

DISRUPTIVE TECHNOLOGICAL INNOVATION AND PROFIT GROWTH OF SMALL SCALE ENTERPRISES IN EBONYI STATE

Ikechukwu Dibie¹ Gilbert Ogechukwu Nworie²

¹Department of Accountancy, Delta State Polytechnic, Ogwashi – Uku, Delta State, Nigeria

²Department of Accountancy, Ebonyi State University, Abakaliki, Ebonyi State, Nigeria

Emails: iykmmand@yahoo.co.uk¹ & dulcisgil@gmail.com²

Correspondence: iykmmand@yahoo.co.uk

CITATION: Dibie, I. & Nworie, G.O. (2025). Disruptive technological innovation and profit growth of Small Scale Enterprises in Ebonyi State, *Journal of Global Accounting*, 11(1), 115 - 139. Available: <https://journals.unizik.edu.ng/joga>

ABSTRACT

The study examined the relationship between disruptive technological innovation and profit growth of selected small scale enterprises in Ebonyi state. The specific objective was to ascertain the extent to which the adoption of artificial intelligence and the adoption of blockchain technology influence profit growth of small scale enterprises in Ebonyi state. This study adopted a survey research design. The population of the study consisted of 1,206 small-scale enterprises registered and operating within Ebonyi State. The sample size of 300 small scale business operators was determined using the Taro Yamane formula, which is commonly employed for calculating sample sizes in large populations. Primary data were collected through a structured questionnaire. Descriptive statistics, specifically frequency and mean, were used to analyse the research questions while Spearman's correlation analysis was employed to test the hypotheses at a 5% level of significance. The findings of the study revealed that: the adoption of artificial intelligence significantly and positively influences the profit growth of small-scale enterprises in Ebonyi state ($\rho = 0.215$; $p\text{-value} = 0.000$); the adoption of blockchain technology significantly and positively influences profit growth of small-scale enterprises in Ebonyi state ($\rho = 0.234$; $p\text{-value} = 0.000$). In conclusion, the adoption of disruptive technological innovations as they are increasingly reshaping traditional business models also improve profit level of small-scale enterprises in Ebonyi State by creating opportunities for small businesses to thrive in a competitive environment. The researcher's therefore recommend that small-scale enterprise owners in Ebonyi state should invest in more advanced AI tools and training programs to enhance their understanding and application of artificial intelligence in business operations to achieve greater profit growth..

Key words: Artificial Intelligence, Blockchain Technology, Disruptive Technological Innovation, Profit Growth

1. INTRODUCTION

As has been ever pronounced by the dynamically changing global economy of today, the importance of technological innovation cannot be overstated. Technology, especially its disruptive forms, is reshaping industries and business models at an unprecedented pace. Disruptive technological innovations have created new markets and value networks, often displacing long-established technologies and business practices (Jayadatta & Majeed, 2024). In various sectors, from finance to agriculture, and particularly among small-scale enterprises, these innovations are reshaping how businesses operate and generate value. Small-scale enterprises, which play a significant role in developing economies like Nigeria, are especially impacted by these technological changes. In Ebonyi State, a region known for its reliance on small-scale enterprises as a backbone of its economy, the adoption of disruptive technological innovations is becoming increasingly vital for enhancing profitability and ensuring sustainability in an increasingly competitive landscape. As globalization and technological advances continue to influence all sectors, Taiwo, Adesoba, and Adedotun (2024) argued that small-scale businesses must adapt to remain competitive and profitable. Disruptive technological innovation is crucial in today's business world because it presents new opportunities for businesses to enhance efficiency, improve customer experience, and streamline operations (Nneji, 2024). Disruptive innovations are technologies that dramatically alter the dynamics of industries, making existing products, services, or business models obsolete or irrelevant (Marinakakis, Walsh & White, 2024). Examples include the rise of the Internet, cloud computing, artificial intelligence, mobile applications, and blockchain technology. These innovations allow businesses to reach new customers, optimize operational costs, and create new products and services that were previously unimaginable. Small-scale enterprises, which often struggle with resource constraints (Nworie & Onochie, 2024), have a unique opportunity to leverage these innovations to drive growth and profitability. In today's fast-paced business environment, staying competitive means embracing and integrating disruptive technologies to create value more efficiently. Therefore, the relevance of disruptive technological innovations lies in their potential to transform business operations, improve service delivery, and ultimately increase profit margins.

Disruptive technological innovation, a term popularized by Clayton Christensen, refers to innovations that significantly alter existing markets or create entirely new ones, often displacing established competitors (Ezeala, Ajuonu & Afolabi, 2024). While traditional businesses may face challenges adapting to these innovations, they often provide smaller

enterprises with unique opportunities to compete on a more level playing field. In the context of small-scale enterprises, disruptive technologies often come in the form of new software, hardware, or processes that enhance business operations in ways that were previously inaccessible or too expensive. Disruptive innovations such as artificial intelligence and blockchain technology have enabled small businesses to cut costs, increase efficiency, and expand their customer base (Kasula, Whig, Vegesna & Yathiraju, 2024). Additionally, technologies like mobile payment solutions, e-commerce platforms, and customer relationship management (CRM) systems have empowered small businesses to streamline their operations, improve customer satisfaction, and manage resources more effectively. The core concept behind disruptive technological innovation is that it democratizes access to tools and resources that were once the preserve of large corporations, thereby leveling the playing field (Brackmann, 2024). As a result, small-scale enterprises, even in regions like Ebonyi State, are finding new pathways to growth and sustainability through these innovations.

Based on the postulates of the resource-based theory (Ahn, Kim & Lee, 2022), we argue that disruptive technological innovations can be seen as strategic resources that small-scale enterprises must effectively harness to gain a competitive advantage. By adopting these innovations, small enterprises can develop unique capabilities that distinguish them from their competitors. The adoption of disruptive technological innovations has a profound impact on the profit growth of small-scale enterprises, primarily through enhanced operational efficiency, cost reduction, and access to new markets. One key way in which these innovations drive profit growth is by reducing the cost of doing business (Jayadatta & Majeed, 2024). Technologies such as cloud computing and automation allow small businesses to scale their operations without investing heavily in physical infrastructure or human resources. This leads to significant cost savings, which can then be reinvested in other areas of the business to drive growth. Furthermore, disruptive innovations enable small-scale enterprises to improve their service offerings, thus attracting more customers and increasing revenue streams (Satria, Suhardjanto, Widarjo, Honggowati & Setiorini, 2024).

