

TECHNOLOGICAL ADVANCEMENT AND ORGANIZATIONAL PERFORMANCE OF FAST-FOOD BUSINESSES IN PORT HARCOURT, NIGERIA

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ABSTRACT

This study examined the relationship between technological advancement and organizational performance of fast-food businesses in Port Harcourt, Nigeria, with specific focus on adaptive performance, past performance, and contextual performance. The study adopted a descriptive survey research design to provide a systematic description of the variables and their relationships. Due to the relatively small population size, the entire population of 202 managers and employees of selected fast-food businesses was studied, and the same figure constituted the sample size. Data were collected using structured questionnaires designed to measure technological advancement and the dimensions of organizational performance. Descriptive statistical tools, including mean and standard deviation, were used to answer the research questions, while the Pearson Product Moment Correlation (PPMC) analysis was employed to test the hypotheses. All hypotheses were tested at a 0.05 level of significance. The findings revealed a significant positive relationship between technological advancement and adaptive performance, indicating that the adoption of technologies such as digital ordering systems, point-of-sale (POS) systems, and automated operations enhances employees' ability to adjust to changes, learn new skills, and respond effectively to work demands. The study also found a significant relationship between technological advancement and past performance, showing that technology contributes to improved efficiency, productivity, and financial outcomes over time. Furthermore, a significant positive relationship was established between technological advancement and contextual performance, suggesting that technology supports teamwork, organizational citizenship behavior, and a supportive work environment. The study concluded that technological advancement is a critical driver of organizational performance in fast-food businesses in Port Harcourt. It therefore recommended that fast-food operators invest continuously in modern technologies, provide regular training for employees, and integrate technology strategically to enhance adaptive, past, and contextual performance for sustained organizational success

1.0 INTRODUCTION

In the ever-evolving tapestry of human progress, technological advancements are the driving force that propels societies toward uncharted frontiers. The relentless pursuit of innovation, fueled by the convergence of scientific discovery and engineering prowess (Ugli, 2024; Yang, 2024), has ushered in an era where transformative technologies reshape the fabric of our existence and how business is done (Cunningham, & Menter, 2021; Alliou & Mourdi, 2023; Diamandis & Kotler, 2020). This paper, embarks on a journey through the vanguard of technological evolution, unraveling the profound impact, challenges, and promises these advancements hold for our collective future and businesses, especially the fast food business.

The fast-food industry, traditionally focused on providing quick, affordable meals with standardized menus and high customer turnover, has been reshaped by evolving consumer expectations and the demand for greater speed, convenience, and personalization. As customers increasingly seek seamless digital interactions and customized experiences, fast-food businesses have turned to technology to stay competitive. Innovations like advanced point-of-sale systems, kitchen automation, mobile ordering platforms, and third-party delivery services have streamlined operations, reduced errors, and enhanced customer convenience. Additionally, data analytics and artificial intelligence help businesses optimize menu offerings, manage inventory, and improve marketing strategies. These technological advancements now play a crucial role in almost every aspect of fast-food operations, allowing companies to meet rising expectations, boost efficiency, and maintain a competitive edge in a fast-evolving market (Ahmed, Mofijur, Rafa, Chowdhury, Chowdhury, Nahrin & Ong, 2022).

Technological advancement can be defined as modern technologies, facilities, improved systems, methods, procedures, or modern designs that can be used for the improvement of a system, business, or organization (Ahmed, et al., 2022; Pulumati, Pulumati, Dwarakanath, Verma & Papineni, 2023; Baig, Mohammad, Akram, Chandio & Gupta, 2024). It can also be defined as a continuous evaluation and innovation, improvement, and integration of modern tools and facilities, methods, and systems in the enhancement of efficiency, productivity, and convenience in an organization (Ezeigweneme, Daraojimba, Tula, Adegbite & Gidiagba, 2024; Gil de Zúñiga, Goyanes & Durotoye, 2024). The adoption of digital ordering platforms, mobile apps, and self-service kiosks has revolutionized how customers interact with fast-food businesses. These systems offer convenience, reduce ordering errors, shorten queues, and provide opportunities for personalized marketing through customer data (Ezeigweneme, et al., 2024). Third-party delivery services and proprietary platforms have expanded market reach and contributed significantly to sales (Pulumati, et al., 2023).

The need for scholarly discourse becomes imperative as we stand at the cusp of a new technological epoch, characterized by the rapid acceleration of artificial intelligence, quantum computing, biotechnology, and other cutting-edge domains (Amajuoyi, Nwobodo & Adegbola, 2024; Akpan, Soopramanien & Kwak, 2021; Rasmussen, Enevoldsen & Xydis, 2020). This publication serves as a forum for interdisciplinary discussions, bringing together the insights of researchers, scientists, engineers, and visionaries who seek to comprehend the profound implications of our technological trajectory.

The transformative power of technology extends far beyond the realms of industry and commerce and has changed the traditional approach to doing business these days (Vaseei, Agha, Abolghasemian & Chobar, 2024). It has affected every facet of our human existence, which in turn changes the method of business communication, making transactions, searching for new customers, conducting business researches, advertisements, and also how we address global challenges such as climate change, healthcare, and poverty. As we navigate these uncharted territories, it is essential to critically examine the ethical, social, and economic dimensions of technological advancements, ensuring that innovation aligns with the values and aspirations of business and humanity in general.

Considering a collection of rigorous research articles, theoretical explorations, and case studies, this journal publication aims to foster a deeper understanding of the intricate interplay between the performance of business organizations and technology. From the ethical considerations of emerging technologies to the implications for business objectives, business-client relationships, and the strategic level of business policy management, the articles within this volume offer a panoramic view of the opportunities and challenges that lie beyond the horizon of technological advancement. We invite readers to embark on this intellectual voyage, where the boundaries of possibility are constantly redrawn, and where the discourse on technological advancement becomes a compass guiding us through the unexplored landscape of the future of business organizations in particular, that of fast-foods.

