcomes.

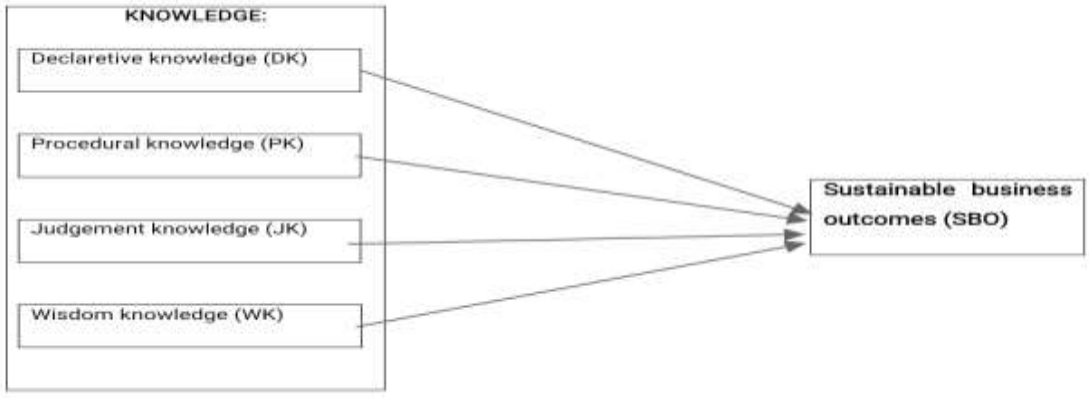

Figure 1. Proposed Model
Source: Prepared by the authors (2025)

2.5 Empirical Review

2.5.1 Declarative knowledge and sustainable business outcomes

Declarative knowledge (knowing that) comprises all concepts and cognitions that people can potentially draw upon to comprehend new information or make judgments and behavioral decisions. It provides a foundation for procedural knowledge to generate inferences and decisions that promote sustainable outcomes. Demir et al. (2023) found a significant positive impact of declarative knowledge on contextual performance in the Turkish context. We hereby propose thus:

H1: Declarative knowledge positively influences sustainable business outcomes by providing a foundation for informed decision-making.

2.5.2 Procedural knowledge and sustainable business outcomes

Procedural knowledge is "knowing-how" to perform a task or skill; it demonstrates competence and practical applications of skills to perform tasks (Demir et al., 2023). Procedural knowledge appears through experience and reflections (Saks et al., 2021) that demonstrate competence through actions, ingrained in production methods, best practices, operational procedures, and technical details of an organization. Demir et al. (2023) found a positive relationship between procedural knowledge and

employee motivation. van der Eem, van Drie, Brand-Gruwel, and van Boxtel (2023) in a study submitted that procedural knowledge and task value are significant predictors of students' task performance. In addition, Žakelj, Štemberger, and Klančar (2025) positively associated accurate procedural knowledge with team performance. Thus, we propose the following:
H2: Procedural knowledge positively influences sustainable business outcomes by facilitating the efficient implementation of sustainable practices.

2.5.3 Judgement, knowledge, and sustainable business outcomes
Judgement knowledge helps understand complex problems, evaluate sustainability impacts (Eccles, Ioannou, & Serafeim, 2014), and integrate other forms of knowledge to make strategic decisions that will ultimately build sustainable long-term value. Judgment knowledge is essential for sustainable business outcomes, as it helps identify and understand complex economic, environmental, and social issues, estimate their costs and benefits, especially for intangible impacts like reputation, and engage stakeholders for comprehensive insights (Eccles et al., 2014). It allows for strategic and adaptable decision-making in the face of uncertainty, guiding the integration of knowledge into operations to foster innovation, ensure regulatory compliance, and build long-term resilience and competitive advantage.

Ultimately, judgmental knowledge helps a business move away from mere factual information to evaluate evidence and make context-specific decisions. The application of judgment knowledge enables businesses to build sustainable, long-term value by enhancing resilience, improving their competitive position, and fostering trust among customers, investors, and employees. Thus, we propose the following hypothesis:
H3: Judgment knowledge positively influences sustainable business outcomes by enabling effective decision-making in complex and uncertain situations.