Small-scale enterprises are expected to benefit from digital tools, automation, e-commerce platforms, and advanced customer relationship management systems, ensuring they maintain high operational efficiency, superior customer engagement, and sustainable profit growth. In this scenario, technological innovations would empower these enterprises to compete with larger corporations, providing them with opportunities for expansion and long-term viability

(Brackmann, 2024). However, many of these businesses struggle to adopt disruptive technological innovations due to financial constraints, inadequate infrastructure, limited technological know-how, and a lack of access to relevant resources (Taiwo, Adesoba & Adedotun, 2024). The penetration of disruptive technologies such as cloud computing, mobile payments, automation, and e-commerce remains low among small-scale enterprises in the region. Many businesses still rely on traditional methods of operation, which are often inefficient, time-consuming, and costly (Nworie, Okafor & John-Akamelu, 2022). This technological lag leaves small-scale enterprises unable to fully capitalize on the potential benefits of innovation, such as increased productivity, cost savings, and access to broader markets. Furthermore, the lack of adequate technological infrastructure in Ebonyi State exacerbates the situation, preventing businesses from utilizing the tools necessary to stay competitive in today's digital economy. As a result of the inability to adopt and integrate disruptive technological innovations, many small-scale enterprises in Ebonyi State experience stunted growth and face challenges in maintaining profitability. These businesses are often unable to optimize their operations or reach new customers, resulting in lower profit margins and diminished competitiveness.

Without access to technological advancements, small-scale enterprises remain vulnerable to larger, more tech-savvy competitors, both locally and globally, and struggle to scale their operations. The consequences of this technological gap are far-reaching, limiting the economic potential of small-scale enterprises, reducing their contribution to job creation and overall economic growth in the region. If this situation persists, it could further entrench economic disparities, leaving small-scale businesses in Ebonyi State at a significant disadvantage in an increasingly digitalized global market. Up till now, related studies have not been conducted to assess the contribution of disruptive technological innovation (particularly artificial intelligence and blockchain technology) towards the profit growth of small scale enterprises in Ebonyi state. Many studies, such as those by Taiwo, Adesoba, and Adedotun (2024), Ogunkoya, Hassan, Soremekun, and Ogundele (2024), and Ayodeji, Akinlabi, and Makinde (2023), have focused on large-scale enterprises or specific sectors like manufacturing and the beverage industry, but have not sufficiently addressed the implications for small-scale enterprises, particularly in the context of Ebonyi State. Furthermore, while studies by Mani, Haruna, and Pulka (2024), and Ekeh (2023) have touched on the importance of technology adoption for operational efficiency and growth, they have primarily

concentrated on broader aspects of business development rather than the direct influence on profit growth, which is a critical factor for sustainability among small enterprises.

Additionally, existing literature has largely overlooked the sectoral and regional variances in the adoption of disruptive technologies in Nigeria. Research by Chukwudi (2024) and Joseph, Umogbai, Kwahar, and Adudu (2023) indicates that digitalization and innovation can enhance firm performance, but their studies focused on different geographical regions and sectors, limiting their generalizability to small enterprises in Ebonyi State. While the works of Thomas, Gbadeyan, and Waheed (2023) and Akinyele, Akintola, and Akinyele (2023) have examined the broader impact of technology on market share and profitability, the specific role of blockchain and artificial intelligence in fostering profit growth among small enterprises remains underexplored. Therefore, this study aims to bridge the gap by investigating the relationship between these disruptive technologies and profit growth, offering insights into how small-scale enterprises in Ebonyi State can leverage these innovations to achieve sustainable profit growth.

1.1 Objectives

The broad objective of the study is to examine the relationship between disruptive technological innovation and profit growth of selected small scale enterprises in Ebonyi state. The specific objectives are as follows:

1. to examine the extent to which the adoption of artificial intelligence influences profit growth of small scale enterprises in Ebonyi state.
2. to ascertain the degree to which the adoption of blockchain technology influences profit growth of small scale enterprises in Ebonyi state.

1.2 Hypotheses

- H₀₁: The adoption of artificial intelligence does not significantly influence profit growth of small scale enterprises in Ebonyi state.
- H₀₂: The adoption of blockchain technology does not significantly influence profit growth of small scale enterprises in Ebonyi state.

2. LITERATURE REVIEW

2.1 Conceptual Review

2.1.1 Disruptive Technological Innovation

Disruptive technological innovation refers to the process by which a new technology significantly alters or displaces the traditional methods of operation within an industry (Nneji, 2024). Coined by Clayton Christensen in the late 1990s, the term "disruptive" emphasizes the transformative impact that such innovations can have on established markets and players (Ezeala, Ajuonu & Afolabi, 2024). Unlike sustaining innovations, which aim to improve existing products and services incrementally, disruptive innovations often introduce a new approach that creates a completely different value proposition (Bähr & Fliaster, 2023). These innovations tend to start by targeting niche markets or under-served customers with simpler, more affordable solutions. Over time, they improve in quality and capability, eventually challenging and overtaking the dominant technologies or practices within the broader market. Disruptive innovations change the way businesses operate, opening up new possibilities that were previously unattainable (Nneji, 2024). For instance, the advent of smartphones disrupted the mobile phone industry by replacing not just traditional mobile devices but also cameras, maps, and even personal computers in many ways. By altering how people interact with technology, these innovations have a profound impact on the overall structure of markets. The growth of the internet is another example of disruptive technological innovation, revolutionizing how companies operate by enabling e-commerce, digital marketing, and remote work. While disruptive innovations initially may seem limited in scope, their capacity to redefine industries and create new markets underscores their far-reaching significance (Ezeala, Ajuonu & Afolabi, 2024).

