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# FINTECH integration and service innovation of food and beverage firms in Cross Rivers State, Nigeria

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## Abstract

*This study evaluated the impact of fintech integration on service innovation in food and beverage firms in Cross River State, Nigeria. Specifically, it examined the relationship between digital payments and customer transactions, and the relationship between point-of-sale (POS) integration and operational efficiency. The study focused on four food and beverage firms selected for their large workforce and long years of establishment. The total population was 710 employees, and a sample size of 251 was determined using the Fernando and Williams formula. A survey research design was employed, utilizing questionnaires and interviews for data collection. Out of the distributed instruments, 248 were properly completed and returned. Data were analyzed using mean scores, and hypotheses were tested with Z-tests using SPSS. The findings revealed that digital payments had a significant positive relationship with customer transactions ($Z = 10.859$, $p < .05$), and POS integration had a significant positive relationship with operational efficiency ($Z = 9.017$, $p < .05$). The study concluded that fintech integration through digital payments and POS systems significantly enhances customer transactions and operational efficiency in food and beverage firms in Cross River State. It recommended that firms invest in secure and user-friendly digital payment platforms to improve transaction efficiency, build customer trust, and enhance overall service experience.*

***Keywords:*** *FINTECH integration, digital payments, POS integration, service innovation, operational efficiency, customer transactions, Cross Rivers State, Nigeria.*

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**Introduction**

Traditionally, the food and beverage (F&B) sector relied on manual, in-person service methods, with physical ordering counters, cash transactions, and direct customer interaction being the norm. Financial services followed a similar pattern, utilizing branch-based banking, check transactions, and limited electronic options in the mid-20th century. Recently, the introduction of digital and electronic payments has provided F&B businesses with new methods for handling orders, payments, and customer relations.

Across the world, the merging of financial technology (fintech) with the service industry has caused significant changes in how F&B companies innovate. Businesses in developed countries now use mobile wallets, contactless payment methods, loyalty programs, and app-based ordering to enhance their services (Kemebaradikumo & Ekankumo, 2024). Studies on business model innovation in the F&B sector indicate that the shift to digital business models increases market share, especially when service channels are improved by fintech payment and ordering systems (Amadi, 2025).

In Nigeria, the fintech environment has expanded quickly, leading to digital payments, agent networks, and mobile solutions that support new service opportunities. Research shows that adopting fintech greatly improves access, ease, and transaction speed, with 57% of users in Nigeria valuing these benefits (McKinsey, 2025). Studies also suggest that fintech adoption has a positive influence on financial inclusion (Ezeocha, 2024; Iroakazi & Ade, 2025), and it is associated with the performance of MSMEs in service delivery (Ogiriki & Atagboro, 2022). This suggests that F&B firms in Nigeria have a strong opportunity to leverage fintech to enhance their services.

In Cross River State (within Nigeria's South-South region), the F&B industry is ready to benefit from fintech-driven service improvements. With the rise in smartphone use, interest in digital payments, and changing consumer expectations for convenience and digital ordering, F&B firms that incorporate fintech platforms (mobile payments, digital ordering, loyalty apps) could gain a competitive edge. However, research specifically about Cross River State is limited, which highlights the need to understand how and to what extent F&B companies in this area are using fintech, how it affects their service improvements, and what challenges they face (Onuegbu et al., 2025). In short, by examining the transition from traditional manual methods to contemporary fintech-supported service improvements, situating it within Nigeria's growing fintech ecosystem, and focusing on Cross River State, this study aims to assess how fintech supports service improvements in F&B companies, what drives its adoption, and what the outcomes might be.

**Statement of the problem**

Ideally, financial technology (fintech) should enable food and beverage (F&B) firms to streamline operations, enhance customer experiences, and drive service improvements through digital payment systems, automated ordering platforms, data analysis, and customer relationship tools. Across the world, F&B businesses have utilized fintech options such as mobile wallets, contactless payments, and digital loyalty programs to achieve more efficient operations and improve competitiveness. In developed countries, fintech-driven changes have become standard, reducing transaction delays, improving transparency, and increasing customer satisfaction.

However, despite Nigeria's growing fintech sector and efforts toward digital transformation, many F&B firms in Cross River State have not fully adopted fintech solutions in their service processes. Studies suggest that while larger firms in urban areas use digital financial platforms to facilitate smooth transactions, small and medium-sized F&B companies in emerging regions often face challenges such as inadequate digital infrastructure, low customer digital literacy, and limited access to fintech financing (VerivAfrica, 2024; PwC, 2023). Additionally, high technology costs and a shortage of skilled personnel have slowed the progress of fintech-driven service improvements in the state. If these issues are not addressed, F&B firms in Cross River State may lag in operational efficiency, customer satisfaction, and competitiveness. Failure to integrate fintech into service improvements could lead to persistent problems in payment processing, customer retention, and profitability. Moreover, these firms risk being excluded from the broader digital economy, reducing their ability to attract tech-savvy customers and sustain growth in an increasingly cashless and technology-driven market. Therefore, it is crucial to examine the extent of fintech adoption, the challenges encountered, and the impact of fintech on service improvements among food and beverage firms in Cross River State.