2.5.4 Wisdom, knowledge, and sustainable business outcomes
Wisdom relates to sustainable business outcomes by providing exceptional insights, reflections, and discernment (Peters & Green, 2024; Roqai, Allouani, Aboumehdi, & Ennida, 2025) to guide the long-term future of businesses. Intezari (2015) submitted that sustainability is not a necessity but is inevitable, and that wisdom provides organizations with the capacity to formulate effective sustainable integrative strategies, as well as wisdom promotes organizational sustainability(Intezari, 2015). He further submitted that sustainability is a must for organizations and the only option for success in uncertain and unstable business environments.

Therefore, wisdom helps businesses appreciate declarative, procedural and judgmental knowledge to understand environmental and social issues in developing business management sustainability (Nuringsih, Budiono, Maupa, & Taba, 2023). Thus, we propose the following hypothesis:
H4: Wisdom knowledge positively influences sustainable business outcomes by providing a long-term perspective and promoting responsible decision-making.

2.5.5 Combined effects of the forms of knowledge on sustainable business outcomes
The preceding findings revealed the distinctive individual effects of the four types of knowledge–declarative, procedural, judgment, and wisdom knowledge (Demir et al., 2023; Eccles et al., 2014; Nuringsih et al., 2023)–on variables such as business performance, societal reunification, and developing business management sustainability. This shows that the combination of these types of knowledge helps to achieve sustainable business outcomes. Based on this argument, we propose the following:
H5: The combination of declarative, procedural, judgment, and wisdom knowledge promotes sustainable business outcomes.

2.6 Literature Gap
There is a gap in the literature relating to the four types of knowledge as a driving force for achieving sustainable business outcomes. While there has been increased awareness on the importance of knowledge, most literature has centered on knowledge management (Alkathiri, Said, Meyer, &

Soliman, 2024; Andrea & Wanyoike, 2024; Kordab et al., 2020) and knowledge sharing (Iqbal et al., 2025), neglecting the unique and interdependent influence of declarative, procedural, judgment, and wisdom knowledge in achieving business sustainability. The only study that attempted to discuss the types of knowledge was limited to declarative and procedural knowledge (Demir et al., 2023; Hong et al., 2018; Saks et al., 2021; Watson et al., 2021; Yun, 2025), neglecting judgment and wisdom knowledge. In addition, a literature search reveals a lack of empirical evidence on the influence of the four types of knowledge on achieving sustainable business outcomes. Hence, this gap motivated the authors to conduct the present study to fill this gap.

3. Research Methodology

This study used a heuristic methodology, that is, a qualitative method that used a self-reflective process to deeply understand the phenomenon through the researcher's personal experiences, intuitions, and shared inquiry with others, following the phases of engagement, immersion, and synthesis to arrive at insights and meaning. This approach involves a holistic, collaborative, and personal journey of discovery, focusing on the researcher's internal frame of reference and lived experiences to uncover the essential nature of the topic.

The authors interviewed 27 farmers specifically on Sugarcane, Acha (fonio), and arish potato farming in Mushere, Plateau State. The primary data came from in-depth, semi-structured interviews lasting 25–60 min, supplemented by our observations during on-site visits to various farms. Phone calls were made to those who had mobile phones when preparing for the interviews, and a literature review on the concepts was conducted. The data obtained from the interviews were coded, and heuristics were induced over multiple rounds by several researchers.

Measurements

The item scale for this study was adapted from Demir et al. (2023), with modifications made to suit the context of the study.

4. Results and Discussion

This study examined how different forms of knowledge–declarative, procedural, judgment, and wisdom knowledge–influence sustainable business outcomes in selected businesses in Plateau State. Through qualitative methods, including interviews, document analysis, and field observations, several key findings emerged.