A fundamental aspect of disruptive technological innovation is that it lowers barriers to entry for smaller firms, enabling them to compete with larger, established companies. By embracing these technologies, smaller firms can achieve higher levels of efficiency, reduce costs, and access previously inaccessible markets (Taiwo, Adesoba & Adedotun, 2024). However, disruptive innovations can also be risky because they often require businesses to fundamentally rethink their business models and adapt quickly to changing technological landscapes. Firms that fail to recognize the potential of disruptive innovations may find themselves left behind, as competitors who embrace these innovations take over their market share (Ezeala, Ajuonu & Afolabi, 2024). As such, businesses need to remain vigilant and adaptable in order to survive and thrive in the face of disruptive technological change. In

conclusion, disruptive technological innovation is a critical force shaping industries today, presenting both opportunities and challenges for businesses of all sizes.

2.1.2 Artificial Intelligence

Artificial intelligence (AI) is a branch of computer science focused on creating systems that can perform tasks traditionally requiring human intelligence (Mmadubuobi, Nworie & Aziekwe, 2024). These tasks include learning from experience, reasoning, problem-solving, understanding language, and interpreting sensory inputs like images and sounds (Qin, Xu, Wang & Skare, 2024). In essence, AI seeks to replicate or simulate human cognitive functions in machines. This is achieved through algorithms that allow computers to process large amounts of data, identify patterns, and make decisions based on the information available (Nneji, 2024). The development of AI encompasses various subfields, such as machine learning, natural language processing, robotics, and computer vision. Each of these areas contributes to building systems that can operate autonomously or augment human capabilities in different sectors of the economy (Thakur, 2024).

Artificial intelligence has far-reaching implications for industries ranging from healthcare to finance and manufacturing. In healthcare, for instance, AI is used to analyze medical images, predict patient outcomes, and assist in diagnostic procedures (Saxena, Ness & Khinvasara, 2024). In finance, AI-driven algorithms are employed for fraud detection, risk assessment, and automated trading. The power of AI lies in its ability to process and analyze vast amounts of data at speeds far beyond human capabilities, thereby providing insights that lead to more efficient decision-making (Thakur, 2024). Moreover, AI systems can learn and improve over time, becoming more accurate as they are exposed to more data. This self-improving capability makes AI a transformative tool in industries where data-driven decisions are critical.

2.1.3 Blockchain Technology

Blockchain technology is a decentralized digital ledger that records transactions across multiple computers in a way that ensures the data is secure, transparent, and immutable (Ressi, Romanello, Piazza & Rossi, 2024). It operates without the need for a central authority or intermediary, allowing participants in the network to conduct peer-to-peer transactions with trust and security. Each transaction is grouped into a block, which is then linked or "chained" to the previous block, forming a chronological chain of data, hence the term "blockchain."

Once a block is added to the chain, the information within it cannot be altered without altering all subsequent blocks, making the system highly resistant to tampering or fraud. This immutability is a key feature of blockchain technology, ensuring that once data is recorded, it is permanent and verifiable (Akanfe, Lawong & Rao, 2024).

Blockchain technology gained widespread recognition with the advent of cryptocurrencies like Bitcoin, where it serves as the underlying technology that enables secure and transparent financial transactions (Bilgin, 2024). However, its potential applications extend far beyond digital currencies. Blockchain can be used to enhance security and efficiency in industries such as supply chain management, healthcare, finance, and even voting systems (Bilgin, 2024). For instance, in supply chain management, blockchain allows companies to track the movement of goods from origin to consumer with greater transparency, ensuring authenticity and reducing fraud. In healthcare, it can be used to securely store patient records, giving authorized personnel instant access while maintaining the privacy and integrity of sensitive information.

2.1.4 Profit Growth

Profit growth refers to the increase in a company's earnings or profits over time (Hag & Firmansyah, 2024). It is a key indicator of financial health and success, reflecting the company's ability to generate more revenue than it incurs in costs (Pirdaus & Sidiq, 2024). Profit growth can result from various factors, including increased sales, reduced operational costs, improved efficiency, or the introduction of new products or services. It is a critical goal for businesses of all sizes, as sustained profit growth enables companies to reinvest in their operations, expand their market presence, reward shareholders, and secure long-term viability. A company's profit growth is often measured by comparing profits over different time periods, such as quarterly or annually, to assess its financial trajectory.

Achieving profit growth is essential for business sustainability and competitiveness (Nuzulla & Murtianingsih, 2022). In a dynamic business environment, companies must continuously innovate and improve their operations to stay ahead of competitors. This may involve expanding into new markets, optimizing supply chains, or leveraging technological innovations to enhance productivity. For small businesses, profit growth is particularly important because it allows them to scale their operations, attract investors, and establish a stronger market presence. Profit growth is not only an indicator of success but also a means of survival, as companies that fail to grow may struggle to keep up with rising costs (Hag &

Firmansyah, 2024), market pressures, and the demands of consumers. While profit growth is a desirable goal for businesses, it is not without its challenges. Companies may face barriers such as increased competition, economic downturns, or regulatory changes that can negatively impact their profitability. Furthermore, focusing solely on short-term profit growth without considering long-term sustainability can lead to issues such as overexpansion or loss of customer trust. Therefore, businesses must balance the pursuit of profit growth with responsible management practices that ensure sustainable long-term success (Siswanto, Maudhiky, Wahyudi & Syah, 2022).

2.2 Theoretical Framework

The Resource-Based Theory (RBT) originated in the field of strategic management and was formally propounded by Jay Barney in 1991. However, its roots can be traced back to the work of Edith Penrose in 1959 (Nworie & Nwoye, 2023), who emphasized the importance of firm-specific resources as a basis for competitive advantage. The theory emerged as an alternative to earlier market-based views, which focused more on the external environment and market conditions as determinants of competitive success. Barney's 1991 work, "Firm Resources and Sustained Competitive Advantage," formalized RBT by highlighting that a firm's internal resources are critical in helping it achieve and sustain a competitive advantage over time. This internal focus was a departure from the prevailing theories of the time, such as Michael Porter's Five Forces Model, which concentrated on external factors (Dimitkova, 2022). The Resource-Based Theory revolutionized strategic thinking by centering attention on the unique resources and capabilities within firms.