The evolving demand of consumers keeps increasing due to some reasons such as educational awareness, changes in the taste of consumers, globalization, cultural interferences, and so on. Many businesses in developed countries like Europe and the United States have in contemporary days adopted different types of cutting-edge technologies which have made a great fortune in business, especially during and after the pandemic to perform very well. The adoption of these cutting-edge technologies has enabled them to carry out business activities at low costs and made their presence more visible and wider than they would have been without these technologies in place.

Statement of the Problem

The increasing importance attached to quality internationally, coupled with the dynamic economic climates and increase global competitiveness, have revitalized the urge in firms to put more efforts on issues relating to their customers satisfactions, in order to achieved organizational growth. Invariably, business organisations, small or big, must realise that their continuous existence and expansion should rest solely on satisfying and fulfilling the

expectations of their customers. The problem of dissatisfaction from the customers on the business and loss incurred on rejected dishes, due to poor service delivery and uncompetitive cost is another area that needs to be addressed. The aforementioned problems may either affect the growth and business outlet expansion of the organization positively or negatively. The issue of quality management faced by fast food firms is as a result of the fast food operator's inability to properly coordinate and manage their business processes which in some cases, leads to eventual withdrawal from and closure of some business outlets, which many other fast food firms are experiencing today. The inability to properly coordinate and manage their business processes affects the quality of products produced or services delivery. Some companies consider it more profitable to produce their products and services in-house while others see it more profitable to source from other expert companies. As noted earlier, outsourcing is technology advancement that has become very crucial in organizational performance in most firms. As far as technology advancement is concerned, the organizational performance may always have a positive or negative impact on the organization's financial position in the long run. It is in light of the above that this study seeks to find a common ground for technological advancements and organizational performance, and how fast-food businesses can leverage these innovative transformations in the achievement of their business objectives.

Objective of the Study

The Main objective of this study is therefore to examine the effect of Technological Advancement and Organizational Performance of Fast-Food Businesses in Port Harcourt, Nigeria. In view of this, this study specifically intends to;

- i. Examine the relationship between technological advancement and the adaptive performance of fast-food businesses in Port Harcourt, Nigeria.
- ii. Explore the relationship between technological advancement and the past performance of fast-food businesses in Port Harcourt, Nigeria.
- iii. Investigate the relationship between technological advancement and contextual performance of fast-food businesses in Port Harcourt, Nigeria.

Research Question

The research questions of this study included:

- i. What is the relationship between technological advancement and the adaptive performance of fast-food businesses in Port Harcourt, Nigeria?
- ii. What is the relationship between technological advancement and the past performance of fast-food businesses in Port Harcourt, Nigeria?
- iii. What is the relationship between technological advancement and contextual performance of fast-food businesses in Port Harcourt, Nigeria?

Research Hypothesis

- i. There is no significant relationship between technological advancement and the adaptive performance of fast-food businesses in Port Harcourt, Nigeria.
- ii. There is no significant relationship between technological advancement and the past performance of fast-food businesses in Port Harcourt, Nigeria.
- iii. There is no significant relationship between technological advancement and contextual performance of fast-food businesses in Port Harcourt, Nigeria.

LITERATURE REVIEW

Theoretical foundation

Technological mediation theory by Professor Jean Ganepagne (1960)

The technological mediation theory was first postulated in 1960 by a French scholar, Professor Jean Ganepagne with the central idea that when technologies are used, they help to shape the relationship between human beings and the world (Ganepagne, 1960). He believed that technology should not be approached from the perspective of material objects that are opposed to human subjects or as ordinary extensions of human beings but rather should be seen as mediators of the “human-world relations. Technological Mediation Theory explores the relationship between humans and technology, emphasizing how technology shapes human experience, communication, and interaction. The theory posits that technology is not merely a neutral tool but a mediator that actively influences how individuals perceive and engage with the world. In other words, technology is not just a passive object that facilitates human action; it actively alters our perceptions, relationships, and behaviors. This theory offers a framework for advanced technologies' role in human beings and the environment. They also believe that technology can be utilized for the benefit of human beings and the environment without negatively affecting each other.

The concept of technological mediation traces its roots to philosophical and sociological studies on technology, with prominent thinkers such as Martin Heidegger, Marshall McLuhan, and Harold Innis contributing foundational ideas. Heidegger’s notion of technology as a “way of revealing” highlighted the idea that technology does not merely serve human needs but reshapes the way humans understand reality. McLuhan, famously known for his idea of the "global village," argued that media and technologies are extensions of human senses, radically altering how we interact with each other and with the world around us. Technological Mediation Theory extends this thinking by focusing on the dynamic interplay between technology, humans, and society. Central to the theory is the understanding that technology acts as a mediator in our interactions with the world, reframing the way we experience time, space, identity, and relationships. Technology, according to this view, is not a static tool, but a dynamic actor that modifies how individuals perceive and act in the world.

In the context of the fast-food industry, where technology is central to enhancing customer experience, improving operational efficiency, and maintaining competitiveness, TMT helps elucidate how technology is not simply a tool, but an active mediator that shapes organizational outcomes and employee-customer relationships. It is an establish fact that technological advancements have radically transformed how businesses interact with

customers. In real sense of it, mobile ordering apps, self-service kiosks, digital menus, and online delivery platforms are now commonplace in many fast-food chains. According to Technological Mediation Theory, these technologies mediate the customer experience in ways that go beyond merely facilitating transactions. They actively shape how customers perceive the speed, convenience, and quality of service. For example, self-service kiosks and mobile ordering systems reduce human interaction, streamlining the ordering process and reducing wait times. These technologies, while designed to improve efficiency, also influence customer expectations and perceptions. Customers may begin to expect faster service, more personalized interactions, or even the ability to track their orders in real-time. Technology mediates these experiences by altering the very nature of how customers engage with the business, shaping their overall satisfaction and loyalty.