I. Declarative Knowledge: The participants possessed a strong factual understanding of the concept of sustainability, such as organic production, environmental conservation, social equity, and economic viability. Knowledge of sustainability helps align business strategies with government rules, regulations, and market trends, thus encouraging eco-friendly production.
II. Procedural knowledge: The farmers (participants) demonstrated practical know-how, such as sustainable farming techniques, composting, waste reduction, and irrigation systems, which influenced the daily sustainability practices of the business. This "know-how enhances the day-to-day operational efficiency, helps conserve resources, and improves the production quality of Sugarcane and Arish potatoes.
III. Judgement knowledge: Experiential learning influenced decision-making, specifically in areas involving the allocation of resources (such as fertilizer, manure, and water), assessment of risk, and crisis management. This helps to mitigate climate-related disruptions.
IV. Wisdom knowledge**:** Farmers' emphasis on community involvement, ethical values, and multigenerational impact shows wisdom knowledge. The business did not view sustainability as a business strategy but as a moral responsibility for community and environmental well-being. Wisdom guides the application of other forms of knowledge to solve real-life challenges.
V. The findings reveal that these four forms of knowledge, as depicted in this study, are interdependent. No single form of knowledge works in isolation from others. For example, an entrepreneur cannot act without knowledge. Certain knowledge of production cannot be applied without first being contextualized.

VI. Sustainable business outcomes in Plateau State and across Nigeria can be significantly improved by not only investing in technology or infrastructure, but also investing in cognitive capital. Businesses that continuously learn, unlearn, and relearn new knowledge lead with cognitive capital and are better positioned to achieve lasting economic, social, and environmental outcomes.

5. Conclusion

5.1. Conclusion

This study concludes that cognitive knowledge (capital) plays an essential and multifaceted role in achieving sustainable business outcomes, especially in the context of developing economies such as Nigeria. Each dimension uniquely contributes to sustainable business outcomes: declarative knowledge serves as the basis for awareness; procedural knowledge provides practical applications of this awareness into actions; judgmental knowledge enhances strategic decision-making; and wisdom knowledge ensures that these processes are based on ethics, values, and intergenerational impacts. Together, these forms of knowledge help achieve sustainable business outcomes, such as economic, environmental, social, and governance objectives. Sustainable business performance in Plateau State, as depicted by this research, is not only a function of technology or capital alone, but also depends largely on how businesses learn and practically integrate the different forms of knowledge into their operational activities.

5.2. Suggestions

In line with the findings and conclusions of this study, the following suggestions are made:

I. Capacity-building programs for knowledge development: Organizations are recommended to invest in employee training and development by designing and implementing training workshops for their staff to strengthen the four types of knowledge. In addition to technical skills, emphasis should be placed on decision-making skills (judgment knowledge) and ethical reasoning (wisdom knowledge).
II. Knowledge-sharing networks: A platform for peer learning among sustainable businesses should be established. For example, maize farmers learn from beekeepers about the mutual relationship between maize flowers and bee pollination. Mentorship programs between experienced and upcoming entrepreneurs also facilitate knowledge transfer.
III. Leverage Technology for Knowledge Utilization: Businesses should adopt digital tools such as artificial intelligence, big data analytics, Google Classroom, collaborative cloud platforms, and virtual reality for immersive learning and experience to optimize access to and use of organizational knowledge.
IV. Policy and institutional support: Various government agencies responsible for developing policies should incorporate cognitive knowledge development into supportive programs for businesses. In addition, a certain level of incentives should be provided for businesses that show value-driven and knowledge-based sustainability practices.
V. Future studies: This study recommends conducting quantitative studies to expand similar studies across different industries in Plateau State and other regions of Nigeria. We also recommend that future researchers qualitatively and quantitatively test the combined/synergistic role of various forms of knowledge in accelerating performance and sustainability.

Individuals and organizations must be ready not to be the illiterate of the 21st century, as described by the American businessman Alvin Toffler. They must be ready to learn, unlearn, and relearn new realities that help individuals and organizations remain relevant and resilient in a dynamic environment.

5.3 Significance of The Study

This study is significant for policymakers, practical applications, and academic significance.