The main postulations of the Resource-Based Theory are that firms achieve sustainable competitive advantage by acquiring and managing valuable, rare, inimitable, and non-substitutable (VRIN) resources (Nason & Wiklund, 2018). According to the theory, a firm's resources can be tangible, such as financial capital and physical assets, or intangible, such as intellectual property, brand reputation, and organizational capabilities. For these resources to provide a competitive edge, they must be valuable in enabling the firm to implement strategies that improve its efficiency or effectiveness. Furthermore, the resources should be rare, meaning they are not widely possessed by competitors, and difficult to imitate due to historical, social, or legal complexities. Lastly, they must be non-substitutable, meaning no other resources can replace them in fulfilling their strategic role. When a firm possesses

resources that meet these criteria, it can sustain its competitive advantage, leading to long-term profitability and growth (Nason & Wiklund, 2018).

The Resource-Based Theory is particularly relevant to the topic of the influence of disruptive technological innovation on profit growth of small-scale enterprises in Ebonyi State. Disruptive technological innovations can be seen as strategic resources that small-scale enterprises must effectively harness to gain a competitive advantage. By adopting these innovations, small enterprises can develop unique capabilities that distinguish them from their competitors.

2.3 Empirical Review

Taiwo, Adesoba, and Adedotun (2024) conducted a study examining the relationship between digital technology adoption and the performance of small and medium-sized enterprises (SMEs) in the Food, Drink, and Beverages industry in Ondo State, Nigeria. This study targeted highly concentrated business areas within the state and employed a multi-stage sampling technique to select its participants. A total of four hundred questionnaires were distributed to workers and owner-managers of selected SMEs within the industry. Of these, three hundred and fifty questionnaires were found useful for analysis, representing an 88% response rate. The researchers employed frequency tables, percentages, and mean scores to analyze the data, while a non-parametric statistical test (ANOVA) was used to test the stated hypotheses. The results showed that the adoption of digital technology had a positive impact on the performance of the SMEs. Additionally, the study found a significant relationship between digital technology adoption and SME performance in the Food, Drink, and Beverages sector. Based on these findings, the study recommended that government at all levels should work to create an enabling environment by providing the necessary infrastructure to support the expansion of information and communication technology (ICT) in modern business environments.

Ogunkoya, Hassan, Soremekun, and Ogundele (2024) explored the impact of technological innovation on firm performance. Their study focused on Nigeria Consolidated Breweries, a company located in the Ijebu-Ode area of Ogun State. The researchers used a purposive sampling method to select a sample of one hundred and two employees from the brewery. Primary data collection methods were employed, and the results were analyzed using descriptive statistics. The findings revealed a significant positive effect of technological

innovation on firm performance, with an R-value of 0.881 and a p-value less than 0.005. Additionally, technological learning was found to have a significant positive effect on firm performance, with a beta value of 0.654 and a p-value below 0.005. Based on these results, the authors recommended that management adopt technological innovation as a critical component of competitive advantage, particularly for new product development.

Mani, Haruna, and Pulka (2024) examined the effects of disruptive technology adoption on SMEs in Kano, focusing on its implications for business growth, competitiveness, and economic development. Drawing on existing empirical research, the study highlighted how integrating disruptive technologies could lead to improved operational efficiency, innovation, and sustainability for businesses in the region. The findings emphasized the importance of understanding the effects of disruptive technology on SMEs to inform strategic decision-making, policy formulation, and technological readiness. The authors made several recommendations for stakeholders, including the development of technology adoption frameworks, the promotion of skills development, enhancement of digital infrastructure, support for research and development, and ensuring data privacy and security. By aligning these recommendations with the needs of SMEs in Kano, stakeholders can capitalize on the opportunities presented by disruptive technology, fostering innovation and contributing to the overall economic development and competitiveness of SMEs.

Chukwudi (2024) conducted a desk study to investigate the impact of digitalization on firm performance in Nigeria's manufacturing sector. The study relied on secondary data collection, analyzing existing studies and reports. The results revealed that digitalization has significantly enhanced operational efficiency, improved decision-making processes, and spurred innovation within Nigerian manufacturing firms. The study concluded that digital transformation has strengthened the competitiveness and market positioning of manufacturing companies. Ongoing investments in digital capabilities were identified as crucial for sustaining growth and success in the sector.

Ayodeji, Akinlabi, and Makinde (2023) explored the effect of disruptive technology on the return on investment of selected manufacturing SMEs in Lagos and Ogun States, Nigeria. The study employed a survey research design and used the Cochran formula to determine a sample size of 436 from a total population of 2,603 owner-managers. A structured and validated questionnaire was administered, with Cronbach's alpha reliability coefficients ranging from

0.726 to 0.900. The response rate for the survey was 88.30%. The findings revealed that disruptive technology components had a significant effect on return on investment, with an adjusted R-squared value of 0.842 and an F-value of 343.200 ($p < 0.05$). The study concluded that disruptive technology positively influenced the return on investment of SMEs in Lagos and Ogun States and recommended that SMEs adopt key components of disruptive technology such as technology investment, awareness, response, adaptation, transfer, and accessibility to enhance their returns.

Ekeh (2023) investigated the effect of technological innovation on the growth of medium enterprises in North-Central Nigeria. The study used a census approach, with a sample size of 243 owner-managers of medium enterprises in the region. Out of the questionnaires distributed, 223 were usable for analysis. The regression analysis revealed a significant positive effect of technological innovation on the growth of medium enterprises. The study concluded that technological innovation practices significantly influenced growth.

Thomas, Gbadeyan, and Waheed (2023) examined the effect of information technology on the market share of SMEs in Lagos State. Using a survey research method, the study selected 381 respondents comprising owners and managers of SMEs. Questionnaires were administered, and data was analyzed using multiple regression analysis. Two hypotheses were tested at a 0.05% significance level using the Statistical Package for Social Science (SPSS). The findings indicated that the use of information technology by SME management improved market share, thereby enhancing the effectiveness of business operations. The study concluded that information technology plays a crucial role in boosting market share among SMEs in Lagos State.