Resource-Based View (RBV) by Birger Wernerfelt (1984)

The Resource-Based View (RBV) is a strategic management theory that posits that a firm's internal resources and capabilities are the key drivers of its competitive advantage and long-term performance. Unlike traditional theories that focus on the external environment, such as Michael Porter's Five Forces model, RBV suggests that a firm's unique bundle of resources—such as human capital, technological expertise, brand reputation, and organizational culture—are the true sources of differentiation (Peteraf, 1993). RBV also emphasizes that firms should focus on leveraging and developing these valuable, rare, and inimitable resources to outperform competitors (Wernerfelt, 1984). In this context, a firm's ability to effectively deploy and reconfigure its resources is crucial to achieving sustainable competitive advantage. This perspective challenges the notion that success is solely determined by market positioning or external factors and highlights the importance of internal capabilities in shaping a firm's strategy.

However, a key contribution of the RBV is the development of the Valuable, Rare, Inimitable, and Non-substitutable framework, introduced by Jay Barney in 1991. According to Barney, for a resource to provide sustained competitive advantage, it must be Valuable, Rare, Inimitable, and Non-substitutable as valuable resources help firms exploit opportunities or neutralize threats, rare resources are not widely available to competitors, inimitable resources are difficult to copy due to factors like historical uniqueness or social complexity, and non-substitutable resources cannot be replaced by other resources that would have the same strategic effect. This VRIN framework has become central to RBV, guiding firms in identifying and nurturing resources that can be a source of competitive superiority. As organizations increasingly realize the importance of their internal capabilities, the RBV has become a cornerstone of strategic management literature, particularly in dynamic and competitive industries where innovation, expertise, and organizational culture are critical to success.

The Resource-Based View (RBV) offers a valuable lens for understanding how technological advancement can drive the organizational performance of fast-food businesses. In the fast-food industry, the adoption and integration of technology serve as strategic resources that can differentiate a business from its competitors. For instance, technologies like AI-powered ordering systems, automated kitchen equipment, and advanced supply chain management tools are resources that are not only valuable but, when effectively utilized, can

be rare and difficult for competitors to replicate. Fast-food businesses that harness these technological resources can enhance operational efficiency, reduce costs, improve customer service, and create a more personalized customer experience, thereby increasing profitability and market share. Additionally, technology can enhance other valuable firm resources, such as human capital and brand reputation, by streamlining operations and enabling real-time data-driven decisions. The RBV suggests that fast-food chains that continuously invest in and develop technological resources that meet the VRIN criteria—valuable, rare, inimitable, and non-substitutable—are better positioned to achieve a sustainable competitive advantage and superior organizational performance in an increasingly technology-driven market.

Conceptual Framework

Technological advancement

Technological advancement refers to the continuous process of innovation, development, and improvement of tools, systems, and processes that enhance the efficiency, functionality, and capabilities of various industries and aspects of society. It encompasses a broad range of advancements, from breakthroughs in information technology, artificial intelligence (AI), and automation to innovations in manufacturing, communication, and medicine (Wahid, Mohammad, Islam, Faisal & Rana, 2024). According to Farida & Setiawan, (2022) and Sony, Antony, Mc Dermott & Garza-Reyes, (2021), Technological advancement drives progress by enabling businesses to streamline operations, improve product and service delivery, and create new opportunities for growth. It is a key factor in increasing productivity, reducing costs, and enhancing the quality of life. As technologies evolve, they often disrupt existing markets, transform consumer behavior, and give rise to entirely new industries, leading to economic growth and societal change. In the modern world, technological advancement is seen as both a catalyst for innovation and a necessity for maintaining competitive advantage in a rapidly changing global landscape.

The importance of technology to business cannot be overemphasized considering the superior performance of business organizations in developed countries like the United States, the UK, Canada, and so on. In light of this technology has been seen as a major driver of business performance even in very challenging times like the pandemic where some businesses made their way to the top. In contrast, others that did not embrace technology had to wind up. The benefits of technological advancement are so numerous that one can explain. These benefits keep increasing as newer technologies are unveiled. Some of the benefits of technological advancement may include but are not limited to; greater visibility with social media facilities (Wahid, et al, 2024), a high degree of customization (Laudien, Reuter, Garcia & Botella-Carrubi, 2024), data security, added efficiency, higher revenues (Farida & Setiawan, 2022).

It also offers better customer experience (Sutrisno, Kuraesin, Siminto, Irawansyah & Ausat, 2023), saves time (Farida & Setiawan, 2022), better accounting performance, helps improve communication (Sony, et al., 2021), increased productivity with the aid of advanced and improved equipment (Zolas, et al., 2021), encourages a better collaboration among the different units within the business (Popkova, De Bernardi, Tyurina & Sergi, 2022; Alloui & Mourdi, 2023; Garg, Gupta, Chauhan, Sivarajah, Gupta & Modgil, 2021; Martin, Shilton &

Smith, 2022), better working condition (Popkova, De Bernardi, Tyurina & Sergi, 2022; Familoni & Onyebuchi, 2024), and so on.

Even though there have been numerous achievements from advanced technologies, other schools of thought believe that there are also dangers that are associated with its usage such as; the high cost of acquisition of these facilities and their installation (Ahmed, Mofijur, Rafa, Chowdhury, Chowdhury, Nahrin & Ong, 2022; Meneses-Espinosa, Gálvez-López, Rosas-Quijano, Adriano-Anaya & Vázquez-Ovando, 2024), distractions from the job (Olabi, Abbas, Shinde & Abdelkareem, (2023), frequent change in technology (Veleva & Tsvetanova, 2020), over-dependence on technology and lose of natural skills, environmental pollution and degradation (Zainal, Ker, Mohamed, Ong, Fattah, Rahman, Nghiem & Mahlia, 2024), job insecurity, loss of jobs, health concerns, Cybersecurity issues, addiction to the machines (Ahmed, et al., 2022), etc.