5.3.1 Policy Significance

The findings of this study provide insights for policymakers in Plateau State and Nigeria as a whole on how to effectively design integrated business support policies that foster free access to information, build technical skills, make sound decisions under uncertainty, and promote business sustainability. The

study further provides evidence-based insights that essentially handle Plateau State's problems of insecurity, environmental risks, climate change, and infrastructural deficits while promoting business resilience and sustainability.

5.3.2 Practical Significance

The findings of this study will demonstrate to business owners and managers how different forms of knowledge contribute to business resilience, competitive advantage, and sustainability. The study shows that declarative knowledge helps provide descriptive and factual information, such as knowledge of environmental and social regulations and policies that inform planning; procedural knowledge provides the skills that translate plans to actions; judgement knowledge provides insights into making refined decisions; and wisdom knowledge ensures that business growth is in tandem with ethical and sustainability principles.

5.3.3 Academic Significance

This study extends the discourse on knowledge and sustainability by exploring the forms of knowledge within the context of developing economies. This study contributes context-specific evidence of resource constraints in developing economies, where businesses operate in an environment of insecurity and uncertainty.

References

Ahmed Farah, M. (2024). *A study on the acquisition of ICT literacy skills among Swedish immigrants with low ICT literacy skills.* Stockholm University, Stockholm, Sweden. Retrieved from https://www.diva-portal.org/smash/record.jsf?pid=diva2:1955520

Ali, U. T., & Lar, J. (2024). The Roles Of Armed Fulani Herders In Perpetrating Violence In Plateau State, Nigeria. *Fuoye International Journal of Education, 7*(1).

Alkathiri, N. A., Said, F. B., Meyer, N., & Soliman, M. (2024). Knowledge management and sustainable entrepreneurship: A bibliometric overview and research agenda. *Journal of Innovation and Entrepreneurship, 13*(1). doi:https://doi.org/10.1186/s13731-024-00387-3

Andrea, P. T., & Wanyoike, R. (2024). Knowledge Management and Organization Performance; A Critical Review of Literature. *Journal of Business and Strategic Management, 9*(1), 73-85. doi:https://doi.org/10.47941/jbsm.1715

Babarinde, S. A. (2021). Assessing the effects of Fulani herdsmen violence on farmer's productivity in Nigeria: A mixed method analogy. *AIPGG Journal of Humanities and Peace Studies, 2*(2), 1-22. doi:https://dx.doi.org/10.2139/ssrn.3935703

Bierly III, P. E., Kessler, E. H., & Christensen, E. W. (2000). Organizational learning, knowledge and wisdom. *Journal of Organizational Change Management, 13*(6), 595-618. doi:https://doi.org/10.1108/09534810010378605

Castaneda, D. I., & Cuellar, S. (2020). Knowledge sharing and innovation: A systematic review. *Knowledge and Process Management, 27*(3), 159-173. doi:https://doi.org/10.1002/kpm.1637

Chen, K., Yang, S., Luh, D., Chen, Z., Ai, H., & An, Y. (2025). Gamification as an Innovative Approach for the Assessment of Procedural Knowledge. *Electronics, 14*(8), 1-21. doi:https://doi.org/10.3390/electronics14081573

de Grefte, J. (2023). Knowledge as justified true belief. *Erkenntnis, 88*(2), 531-549. doi:https://doi.org/10.1007/s10670-020-00365-7

Demir, A., Kiziloglu, M., Budur, T., & Heshmati, A. (2023). Elaborating on the links between declarative knowledge, procedural knowledge, and employee performance. *SN Business & Economics, 3*(1). doi:https://doi.org/10.1007/s43546-022-00402-3

Eccles, R. G., Ioannou, I., & Serafeim, G. (2014). The impact of corporate sustainability on organizational processes and performance. *Management Science, 60*(11), 2835-2857. doi:https://doi.org/10.1287/mnsc.2014.1984

Elshaiekh, N. E., Shehata, A., & Al Hosni, N. (2024). Enhancing Students' Knowledge-Based Economy Skills at Sultan Qaboos University. *Education Sciences, 14*(11), 1-16. doi:https://doi.org/10.3390/educsci14111141

Ezeonwuka, I. F., & Orizu, O. N. (2018). Fulani herdsmen attacks on farming communities: Psychological implications. *Practicum Psychologia, 8*(1), 156-166.