Joseph, Umogbai, Kwahar, and Adudu (2023) explored the effect of innovation on the entrepreneurial success of manufacturing SMEs in North-Central Nigeria. The study examined the relationship between different dimensions of innovation—product, process, management, and marketing—and entrepreneurial success, which was measured through improved personal wealth and market expansion. Using a cross-sectional survey research design, the researchers targeted 393 business owners and finance heads from manufacturing SMEs. The results revealed a positive relationship between innovation dimensions and entrepreneurial success. Product innovation had a t-value of 2.537 and a p-value of 0.022, process innovation had a t-value of 5.423 and a p-value of 0.000, management innovation had

a t-value of 3.118 and a p-value of 0.002, and marketing innovation had a t-value of 8.071 and a p-value of 0.000. The study concluded that all innovation dimensions significantly influenced the entrepreneurial success of SMEs.

Akinyele, Akintola, and Akinyele (2023) examined the relationship between technological product innovation and SMEs' profitability in Odeda Local Government Area of Ogun State, Nigeria. Using a probability sampling technique, the study administered questionnaires to 107 respondents. The analysis revealed that technological product innovation explained 10.5% of the variance in SMEs' profitability, with an F-value of 12.283 and a significance level of 0.001. The study concluded that technological product innovation had a significant effect on SMEs' profitability and recommended increased investment in product innovation to improve profitability.

3. MATERIALS AND METHOD

This study adopted a survey research design to examine the relationship between disruptive technological innovation and profit growth among selected small-scale enterprises in Ebonyi State. The survey method is appropriate for this research as it allows for the collection of primary data from a large population, enabling the researcher to explore the influence of artificial intelligence and blockchain technology on profit growth. The population of the study consists of 1,206 small-scale enterprises operating within Ebonyi State. These enterprises are drawn from various sectors, providing a diverse sample to examine the adoption of disruptive technological innovations. The sample size was determined using the Taro Yamane formula, which is commonly employed for calculating sample sizes in large populations. The formula is given as:

$$\text{Formula: Sample size (n)} = \frac{N}{1+N(e)^2}$$

Where:

n = sample size

N = population size (1,206)

e = margin of error (assumed to be 5%)

Therefore, sample size (n) is obtained thus:

$$n = \frac{1206}{1+1206(0.05)^2}$$

$$n = 300$$

After applying the formula, the calculated sample size of 300 ensures that the selected enterprises are representative of the total population, enhancing the reliability and generalizability of the results. Primary data was collected through a structured questionnaire. The questionnaire was designed to capture information on the extent of adoption of artificial intelligence and blockchain technology, as well as their influence on profit growth. The questionnaires were administered online to ensure a high response rate. The data collected from the respondents were analyzed using descriptive statistics, specifically frequency and mean, to summarize the characteristics of the data. The frequency distribution was employed to present the responses for each questionnaire item, while the mean was used to gauge the central tendency for each factor being examined, such as the level of technology adoption and its perceived influence on profit growth.

For hypothesis testing, Spearman's correlation analysis was employed to assess the relationship between the adoption of artificial intelligence, blockchain technology, and the profit growth of small-scale enterprises. Spearman's correlation is suitable for this study as it assesses the strength and direction of association between the variables, which are measured on an ordinal scale. This method provides insights into whether adopting disruptive technological innovations is significantly correlated with profit growth in small-scale enterprises. As a decision rule, the null hypothesis is accepted while the alternate hypothesis rejected if the p-value is greater than 0.05 and vice versa.

4. RESULT AND DISCUSSIONS

4.1 Analysis of Research Questions

4.1.1 Research Question One: To what extent does the adoption of artificial intelligence influences profit growth of small scale enterprises in Ebonyi state?

Table 1 below shows the analysis of the research questions:

Table 1 Analysis of Responses to Artificial Intelligence

S/N	Artificial Intelligence	SA	A	N	D	SD	Mean	Decision
1	AI adoption improve the decision-making process in small scale businesses.	157	103	37	3	0	4.38	Accept
2	The use of AI enhances the efficiency of daily operations in small scale enterprises.	118	119	42	18	3	4.10	Accept
3	The integration of AI reduces the cost of running small scale business.	115	121	46	12	6	4.09	Accept
4	AI technology positively influences the speed at which small scale enterprises deliver products or services.	99	121	62	12	6	3.98	Accept

Source: Field Survey, September 2024

Table 1 presents the analysis of responses related to the impact of Artificial Intelligence (AI) on small-scale businesses. Each item in the table assesses different aspects of AI adoption and its effects, with the responses categorized into Strongly Agree (SA), Agree (A), Neutral (N), Disagree (D), and Strongly Disagree (SD). The mean scores for each item are also provided, alongside the decision based on these scores.

The first item in the table evaluates whether AI adoption improves the decision-making process in small-scale businesses. With a mean score of 4.38, the majority of respondents strongly agree or agree that AI enhances decision-making. This high mean score indicates a strong consensus that AI significantly benefits decision-making processes in these businesses. The second item explores the efficiency gains from using AI in daily operations. The mean score for this item is 4.10, suggesting that most respondents agree that AI improves the

efficiency of daily operations. While slightly lower than the first item, this score still reflects a positive perception of AI's role in operational efficiency.

The third item addresses whether AI integration reduces the cost of running a small-scale business. With a mean score of 4.09, responses indicate that there is agreement on the cost-reducing effects of AI. This score, though marginally lower, still supports the view that AI contributes to lowering operational costs.

The fourth item assesses whether AI technology positively affects the speed at which products or services are delivered by small-scale enterprises. This item has a mean score of 3.98, which, although slightly lower than the other items, still falls within the acceptance range. This suggests that respondents generally agree that AI influences delivery speed positively, though the agreement is less emphatic compared to the other aspects evaluated.

4.1.2 Research Question Two: To what degree does the adoption of blockchain technology influences profit growth of small scale enterprises in Ebonyi state?