Organizational performance

Organizational performance refers to how effectively and efficiently an organization achieves its goals and objectives. It encompasses various dimensions, including financial outcomes, customer satisfaction, operational efficiency, employee productivity, and innovation. According to Okatta, Ajayi & Olawale, (2024), a strong organizational performance is typically measured by key performance indicators (KPIs), such as profitability, market share, revenue growth, and employee engagement. It reflects the ability of a business to adapt to changing market conditions, optimize resources, and meet stakeholder expectations. Effective organizational performance is not only about financial success but also about creating value for customers, maintaining a positive work environment, and contributing to the broader community (Usman, Khan, & Moinuddin, 2024). High performance in an organization often results from the successful integration of strategy, leadership, technology, and human resources, ensuring that all elements work in harmony toward achieving long-term sustainability and competitive advantage.

In the ever-increasing dynamic landscape of business organizations, managers have on the main objective which is to improve the performance of business organizations. This has been made possible and many incredible strides have been achieved with the help of advanced and improved technologies. It is, therefore, important to note that the contemporary environment of business organizations is volatile, and managers of business organizations should endeavor to innovate and adopt measures that can enhance the sustainability of their organizations. There are many dimensions to the definition of “organizational performance” due to its importance to the sustainability of business organizations. Organizational performance can be defined as the degree to which business organizations with the help of some information, material, and human resources position themselves in the industry in which they operate to their advantage (Akpa, Asikhia & Nneji, 2021; Rohman, Noermijati, Mugiono & Soelton, 2023).

Business organizations must enhance their performance to keep up with the industry's demands by investing in employee growth (Alshurideh, Kurdi, Alzoubi, Obeidat, Hamadneh & Ahmad, 2022), investment in modern facilities and technologies (Humayun, 2021;

Shalbolova, Chikibayeva & Kenzhgaliyeva, 2021). Other management scholars further believed that participative leadership (Felix, Aparicio & Urbano, 2019), leadership competencies (Aguilera, De Massis, Fini & Vismara, 2024), shareholders value, organizational culture, and social systems can enhance the performance of business organizations (Okatta, Ajayi & Olawale, 2024).

Performance at the organizational level also involves cultivating a pleasant work idea, creating a positive relationship and effective communication at work, and rewarding a positive sense of work (Niftiyev, David, Iordan & Horga, 2024). The effective management of the performance of an organization extends beyond the end of the year's appraisal; however, translating the goals into the achievement of desired goals and objectives is more important

Adaptive Performance

Adaptive performance can be seen from different levels in the organization: the individual, organizational, and industry levels. Adaptive performance in business therefore can be defined as the ability of the organization's management to adjust to the constantly evolving landscape of business (Niftiyev, David, Iordan & Horga, 2024). This concept of adaptive performance is very suitable for firms with a complex and frequently evolving business landscape. It also involves analyzing an organization's performance in the past against its desired goals and objectives with the main focus on shareholder value, financial performance, and market performance (Niftiyev, David, Iordan & Horga, 2024).

Spacey (2020) highlighted 16 methods in which adaptive performance can be applied and they include; crisis handling, fluid intelligence, dealing with ambiguity, situational awareness, rebelliousness, social loafing, comradery, fake it till you make it, failure resilience, stress resilience, risk-taking, physical adaptability, cultural adaptability, creativity, tolerance for mediocrity, and work accomplishment. Adaptive performance can improve the management of an organization, and also its effectiveness (Organ, 2018). The various methods of adaptive performance may include; handling stress in the workplace, demonstrating physically oriented abilities, learning the use of new machines, technologies, tasks, or procedures, new creative solving skills, dealing with uncertainties and unpredictable work situations, and handling stress among the workforce, handling of crisis and emergencies, the demonstration of interpersonal adaptabilities, cultural adaptability, etc. (Kwantes, Neal & Vuckovic, 2013).

Past Performance

Past performance can be defined as the use of historical information of the organization in preparing it for the future to give it a competitive advantage (Geraci, Kurpad, Tirso, Gray & Wang, 2023). Past performance can also be defined as the act of focusing on the qualities of previous works performed and probably maintaining the status quo or improving on it to achieve the objectives of the organization (USAID, 2024). The Federal Acquisition Regulation (42, 1501) defined past performance as vital information, for future source selection purposes, an organization's actions under previously awarded contracts or orders, a contractor's record of conforming to requirements and standards of good workmanship; forecasting and controlling costs; adherence to schedules, the administrative aspects of performance; reasonable and cooperative behavior and commitment to customer satisfaction; reporting into databases; integrity and business ethics; and business-like concern for the interest of the customer.

Some authors argued that past performance is not a reliable indicator of future performance as future markets may develop significantly differently from the previous one. Dooyema (2018) argued that past performance does not guarantee future results as it is only a warning sign for the future.) On the other hand, the easiest way to gain self-efficacy is from past performance (Bandura, 1997). Employees or organizations that have succeeded in previous tasks or jobs are likelier to complete similar tasks in the future than those just meeting similar jobs for the first time (Aliyu, Maiyaki & Aliyu, 2023). Past performance is a pivotal element used by the United States agencies in evaluating companies and proposals to determine which company to award a contract, having a good knowledge of how past performance is evaluated is important to succeed (Geraci, et al., 2023).

Contextual Performance

Contextual performance can be defined as the creation of an enabling work environment that aids the staff of organizations to willingly support their employers by actively supporting each other, sharing knowledge, and contributing to the collective advantage of the organization (Corbeanu & Iliescu, 2023; Adekiya, 2024; Meyers, Kooij, Kroon, de Reuver & van Woerkom, 2020). Contextual performance is vital to the life of an organization as it encourages the kind of behavior, which is under the motivational control of the individuals in the organization. Contextual performance refers to those behaviors in the organization that are

not part of the individual's job description but, contribute to the overall benefit of the employees, team, or organization (Park, 2018).