**Objectives of the study**

The main objective of the study was to evaluate the Fintech Integration and Service Innovation of food and beverage firms in Cross Rivers State, Nigeria. The specific objectives were to:

i. Examine the relationship between Digital Payments and customer transactions of food and beverage firms in Cross Rivers State
ii. Evaluate the relationship between POS Integration and operational efficiency of food and beverage firms in Cross Rivers State

**Research Questions**

The following research Questions guided the study

i. What is the relationship between Digital Payments and customer transactions of food and beverage firms in Cross Rivers State?
ii. What is the relationship between POS Integration and operational efficiency of food and beverage firms in Cross Rivers State?

**Statement of the Hypotheses**

i. Digital Payments has relationship with the customer transactions of food and beverage firms in Cross Rivers State
ii. POS Integration has relationship with operational efficiency of food and beverage firms in Cross Rivers State

**Review of Related Literature**

**Conceptual Review**

**FINTECH**

Financial Technology, or FINTECH, involves the use of current digital tech to create, supply, and refine banking services and systems. It is the combination of tech and banking to boost how well things work, how easy they are to use, and who can get to them in areas like payments, loans, savings, investments, and insurance. Sanyaolu, Adeleke, Azubuko, and Osundare (2024) suggest that fintech uses new digital advances like AI, blockchain, and apps to improve and automate banking for people and businesses. They propose that fintech changes old banking methods by providing faster, cheaper, and more inclusive banking options.

**Fintech Integration**

Fintech integration in food and beverage (F&B) companies refers to the use of banking technologies such as mobile payments, digital wallets, POS systems, and online banking to enhance services, streamline operations, and improve the customer experience. Kemebaradikumo and Ekankumo (2024) find that fintech integration enables F&B businesses to digitize payments, simplify transactions, and build stronger customer relationships through data-driven services. Similarly, Amadi (2025) notes that adopting fintech tools allows F&B firms to innovate their service processes, reduce the risks associated with handling cash, and meet evolving customer preferences for digital payments. Iroakazi and Ade (2025) also argue that fintech integration improves access to banking services and supports business growth by enabling small- and medium-sized enterprises in sectors such as food and beverage to access technology-driven financial solutions.

**Components of FINTECH Integration Used in the Study**

**Digital Payments**

Digital payments in F&B firms refer to the use of systems and platforms such as mobile money, online banking, POS terminals, and QR codes to facilitate cashless transactions between customers and businesses. These technologies provide faster, safer, and more convenient payment methods in restaurants, coffee shops, and other food service establishments. Sanyaolu et al. (2024) find that digital payments improve service efficiency and enhance customer satisfaction by simplifying transactions and reducing reliance on cash. Similarly, Ezeocha (2024) notes that digital

payment systems increase access to banking services and promote transparency, particularly for small- and medium-sized enterprises. Amadi (2025) adds that, in F&B firms, digital payments support service innovation, streamline operations, and enhance competitiveness in a technology-driven environment.

**POS Integration**

POS integration in F&B firms means linking payment systems with business tasks like sales, stock, and managing customers through digital POS tech. It lets restaurants and food places process payments, record payments, and watch sales on their own in real time. Kemebaradikumo and Ekankumo (2024) state that POS integration makes operations work better and services better by linking payment options with stock and customer info. Amadi (2025) says that adding POS systems helps F&B firms lower human mistakes, make payments faster, and make data-backed decisions better. Similarly, Iroakazi and Ade (2025) find that digital POS systems help make banking open and support fintech use among small and mid-size businesses. In short, POS integration in F&B firms means putting digital point-of-sale systems into business operations to make payments work better, service quality higher, and management better.

**Service Innovation**

Service innovation in F&B firms refers to new or better ways of giving services that make customers happier, work smoother and are more competitive. It means taking on new tech, methods, or business ways to improve how food and drinks are ordered, made, and served. Amadi (2025) expresses that service innovation lets F&B firms react to changing customer wants through new ideas like online ordering, digital payments, and personal touches. Kemebaradikumo and Ekankumo (2024) mention that it means making new service ways that add worth and set firms apart in a competitive world. Similarly, Sanyaolu et al. (2024) point out that tech-driven innovations like fintech and automation—are main reasons for service changes in the F&B world now. So, service innovation in F&B firms means using new ideas and tech to improve service giving, customer experience, and how well the business does.