Table 2 Analysis of Responses to Blockchain Technology

S/N	Blockchain Technology	SA	A	N	D	SD	Mean	Decision
1	Blockchain technology improves the security of financial transactions in small scale business.	81	138	56	15	10	3.88	Accept
2	The transparency provided by blockchain enhanced trust between business and customers.	76	119	74	25	6	3.78	Accept
3	Blockchain adoption streamlines the supply chain processes in small scale business enterprises.	109	132	38	18	3	4.09	Accept
4	Blockchain technology provides for better tracking and management of business assets.	63	141	68	13	15	3.75	Accept

Source: Field Survey, September 2024

Table 2 presents the analysis of responses concerning the impact of Blockchain Technology on small-scale businesses. The first item in the table investigates whether blockchain technology improves the security of financial transactions in small-scale businesses. The mean score of 3.88 indicates a general agreement among respondents that blockchain

enhances financial transaction security. Although the mean score is slightly lower, it still suggests a favorable view of blockchain's role in securing financial operations.

The second item evaluates whether the transparency offered by blockchain technology enhances trust between businesses and their customers. With a mean score of 3.78, this item reflects a moderate level of agreement. While respondents see some value in blockchain's ability to foster trust through transparency, this aspect is perceived slightly less strongly compared to others.

The third item considers whether blockchain adoption streamlines supply chain processes in small-scale enterprises. This item has a mean score of 4.09, indicating that respondents generally agree that blockchain improves the efficiency of supply chain management. This high mean score demonstrates a positive perception of blockchain's impact on operational processes related to supply chains.

The fourth item assesses whether blockchain technology enables better tracking and management of business assets. The mean score of 3.75 suggests a more reserved yet positive agreement that blockchain contributes to asset management and tracking. Although it is the lowest mean score among the items, it still falls within the acceptable range, indicating that respondents see some benefit in blockchain for asset management.

Table 3 Analysis of Responses to Profit Growth

S/N	Profit Growth	SA	A	N	D	SD	Mean	Decision
1	The use of AI directly contributes to the growth of business's revenue.	86	147	43	15	9	3.95	Accept
2	Blockchain technology reduces operational costs of running business, thereby increasing profitability.	72	152	53	14	9	3.88	Accept
3	The adoption of disruptive technologies opens new revenue streams for small scale business.	58	132	82	19	9	3.70	Accept
4	Profits improved due to enhanced efficiency from technological innovations.	64	156	49	20	11	3.81	Accept

Source: Field Survey, September 2024

Table 3 provides an analysis of responses regarding the impact of various technologies on profit growth in small-scale businesses. The first statement assesses whether the use of AI directly contributes to the growth of a business's revenue. With a mean score of 3.95, there is a clear indication that respondents agree that AI has a positive impact on revenue growth. This score suggests that AI is perceived as a significant factor in enhancing financial performance, although the level of agreement is moderate.

The second statement explores whether blockchain technology reduces operational costs, thereby increasing profitability. The mean score of 3.88 reflects a general agreement that blockchain contributes to cost reduction and, consequently, to improved profitability. This result indicates that respondents view blockchain as beneficial for enhancing financial outcomes through cost efficiencies.

The third statement examines whether the adoption of disruptive technologies opens new revenue streams for small-scale businesses. With a mean score of 3.70, the responses suggest a somewhat positive but less emphatic agreement. This score indicates that while there is recognition of the potential for new revenue streams, the impact is perceived to be less pronounced compared to other aspects of profit growth.

The fourth statement evaluates whether profits have improved due to enhanced efficiency resulting from technological innovations. The mean score of 3.81 suggests a moderate level of agreement that technological innovations contribute to profit improvement through increased efficiency. This score aligns with a general acceptance that efficiency gains from technology can positively affect profitability.

4.2 Test of Hypotheses

4.2.1 Hypothesis One

H₀₁: The adoption of artificial intelligence does not significantly influence profit growth of small scale enterprises in Ebonyi state.

Table 4 Test of Hypothesis I

			Profit Growth
Spearman's rho	Artificial Intelligence	Correlation Coefficient	.215
		Sig. (2-tailed)	.000
		N	300

Source: Researchers' Computation Using SPSS Version 26 (2025)

The result of the Spearman's rho correlation analysis, as presented in Table 4, shows a correlation coefficient of 0.215 between artificial intelligence (AI) adoption and profit growth of small-scale enterprises. This indicates a positive and weak correlation between the two variables, meaning that as AI adoption increases, profit growth also tends to increase, although the relationship is not very strong.

4.2.1.1 Decision: The p-value is reported as 0.000, which is less than the conventional significance level of 0.05. Since the p-value is smaller than 0.05, we reject the null hypothesis (H_0). Therefore, the adoption of artificial intelligence significantly and positively influences the profit growth of small-scale enterprises in Ebonyi state ($\rho = 0.215$; $p\text{-value} = 0.000$). The positive correlation suggests that businesses adopting AI experience some level of increased profitability, albeit not strongly. This result can be attributed to the fact that AI-driven tools such as customer service automation, predictive analytics, and data-driven decision-making enable small-scale enterprises to improve efficiency, reduce operational costs, and enhance customer experiences, all of which can contribute to profit growth. The positive influence of artificial intelligence (AI) on profit growth observed in this study is consistent with several empirical studies in the broader context. For example, Taiwo, Adesoba, and Adedotun (2024) found that the adoption of digital technology, including AI, significantly enhances the performance of SMEs in Nigeria, leading to better operational outcomes and profitability. Similarly, Ayodeji, Akinlabi, and Makinde (2023) reported that disruptive technologies, including AI components, had a notable impact on the return on investment for SMEs, underscoring the role of technological advancements in boosting financial performance. This is supported by Ogunkoya, Hassan, Soremekun, and Ogundele (2024), who observed that technological innovation, which encompasses AI, positively influences firm performance, enhancing competitive advantage and profitability. These findings highlight the alignment of AI adoption with improved profit outcomes, reinforcing the notion that integrating advanced technologies can lead to substantial financial benefits for small-scale enterprises.

4.2.2 Hypothesis II

H₀₂: The adoption of blockchain technology does not significantly influence profit growth of small scale enterprises in Ebonyi state.