Contextual performance can be achieved by offering extra volunteer work, persistent enthusiasm, offering to assist colleagues in carrying out their tasks, dully following laid down rules and regulations in the organization, and protecting the image of the organization (LePine, Hanson, Borman & Motowidlo, 2000). Contextual performance can help the organization increase production, and enhance efficiency, and effectiveness in achieving a firm's objectives (Kappagoda, 2018; Pradhan & Jena, 2017; Taouab & Issor, 2019).It also enhances customers' satisfaction and loyalty, employee development and engagement, better employee retention, and organizational performance (Decu, 2023). It consists of two distinct areas whichinclude; dedication to the jobs or tasks, and interpersonal facilitation (Le Sante, Eaton & Viswesvaran, 2021).

Fast-Food Business

The fast-food industry has evolved significantly over the years to become one of the most dynamic and influential sectors within the global economy. This sector primarily focuses on providing quick, convenient, and affordable meals to customers, often through standardized menus and efficient service systems. The hallmark of fast-food businesses is their emphasis on speed, consistency, and convenience, catering to a consumer base that values fast service, affordability, and familiarity in their dining choices. The rise of major international fast-food chains in Port Harcourt, Nigeria has not only contributed to shaping a globalized food culture but also significantly influenced local dining preferences across various regions. This global reach is a result of innovations in food production, marketing strategies, and distribution systems, which have allowed fast-food brands to penetrate diverse markets, offering products that are locally adapted while maintaining core brand identities. For instance, McDonald's offers culturally tailored menu items in international markets, such as the McAlloo Tikki in India and Ebi Fillet-O in Japan, which appeals to local tastes while maintaining the brand's reputation for consistency and speed (Alon, 2019).

The industry's continued growth is largely attributed to its ability to adapt to changing consumer preferences, embrace technological advancements, and respond to global market trends. Recent studies suggest that the fast-food business model thrives on operational efficiency, cost reduction, and strategic marketing, allowing companies to scale rapidly and dominate an increasingly competitive landscape. The integration of technology, such as online

ordering platforms, mobile apps, and AI-driven supply chain systems, has revolutionized how fast-food businesses engage with customers and optimize internal operations (Grewal et al., 2020). Furthermore, a focus on cost leadership strategies—where businesses seek to deliver value by minimizing production and operational costs—has been a crucial factor enabling fast-food chains to maintain profitability while competing in a crowded market. For example, Domino's Pizza leveraged its digital ordering platform and integrated AI to streamline operations, improve delivery efficiency, and enhance the overall customer experience (Liu et al., 2021).

Additionally, the rise of health-conscious consumers and environmental sustainability concerns has forced fast-food businesses to adapt their offerings and operational models. As consumers become more aware of nutrition, sustainability, and the impact of their food choices on the environment, brands are increasingly focused on offering healthier menu options and implementing sustainable sourcing practices. This shift aligns with consumer demand for transparency, with brands like Chipotle and Subway leading efforts in clean, traceable ingredients and eco-friendly packaging (Keller, 2020). These adaptations, combined with the industry's emphasis on cost efficiency and the scalability of operations, ensure that fast-food chains remain competitive and relevant in a rapidly evolving market. Recent research has shown that fast-food companies that strategically integrate technology and sustainability into their business models enjoy enhanced customer loyalty and brand differentiation (Chen et al., 2022).

Review of Empirical Studies

Technological Advancement and Adaptive Performance

Sharma and Singh (2021) investigated the effects of technological advancements such as self-service kiosks, mobile ordering systems, and AI-driven customer service tools on the adaptive performance of fast-food employees. Through quantitative correlational research involving 300 employees from various fast-food outlets, the research found that the introduction of these technologies significantly enhanced employees' task performance, problem-solving skills, and learning capacity. The study also revealed that technology adoption reduced operational inefficiencies and increased productivity in the fast-food outlets. The study concluded that integrating technological advancements is crucial for improving adaptive performance, especially when employees are equipped with proper training. The

recommendation emphasizes the need for ongoing investments in technology and the provision of adequate employee training programs to enhance adaptability.

Grewal et al. (2020) examined how technological innovation influenced adaptive performance in fast-food businesses. The study adopted 180 participants, comprising 150 employees and 30 managers. The research found that technological innovations like mobile ordering and automated food preparation significantly improved adaptability, particularly in problem-solving and multitasking. The study highlighted that employees felt more confident and performed better when provided with sufficient training. It was concluded that for technological changes to positively impact adaptive performance, businesses need to prioritize comprehensive training programs for employees. Their findings recommend that U.S.-based fast-food chains involve employees in the adoption process and provide continuous support to ensure smooth transitions.

Adebayo and Olayemi (2020) conducted a study in Nigeria to explore how the fast-food industry adapts to technological advancements and the impact on employees' performance. The study examined 250 employees across various Nigerian fast-food outlets, focusing on technologies like mobile apps for orders, digital payment systems, and automated kitchen equipment. The results showed that technological advancements significantly improved adaptive performance, particularly in areas of task execution speed and service efficiency. However, the study also highlighted that the lack of consistent training programs in Nigerian fast-food businesses hindered full adoption of these technologies. It was concluded that businesses in Nigeria need to invest in continuous technological training and employee development to improve adaptive performance and service delivery.

Technological Advancement and the Past Performance

Ogbari et al. (2019) conducted a study to examine the role of technological advancements on organizational performance in Nigeria's service sector, specifically in Lagos, focusing on fast-food chains. The study surveyed 350 managers and employees working in the Nigerian service industry, using structured questionnaires and semi-structured interviews as data collection instruments. Regression and factor analysis were used for data analysis. The study found that technological adoption, particularly the implementation of digital point-of-sale (POS) systems, significantly improved business performance. Fast-food businesses that integrated digital ordering, inventory management, and customer relationship management (CRM) systems saw enhanced operational efficiency, better customer satisfaction, and

improved financial outcomes. The study concluded that technology adoption is crucial for improving performance in Nigeria's fast-food sector by enhancing service delivery, reducing operational costs, and building customer loyalty. They recommended that Nigerian fast-food businesses invest more in digital technologies, to stay competitive and meet increasing customer demands for convenience and speed.