Feather, J. (2025). Building Relationships and Sustaining Hope Through Humanities Advocacy *Strategic Shakespeare* (1st ed., pp. 170-178): Routledge.
Gaventa, J., & Cornwall, A. (2015). Power and knowledge. *The SAGE handbook of action research, 3*, 465-471.
Hong, J., Pi, Z., & Yang, J. (2018). Learning declarative and procedural knowledge via video lectures: Cognitive load and learning effectiveness. *Innovations in Education and Teaching International, 55*(1), 74-81. doi:https://doi.org/10.1080/14703297.2016.1237371
Hou, B. X., El-Gayar, O., Rahman, M. T., & Nawar, N. (2025). Towards design principles for knowledge management systems that support experientially derived tacit and procedural knowledge. *Issues in Information Systems, 26*(4), 264-281. doi:https://doi.org/10.48009/4_iis_2025_122
Intezari, A. (2015). Integrating wisdom and sustainability: Dealing with instability. *Business Strategy and the Environment, 24*(7), 617-627. doi:https://doi.org/10.1002/bse.1892
Iqbal, S., Bashir, M., Bureš, V., Zanker, M., Ullah, S., & Rizwan, A. (2025). Impact of knowledge sharing and innovation on performance of organization: evidence from the pharmaceutical industry of Pakistan. *Cogent Business & Management, 12*(1), 2471536. doi:https://doi.org/10.1080/23311975.2025.2471536
Ishola, T. O., & Luginaah, I. (2025). The Gender–Climate–Security Nexus: A Case Study of Plateau State. *Climate, 13*(7), 136. doi:https://doi.org/10.3390/cli13070136
Kordab, M., Raudeliūnienė, J., & Meidutė-Kavaliauskienė, I. (2020). Mediating role of knowledge management in the relationship between organizational learning and sustainable organizational performance. *Sustainability, 12*(23), 10061. doi:https://doi.org/10.3390/su122310061
Kucuksuleymanoglu, R. (2025). Resilience in Lifelong Learning for Individuals *Resilience, Adaptability, and Cultural Awareness Within the Educational Landscape* (pp. 69-96): IGI Global Scientific Publishing.
Li, B., Teece, D. J., Baskaran, A., & Chandran, V. (2025). Dynamic Knowledge Management: A dynamic capabilities approach to knowledge management. *Technovation, 147*, 103316. doi:https://doi.org/10.1016/j.technovation.2025.103316
Nosratabadi, S., Mosavi, A., Shamshirband, S., Zavadskas, E. K., Rakotonirainy, A., & Chau, K. W. (2019). Sustainable business models: A review. *Sustainability, 11*(6), 1-30. doi:https://doi.org/10.3390/su11061663
Nson, Y. D. (2024). Sustainability of the society through green human resources management practices: A proposed model. *Annals of Human Resource Management Research, 4*(1), 43-59. doi:https://doi.org/10.35912/ahrmr.v4i1.2161
Nuringsih, K., Budiono, H., Maupa, H., & Taba, M. I. (2023). Wisdom Appreciation in Sustainable Management Thought: As Grounded Theory. *International Journal of Application on Economics and Business, 1*(2), 805-813. doi:https://doi.org/10.24912/ijaeb.v1i2.805-813
Peters, M. A., & Green, B. J. (2024). Wisdom in the Age of AI Education. *Postdigital science and education, 6*(4), 1173-1195. doi:https://doi.org/10.1007/s42438-024-00460-w
Robertson, J., Caruana, A., & Ferreira, C. (2023). Innovation performance: The effect of knowledge-based dynamic capabilities in cross-country innovation ecosystems. *International Business Review, 32*(2), 101866. doi:https://doi.org/10.1016/j.ibusrev.2021.101866
Roqai, M. C., Allouani, S. A., Aboumehdi, Y. H., & Ennida, K. (2025). Character Education in Universities: Anchoring Practical Wisdom to Foster Organizational Well-Being *Harnessing Happiness and Wisdom for Organizational Well-Being* (pp. 169-202): IGI Global Scientific Publishing.
Rowett, C. (2018). *Knowledge and truth in Plato: Stepping past the shadow of Socrates*. United Kingdom: Oxford University Press.
Saks, K., Ilves, H., & Noppel, A. (2021). The impact of procedural knowledge on the formation of declarative knowledge: How accomplishing activities designed for developing learning skills impacts teachers' knowledge of learning skills. *Education Sciences, 11*(10), 1-15. doi:https://doi.org/10.3390/educsci11100598
Salaberry, M. R. (2018). Declarative versus procedural knowledge. *The TESOL Encyclopedia of English language teaching*, 1-7. doi:https://doi.org/10.1002/9781118784235.eelt0051