Table 5 Test of Hypothesis II

		Profit Growth
Spearman's rho	Blockchain Correlation Coefficient	.234
	Technology Sig. (2-tailed)	.000
	N	300

Source: Researchers' Computation Using SPSS Version 26 (2025)

The result of the Spearman's rho correlation analysis, as shown in Table 5, indicates a correlation coefficient of 0.234 between blockchain technology adoption and profit growth. This represents a positive and weak correlation, suggesting that as blockchain technology is adopted, the profit growth of small-scale enterprises tends to increase slightly.

4.2.2.1 Decision: The p-value is also 0.000, which is lower than the standard threshold of 0.05. As a result, we reject the null hypothesis (H₀₂). Thus, the adoption of blockchain technology significantly and positively influences profit growth of small-scale enterprises in Ebonyi state (rho= 0.234; p-value = 0.000). This result could be because blockchain technology is often associated with enhanced security, transparency, and efficiency in business transactions, which are critical factors for improving trust and operational efficiency in small businesses. The significant positive influence of blockchain technology on profit growth in this study aligns with existing literature that emphasizes the transformative potential of blockchain for business performance. Mani, Haruna, and Pulka (2024) noted that integrating disruptive technologies, including blockchain, could lead to enhanced operational efficiency and business growth, supporting the notion that blockchain adoption can drive profitability. Similarly, Chukwudi (2024) highlighted that digitalization, which encompasses technologies like blockchain, improves operational efficiency and decision-making processes, contributing to firm success and profitability. However, Ekeh (2023) primarily focused on technological innovation in general, suggesting that while blockchain is a crucial component, the broader category of technological advancements also plays a significant role in growth. These studies collectively reinforce the finding that blockchain technology can positively influence profit growth, especially when adopted strategically within small-scale enterprises.

5. CONCLUSION AND RECOMMENDATIONS

Disruptive technological innovations, such as artificial intelligence (AI) and blockchain technology, have revolutionized various industries by transforming how businesses operate and compete. For small-scale enterprises, adopting these technologies can create new opportunities for growth, efficiency, and competitiveness in a rapidly evolving market. This study sought to investigate how the adoption of AI and blockchain technology influences the profit growth of small-scale enterprises in Ebonyi state, Nigeria. By testing two hypotheses, we aimed to uncover the relationship between these innovative technologies and business performance.

The research findings demonstrate that both artificial intelligence (AI) and blockchain technology significantly influence profit growth for small-scale enterprises in Ebonyi State. The positive influence of AI on profit growth can be attributed to its capacity to streamline operations, enhance decision-making, and offer competitive advantages through automation and data-driven insights. These benefits align with existing literature that emphasizes AI's role in improving performance and profitability for SMEs. Similarly, the significant influence of blockchain technology on profit growth underscores its potential to increase transparency, reduce transaction costs, and foster trust in business transactions. The ability of blockchain to enhance operational efficiency and security supports the observed positive correlation with profit growth. In conclusion, the adoption of disruptive technological innovations as they are increasingly reshaping traditional business models also improve profit level of small-scale enterprises in Ebonyi State by creating opportunities for small businesses to thrive in a competitive environment. Thus, small-scale enterprises can not only reduce costs and increase operational efficiency but also reach new customers and improve their overall profitability by adopting these technologies.

The researchers' therefore recommend that:

- a. Small-scale enterprise owners in Ebonyi state should invest in more advanced AI tools and training programs to enhance their understanding and application of artificial intelligence in business operations to achieve greater profit growth.
- b. Ebonyi state government and business support organizations should facilitate the provision of blockchain infrastructure and training for small-scale enterprises to ensure that businesses can leverage blockchain technology more effectively to improve profitability.

REFERENCES

- Ahn, S., Kim, K. S., & Lee, K. H. (2022). Technological capabilities, entrepreneurship and innovation of technology-based start-ups: The resource-based view. *Journal of Open Innovation: Technology, Market, and Complexity*, 8(3), 156.
- Akanfe, O., Lawong, D., & Rao, H. R. (2024). Blockchain technology and privacy regulation: Reviewing frictions and synthesizing opportunities. *International Journal of Information Management*, 76, 102753.
- Akinyele, S. T., Akintola, D. A., & Akinyele, E. F. (2023). Appropriate Entrepreneurial Technology usage and Small and Medium Scale Enterprises Performance in Odeda Local Government Area, Ogun State, Nigeria. *Journal of Business Development and Management Research*.
- Ayodeji, O. T., Akinlabi, H. B., & Makinde, G. O. (2023). Disruptive Technology Components and the Return on Investment of Selected Manufacturing SMEs in Lagos and Ogun States, South-West, Nigeria. *International Research Journal of Economics and Management Studies IRJEMS*, 2(2).
- Bähr, K., & Fliaster, A. (2023). The twofold transition: Framing digital innovations and incumbents' value propositions for sustainability. *Business Strategy and the Environment*, 32(2), 920-935.
- Bilgin, E. (2024). From Skepticism to Integration: The Banking Sector's Evolving Relationship with Cryptocurrency and Blockchain Technology. *Journal of Economics*, 12(1), 1-8.
- Brackmann, N. J. (2024). *Redefining strategic success: a comprehensive analysis of companies gaining competitive edge via disruptive technologies and control mechanisms* (Doctoral dissertation).
- Chukwudi, N. (2024). Impact of Digitalization on Firm Performance in the Manufacturing Sector: A Case Study of Nigeria. *International Journal of Strategic Management*, 3(1), 17-29.
- Dimitkova, A. (2022). The Application of Porter's Five Forces Model on Organization Performance: A Case of Universities in Republic of Macedonia. *Journal of Economics*, 7(2), 78-86.
- Ekeh, L. O. (2023). The effect of technology innovation on growth of medium enterprises in North Central, Nigeria. In *AccexGate Journal of International Conference Series* (Vol. 1, No. 2, pp. 96-129).