Kumar et al. (2020) examined the impact of technological innovations on the financial performance of fast-food chains in India, focusing on major cities such as Mumbai and Delhi. The research followed a quantitative design with a longitudinal approach, gathering data from 200 managers working in leading fast-food chains across the country. Data collection involved surveys and secondary financial records from company databases, while data analysis employed correlation techniques and regression models to assess the relationship between technology adoption and profitability. The study revealed that technological advancements like automated kitchens, online ordering platforms, and mobile apps led to a 15% increase in profitability over a two-year period. These innovations resulted in higher operational efficiency, with reduced labor costs and faster kitchen operations. In conclusion, the study found that embracing technology was a key driver of financial success in the Indian fast-food sector, enabling businesses to streamline operations, enhance customer experiences, and stay competitive in a fast-evolving market. The study recommended that fast-food chains continue to explore technologies that enhance customer interaction, such as mobile apps and delivery platforms, as well as those that optimize internal processes through automation and data-driven insights.

Zhang et al. (2023) conducted a study examining the role of automation technologies in improving operational efficiency within global fast-food chains. The study employed an experimental design with both control and treatment groups across three regions: the U.S., China, and Europe. The sample included 300 fast-food restaurants—100 from each region—focusing on operations managers and frontline employees. Data collection involved observational studies, time-motion studies, and employee surveys to assess the impact of automation on various operational metrics. The analysis utilized ANOVA to compare the outcomes between automated and non-automated restaurants. The findings revealed that automation technologies such as robotic fryers, automated order fulfillment systems, and self-service kiosks led to significant improvements in efficiency. In the U.S. and Europe, automation resulted in a 25% reduction in labor costs, while in China, automated ordering systems cut customer wait times by 30%. Across all regions, automation enhanced service

speed, improved order accuracy, and lowered operational costs, benefiting both employees and customers. The study concluded that automation is critical for fast-food chains looking to streamline operations, reduce overhead, and enhance customer satisfaction. Based on these results, it was recommended that fast-food chains worldwide prioritize investments in automation technologies, particularly in high-traffic locations, to maintain a competitive edge and ensure long-term operational sustainability.

Technological Advancement and Contextual Performance

Ogbari et al. (2019) conducted a descriptive survey research study to explore the role of technological advancements in shaping contextual performance within Nigeria's service sector, with a particular focus on fast-food businesses in Lagos. The study surveyed 350 respondents, including 150 managers and 200 employees, using a combination of structured questionnaires, semi-structured interviews, and performance evaluation forms. The data were analyzed through multiple regression analysis and factor analysis to identify the relationship between technology adoption and various aspects of employee performance. The findings revealed that the introduction of digital point-of-sale (POS) systems and mobile ordering apps had a significant positive impact on contextual performance. Specifically, employees reported enhanced efficiency, improved customer interactions, and more effective collaboration within teams. The integration of technology led to higher job satisfaction among employees, who were more inclined to engage in organizational citizenship behaviors (OCBs). The study concluded that technological advancements play a crucial role in improving contextual performance by fostering better operational efficiency, strengthening team collaboration, and elevating customer satisfaction in the Nigerian fast-food industry. Based on these results, the authors recommended that Nigerian fast-food businesses invest in technologies that promote teamwork and employee engagement, especially in customer-facing roles.

Zhang et al. (2020) conducted a longitudinal study to investigate the effect of technology on contextual performance in Chinese restaurant chains, specifically focusing on major cities across China. The study examined 500 employees from 10 different restaurant and fast-food chains, including kitchen staff, servers, and managers. Using pre- and post-technology adoption analysis, the researchers collected data through employee surveys, management reports, and performance evaluations. The study utilized paired sample t-tests and structural equation modeling (SEM) for data analysis to assess changes in employee performance after the adoption of self-service kiosks and automated ordering systems. The findings revealed a significant improvement in contextual performance following the

implementation of these technologies. Employees in restaurants that adopted these customer-facing tools demonstrated enhanced cooperation, higher levels of job satisfaction, and were more likely to engage in organizational citizenship behaviors (OCBs), and suggesting operational improvements. The study concluded that the integration of technology, particularly self-service kiosks and automated ordering systems, not only improved operational efficiency but also fostered a more collaborative and empowered work environment. Based on these findings, it was recommended that restaurant managers continue to invest in technologies that reduce task load, as these tools contribute to a more cohesive and satisfied workforce, enhance job satisfaction, and encourage employees to take on more proactive roles within the organization.

Tarek et al. (2021) conducted a mixed-methods study to explore the impact of technology on both contextual performance and employee well-being in the UK fast-food industry. The study involved 400 employees, including 200 frontline staff and 200 managers, across various fast-food chains in the UK. Data collection included online surveys to assess contextual performance and employee well-being, as well as semi-structured interviews to gather qualitative insights. The researchers employed content analysis for the qualitative data and correlation analysis for the quantitative data. The results indicated a strong positive correlation between the adoption of technology—such as digital training programs, automated scheduling systems, and mobile apps—and improvements in contextual performance. The technology provided greater flexibility in scheduling, which helped to reduce stress and gave employees more opportunities for professional development. As a result, employees reported higher job satisfaction, improved work-life balance, and a greater sense of empowerment. The study concluded that technological advancements not only streamline operational tasks but also foster a healthier work environment, ultimately enhancing both employee well-being and contextual performance. Based on these findings, the researchers recommended that UK fast-food chains integrate more employee-centric technologies that reduce both mental and physical workload, thereby improving employee satisfaction and performance.

Methodology

The study adopted a Descriptive survey design. The population of this study comprises all the fast-food businesses in Port Harcourt, Nigeria. The total population involved 202 employees, including 112 frontline staff and 90 managers, across various fast-food chains the fast-food business organizations in Port Harcourt, Nigeria due to the small size of the study population, the researchers handled the entire population for the study, hence, a census study.