Schoenherr, T. (2022). The knowledge-based view *Handbook of theories for purchasing, supply chain and management research* (pp. 118-139): Edward Elgar Publishing.
Simao, L., & Franco, M. (2018). External knowledge sources as antecedents of organizational innovation in firm workplaces: a knowledge-based perspective. *Journal of knowledge management, 22*(2), 237-256. doi:https://doi.org/10.1108/JKM-01-2017-0002
Slattery, M. (2024). *Education strategy in a changing society: Personalised, smarter, lifelong learning in the 21st century* (1st ed.). London: Routledge.
Teece, D. J. (2025). *Dynamic Capabilities: Foundational Concepts*. Cambridge Cambridge University Press.
Toffler, A. (2006). The illiterate of the 21st century will not be those who cannot read and write, but those who cannot learn, unlearn, and relearn. *Amerikaans Publicist En Futuroloog Als.*
van der Eem, M., van Drie, J., Brand-Gruwel, S., & van Boxtel, C. (2023). Students' evaluation of the trustworthiness of historical sources: Procedural knowledge and task value as predictors of student performance. *The Journal of Social Studies Research, 47*(1), 64-76. doi:https://doi.org/10.1016/j.jssr.2022.05.003
Van Velzen, J. H. (2022). What is knowledge as an actual-world phenomenon. *RRREaT–Cognitive Psychological Phenomena in Education, 1*(1), 1-36.
Vandavasi, R. K. K., McConville, D. C., Uen, J.-F., & Yepuru, P. (2020). Knowledge sharing, shared leadership and innovative behaviour: a cross-level analysis. *International Journal of Manpower, 41*(8), 1221-1233. doi:https://doi.org/10.1108/IJM-04-2019-0180
Watson, A. M., Newman, R. M., & Morgan, S. D. (2021). Metatalk and metalinguistic knowledge: The interplay of procedural and declarative knowledge in the classroom discourse of first-language grammar teaching. *Language Awareness, 30*(3), 257-275. doi:https://doi.org/10.1080/09658416.2021.1905655
Yun, T. (2025). Declarative Knowledge *The ECPH Encyclopedia of Psychology* (pp. 370-371): Springer.
Zagzebski, L. (2017). What is knowledge? *The Blackwell guide to epistemology*, 92-116. doi:https://doi.org/10.1002/9781405164863.ch3
Žakelj, A., Štemberger, T., & Klančar, A. (2025). An empirical study on basic and conceptual knowledge, procedural knowledge and problem solving among primary school students. *International Journal of Instruction, 18*(4), 627-650. doi:https://doi.org/10.29333/iji.2025.18434a
Zhang, K., Shi, J., Wang, F., & Ferrari, M. (2023). Wisdom: Meaning, structure, types, arguments, and future concerns. *Current Psychology, 42*(18), 15030-15051. doi:https://doi.org/10.1007/s12144-022-02816-6