- Ezeala, G., Ajuonu, A. U., & Afolabi, A. B. (2024). Digital disruption and performance of tertiary institutions in Nigeria: a case study of Nnamdi Azikiwe University, Awka. *Journal of Global Accounting*, 10(1), 209-226.
- Hag, A. D. A., & Firmansyah, D. (2024). Profit growth: the impact of total asset turnover and firm size. *Jurnal Ekonomi, Manajemen Dan Akuntansi*, 2(04), 531-544.
- Jayadatta, S., & Majeed, M. (2024). An insight into the consequences of digitalization and digital technologies for small and medium enterprises (SMEs) in Africa. *Digital Transformation in African SMEs: Emerging Issues and Trends*., 2, 73.
- Joseph, T. T., Umogbai, M. E., Kwahar, N., & Adudu, C. A. (2023). Effect of Innovation on Entrepreneurial Success of Manufacturing Small and Medium Firms in North-Central Nigeria. *International Academy Journal of Management, Marketing and Entrepreneurial Studies*, 10(1), 84-103.
- Kasula, B. Y., Whig, P., Vegesna, V. V., & Yathiraju, N. (2024). Unleashing Exponential Intelligence: Transforming Businesses through Advanced Technologies. *International Journal of Sustainable Development Through AI, ML and IoT*, 3(1), 1-18.
- Mani, U. A., Haruna, U., & Pulka, B. M. (2024). Effect of Disruptive Technology on Small and Medium Industries in Kano Nigeria. *Solo International Collaboration and Publication of Social Sciences and Humanities*, 2(02), 171-180.
- Marinakos, Y. D., Walsh, S. T., & White, R. (2024). What is the relationship between sociotechnical transition and disruptive innovations?. *Technological Forecasting and Social Change*, 199, 123081.
- Mmadubuobi, L. C., Nworie, G. O. and Aziekwe, O. P. (2024). Industry 4.0 and Corporate Technological Responsibility of Manufacturing Firms in Nigeria. *Central Asian Journal of Innovations on Tourism Management and Finance*, 5(4), 67-80. Available at: <https://cajitmfc.centralasianstudies.org/index.php/CAJITMF/article/view/711>
- Nason, R. S., & Wiklund, J. (2018). An assessment of resource-based theorizing on firm growth and suggestions for the future. *Journal of management*, 44(1), 32-60.
- Nneji, O. V. (2024). Impact of disruptive technologies on business organisations (small and large) in Nigeria. *International Journal of Research in Marketing, Entrepreneur and Management*, 9(2), 59-70.
- Nuzulla, F., & Murtianingsih, M. (2022). Profitability and profit growth of manufacturing companies in Indonesia during the Covid-19 pandemic. *International Journal of Educational Research & Social Sciences*, 3(2), 876-882.

- Nworie, G. O. & Onochie, C. C. (2024). Fuelling Entrepreneurial Productivity in Nigeria: The Contribution of Bank Loans. *International Journal of Entrepreneurship and Business Innovation* 7(3), 92-109. DOI: 10.52589/IJEBIXQGMW7DI
- Nworie, G. O., & Nwoye, U. J. (2023). Drivers of Operating Profit: A Focus on Selected Firms' Costs. *CECCAR Business Review*, 4(2), 62-72. [dx.doi.org/10.37945/cbr.2023.02.07](https://doi.org/10.37945/cbr.2023.02.07)
- Nworie, G.O., Okafor, T.G. & John-Akamelu, C.R. (2022). Firm-level traits and the adoption of computerised accounting information system among listed manufacturing firms in Nigeria. *Journal of Global Accounting*, 8(3), 128-148. Retrieved from <https://journals.unizik.edu.ng/index.php/joga/article/view/1858>
- Ogunkoya, O. A., Hassan, B. A., Soremekun, O. E., & Ogundele, M. A. (2024). The Impact of Technological Innovation on Firm Performance in Nigeria Consolidated Breweries PLC. *Modern Management Review*, 29(1), 31-42.
- Oyerinde, A. J., Adeyemi, D. S. N., & Ayantoso, D. A. J. (2023). Technological Innovation and SMEs Sales Growth (A Case Study of Some Selected SMEs in Lagos State. *Iconic Research and Engineering Journals*, 7(1), 370-380.
- Pirdaus, D. I., & Sidiq, F. (2024). Capital Structure, Liquidity, Profit Growth, and Financial Performance of Culinary MSMEs Using Local Raw Materials. *International Journal of Business, Economics, and Social Development*, 5(2), 179-184.
- Qin, Y., Xu, Z., Wang, X., & Skare, M. (2024). Artificial intelligence and economic development: An evolutionary investigation and systematic review. *Journal of the Knowledge Economy*, 15(1), 1736-1770.
- Ressi, D., Romanello, R., Piazza, C., & Rossi, S. (2024). AI-enhanced blockchain technology: A review of advancements and opportunities. *Journal of Network and Computer Applications*, 103858.
- Satria, H., Suhardjanto, D., Widarjo, W., Honggowati, S., & Setiorini, K. R. (2024). Open innovation and disruptive innovation: Financial performance small and medium enterprises (SMEs) evidence in Tanjungpinang Indonesia. *Journal of Infrastructure, Policy and Development*, 8(9), 6913.
- Saxena, A. K., Ness, S., & Khinvasara, T. (2024). The Influence of AI: The Revolutionary Effects of Artificial Intelligence in Healthcare Sector. *Journal of Engineering Research and Reports*, 26(3), 49-62.

- Siswanto, D. J., Maudhiky, F., Wahyudi, I., & Syah, T. Y. R. (2022). The Influence of Debt to Equity Ratio (DER), Return on Assets (ROA) and Company Size on Profit Growth. *Journal of Social Science*, 3(6), 2137-2147.
- Taiwo, A. A., Adesoba, O. C., & Adedotun, A. K. (2024). Digital technology adoption and performance of small and medium enterprises in food, drink and beverages industries in Ondo State, Nigeria. *Akunga Journal of Management*, 6(1), 167-179.
- Thakur, R. (2024). Introduction to artificial intelligence and its importance in modern business management. In *Leveraging AI and emotional intelligence in contemporary business organizations* (pp. 133-165). IGI Global.
- Thomas, E. O., Gbadeyan, R. O., & Waheed, I. (2023). Effect of Information Technology on the Market Share of Small and Medium Scale Enterprises (SMEs) in Lagos State, Nigeria. *African Journal of Management and Business Research*, 12(1), 82-97.