Therefore, the total number of respondents was 202 respondents from the across business organizations registered with the Corporate Affairs Commission (CAC) involved in the fast-food business in Port Harcourt, Nigeria. Primary data was collected using a 5-point Likert-scale questionnaire. The researcher subjected the data generated for this study to Descriptive analysis which was used to answer the research questions while Pearson Product Moment Correlation Analysis was used to test the hypothesis. The test for significance was done at 0.05 alpha levels.

Data Analysis and Results

Research Question One: The research question sought to find out relationship between technological advancement and the adaptive performance of fast-food businesses in Port Harcourt, Nigeria. In order to answer the research question, descriptive analysis was performed on the data collected, (see table 1)

TABLE 1

Descriptive Analysis of the relationship between technological advancement and the adaptive performance of fast-food businesses in Port Harcourt, Nigeria

Variables	N	Arithmetic Mean	Expected Mean	r	Remarks
adaptive performance	202	15.74	12.5	0.65	*moderately strong relationship
technological advancement.		16.81	12.5		

Source: Field Survey 2025

The above table 1 presents the descriptive analysis of the relationship between technological advancement and the adaptive performance of fast-food businesses in Port Harcourt, Nigeria. The two variables were observed to have *moderately strong relationship at 65%. The arithmetic means for adaptive performance (15.74) was also observed to be greater than the expected mean score of (12.5). In addition to that, the arithmetic mean for technological advancement (16.81) was observed to be higher than the expected mean score of (12.5). The result therefore means that technological advancement has a remarkable relationship with the adaptive performance of fast-food businesses in Port Harcourt, Nigeria.

Research Question Two: The research question sought to find out the extent of the relationship between technological advancement and the past performance of fast-food businesses in Port Harcourt, Nigeria. In order to answer the research question, descriptive analysis was performed on the data collected (see table 2)

TABLE 2

Descriptive Analysis of the relationship between technological advancement and the past performance of fast-food businesses in Port Harcourt, Nigeria

Variables	N	Arithmetic Mean	Expected Mean	r	Remarks
past performance		17.08	12.5		*moderately weak relationship
Technological advancement.	202	16.81	12.5	0.50	

Source: Field Survey 2025

The above table 2 presents the descriptive analysis of the relationship between technological advancement and the past performance of fast-food businesses in Port Harcourt, Nigeria. The two variables were observed to have moderately weak relationship at 50%. The arithmetic means for past performance (17.08) was also observed to be greater than the expected mean score of (12.5). In addition to that, the arithmetic mean for technological advancement (12.5) was observed to be higher than the expected mean score of (16.81). The result therefore means that technological advancement has a remarkable relationship past performance of fast-food businesses in Port Harcourt, Nigeria.

Research Question Three: The research question sought to find out relationship between technological technological advancement and contextual performance of fast-food businesses in Port Harcourt, Nigeria. In order to answer the research question, descriptive analysis was performed on the data collected, (see table 3)

TABLE 3**Descriptive Analysis of the relationship between technological advancement and contextual performance of fast-food businesses in Port Harcourt, Nigeria**

Variables	N	Arithmetic Mean	Expected Mean	r	Remarks
contextual performance		16.84	12.5		*moderately strong
	202			0.65	relationship
technological advancement.		16.81	12.5		

Source: Field Survey 2025

The above table 1 presents the descriptive analysis of the relationship between technological advancement and contextual performance of fast-food businesses in Port Harcourt, Nigeria. The two variables were observed to have *moderately strong relationship at 65%. The arithmetic means for contextual performance (16.84) was also observed to be greater than the expected mean score of (12.5). In addition to that, the arithmetic mean for technological advancement (16.81) was observed to be higher than the expected mean score of (12.5). The result therefore means that technological advancement has a remarkable relationship with the contextual performance of fast-food businesses in Port Harcourt, Nigeria.

Hypotheses Testing**Hypothesis One**

The null hypothesis states that there is no significant relationship between technological advancement and the adaptive performance of fast-food businesses in Port Harcourt, Nigeria. In order to test the hypothesis, two variables were identified as follows:-

1. The adaptive performance as the independent variable
2. Technological advancement as the dependent variable. (See table 4)

Table 4**Pearson Product Moment Correlation Analysis of the relationship between technological advancement and the adaptive performance of fast-food businesses in Port Harcourt, Nigeria**

Variables	ΣX	ΣX^2	ΣXY	r
	Σy	Σy^2		
Adaptive performance (X)	3179	50445		
Technological			53699	0.65*

advancement	(y)	3396	57458
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***significant at 0.05 level; N=202; df =200; Critical r – value = value = 0.138**

The above table 4 presents the obtained r-values as (0.65). This value was tested for significance by comparing it with the critical r-value (0.138) at 0.05 level with 200 degree of freedom. The obtained r-value (0.50) was greater than the critical r-value (0.138). Hence, the result is significant. The result therefore means that there is significant relationship between technological advancement and the adaptive performance of fast-food businesses in Port Harcourt, Nigeria.

Hypothesis Two

The null hypotheses state that there is no significant relationship between technological advancement and the past performance of fast-food businesses in Port Harcourt, Nigeria. In order to test the hypothesis, two variables were identified as follows:-

1. The past performance as the independent variable
2. Technological advancement as the dependent variable. (See table 5)

Table 5

Pearson Product Moment Correlation Analysis of the relationship between technological advancement and the past performance of fast-food businesses in Port Harcourt, Nigeria

Variables		ΣX	ΣX^2	ΣXY	r
		Σy	Σy^2		
The past performance	(X)	3450	59850		
				58193	0.50*
Technological advancement	(y)	3396	57458		

***significant at 0.05 level; N=202; df =200; Critical r – value = 0.138**

The above table 5 presents the obtained r-values as (0.50). This value was tested for significance by comparing it with the critical r-value (0.138) at 0.05 level with 200 degree of freedom. The obtained r-value (0.50) was greater than the critical r-value (0.138). Hence, the result is significant. The result therefore means that there is significant relationship between technological advancement and the past performance of fast-food businesses in Port Harcourt, Nigeria. **Hypothesis Three**

The null hypotheses state that there is no significant relationship between technological advancement and contextual performance of fast-food businesses in Port Harcourt, Nigeria. In order to test the hypothesis, two variables were identified as follows:-

1. contextual performance as the independent variable
2. Technological advancement as the dependent variable. (See table 6)

Table 6**Pearson Product Moment Correlation Analysis of the relationship between technological advancement and contextual performance of fast-food businesses in Port Harcourt, Nigeria**

Variables	ΣX	ΣX^2	ΣY	ΣY^2	ΣXY	r
contextual performance (X)	3257	59850				
Technological advancement (y)	3396	57458			58193	0.50*

***significant at 0.05 level; N=202; df =200; Critical r – value = 0.138**

The above table 6 presents the obtained r-values as (0.50). This value was tested for significance by comparing it with the critical r-value (0.138) at 0.05 level with 200 degree of freedom. The obtained r-value (0.50) was greater than the critical r-value (0.138). Hence, the result is significant. The result therefore means that there is significant relationship between technological advancement and contextual performance of fast-food businesses in Port Harcourt, Nigeria.

Discussion of the Findings

The results of the data analyses in tables 1 & 4 were significant due to the fact that the obtained r-value (0.63) was greater than the critical r-value (0.138) at 0.05 level with 200 degree of freedom. This implies that there is significant relationship between technological advancement and the adaptive performance of fast-food businesses in Port Harcourt, Nigeria. The significance of the result is in agreement with the opinion of Sharma and Singh (2021) argued that technology adoption reduced operational inefficiencies and increased productivity in the fast-food outlets. Also, technological advancements significantly improved adaptive performance, particularly in areas of task execution speed and service efficiency. However, the study also highlighted that the lack of consistent training programs in Nigerian fast-food businesses hindered full adoption of these technologies (Adebayo and Olayemi 2020). The significance of the result caused the null hypothesis to be rejected while the alternative one was accepted.

The results of the data analyses in tables 2 & 5 were significant due to the fact that the obtained r-value (0.63) was greater than the critical r-value (0.138) at 0.05 level with 200 degree of freedom. This implies that there is significant relationship between technological advancement and the past performance of fast-food businesses in Port Harcourt, Nigeria. The significance of the result is in agreement with the opinion of Ogbari et al. (2019) who stressed that that technological adoption, particularly the implementation of digital point-of-sale (POS) systems, significantly improved business performance. Fast-food businesses that integrated digital ordering, inventory management, and customer relationship management (CRM) systems saw enhanced operational efficiency, better customer satisfaction, and improved financial outcomes. Technological advancements like automated kitchens, online ordering platforms, and mobile apps led to a 15% increase in profitability over a two-year period. These

innovations resulted in higher operational efficiency, with reduced labor costs and faster kitchen operations (Kumar et al. 2020). The significance of the result caused the null hypothesis to be rejected while the alternative one was accepted.

The results of the data analyses in tables 3 & 6 were significant due to the fact that the obtained r-value (0.63) was greater than the critical r-value (0.138) at 0.05 level with 200 degree of freedom. This implies that there is significant relationship between technological advancement and the past performance of fast-food businesses in Port Harcourt, Nigeria. The significance of the result is in line with the findings of Ogbari et al. (2019) and Zhang et al. (2020) who jointly postulated that the introduction of digital point-of-sale (POS) systems and mobile ordering apps had a significant positive impact on contextual performance. Specifically, employees reported enhanced efficiency, improved customer interactions, and more effective collaboration within teams. The integration of technology led to higher job satisfaction among employees, who were more inclined to engage in organizational citizenship behaviors (OCBs), a significant improvement in contextual performance following the implementation of these technologies. Employees in restaurants that adopted these customer-facing tools demonstrated enhanced cooperation, higher levels of job satisfaction, and were more likely to engage in organizational citizenship behaviors (OCBs), and suggesting operational improvements. The significance of the result caused the null hypothesis to be rejected while the alternative one was accepted.

Conclusion and Recommendations

This study concludes that technological advancement plays a significant and positive role in enhancing the organizational performance of fast-food businesses. The adoption of modern technologies—such as digital point-of-sale (POS) systems, mobile and online ordering platforms, automated kitchen equipment, customer relationship management (CRM) systems, and data analytics tools—has been shown to improve operational efficiency, service speed, cost control, and overall customer satisfaction. Technological innovations also support better decision-making by providing real-time data on sales, inventory, and customer preferences, enabling fast-food businesses to respond quickly to market changes. Furthermore, technology enhances employee performance and engagement by reducing task complexity, minimizing errors, and fostering collaboration. Overall, fast-food businesses that strategically invest in and effectively utilize technological advancements tend to achieve higher productivity, improved profitability, stronger customer loyalty, and greater adaptability in a highly competitive and dynamic business environment.

Based on the findings, it is recommended that fast-food businesses prioritize continuous investment in relevant and scalable technologies to sustain and improve organizational performance. Management should adopt customer-facing technologies such as mobile apps,

self-service kiosks, and online feedback platforms to enhance service delivery and customer engagement. Internally, businesses should implement automation tools, advanced POS systems, and data-driven inventory management systems to streamline operations, reduce costs, and minimize human error. Additionally, organizations should provide regular training and capacity-building programs to ensure employees are well-equipped to use new technologies effectively and confidently. Fast-food businesses are also encouraged to align technological investments with their strategic goals and customer needs, while fostering a culture of innovation that encourages employees to leverage technology for continuous improvement. Finally, policymakers and industry stakeholders should support technology adoption through incentives, training initiatives, and infrastructure development to strengthen the overall performance and competitiveness of the fast-food industry.

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