**Components of Service Innovation**

**Customer Transactions**

Customer transactions in F&B firms mean the exchange between customers and businesses, involving ordering, paying for, and getting food and drink products or services. These payments can happen in person or online through places like POS systems, apps, or online services. Amadi (2025) states that customer transactions show the point where value is changed and customer happiness is decided through service quality and payment ease. Iroakazi and Ade (2025) find that going digital has changed customer transactions by making payments faster, cashless, and more open. Ezeocha (2024) stresses that tech-run transactions help more people get banking services and make things work better, mostly for small and mid-size businesses. All in all, customer transactions in F&B firms mean the money and service getting together between customers and firms, made better by digital payment and service systems.

**Operational Efficiency**

Operational efficiency in F&B firms refers to how well high-quality products and services are given using as little as possible in resources, time, and cost, while keeping customers happy and making money. It means making processes like getting, making, serving, and payment systems work smoothly to get things working best. Amadi (2025) finds that operational efficiency in F&B firms is gotten through new ideas and tech use that lower waste and make service quick. Kemebaradikumo and Ekankumo (2024) say that working well lets firms raise how much they do, lower costs, and respond fast to what the market wants. Similarly, Sanyaolu et al. (2024) point out that adding fintech and digital tools makes money better and makes operations better in businesses that give services**.**

**Theoretical Framework**

The study was based on Teece, Pisano and Shuen (1997).

The Dynamic Capabilities Theory (DCT), from Teece, Pisano, and Shuen (1997), focuses on a firm's skill to add, build, and change inside and outside strengths to deal with fast-changing settings. For food and drink firms in Cross River State, Nigeria, this theory gives a helpful base for knowing how groups can use Fintech integration to push service innovation and stay competitive in a digital setting.

Fintech tech like mobile payments, digital wallets, online banking, and auto billing systems are changing how firms handle banking payments and connect with customers. Using the Dynamic Capabilities Theory, these firms can make their sensing, seizing, and changing skills better:

i. Sensing Skills: Firms must always find and judge new Fintech trends and chances in the banking world. This means watching what customers want for digital payments, changes in rules, and tech innovations that can make service better.
ii. Seizing Skills: Once chances are found, firms need to take on and put into place Fintech answers such as adding mobile POS systems, contactless payments, or data study to make payment speed, ease, and customer happiness better.
iii. Changing Skills: To keep innovation going, firms must change current ways and resources to match digital goals. This might mean worker training, upgrading tech spaces, and changing service plans to take in new Fintech-driven operations.

By making strong dynamic skills, food and drink firms in Cross River State can react better to market changes, make banking more see-through, and make new service events that make customer loyalty stronger. So, the Dynamic Capabilities Theory shows how important it is to be able to change and always make new things as important things for doing well in Fintech integration and service change**.**

**Empirical Review**

Mohammed et al. (2022) studied how payment system innovations affect how well banks in Nigeria do, using past data. The study checked all banks in Nigeria. Data came from reports from Nigeria's central bank. The study used a method on data from 2007 to 2020 to see how payments and bank money doing are linked. The results said mobile payment and POS payments have good effects on banks in Nigeria, while one payment type has bad effects. The study's results will help people in charge and at the banks make choices about new plans for payments.

Arinze-Emefo & Ibrahim (2023) studied how cashless banking has gotten more liked over time, banks rely on deposits. The study looks at how cashless banking and bank doing are linked. The study uses numbers from bank reports from 2016-2020. The study checks things like bank profits and costs. The study's results will help banks and leaders decide about cashless banking.

Ehiedu et al. (2023) studied how e-payment systems affect how well banks in Nigeria do. They looked at mobile payment, ATMs, and POS from 2012 to 2016. The study found that e-payments do not have an effect on how well banks in Nigeria do.

Okoro (2023) studied how some e-payment tools affect the Nigerian economy. Using data from 2006 – 2011, the study found that ATMs, PoS, and Internet are linked to how well the Nigerian economy works. The study also said that mobile payments are not linked to how well the Nigerian economy works during that time.

Pueblos & Timoteo (2023) studied how e-payment systems affect small business owners in Taguig City. The study used surveys and found that good e-payment systems are easy to use and make payments more safe. The study also said e-payment systems can help lift sales and make payments easier. But, the study found tech problems are common when using e-payment systems.

Oyolola et al. (2023) studied how managing customers online affects keeping bank customers. The study got answers from 380 customers and found that online customer service has a good effect on keeping customers. The study ends by saying that online customer service helps make customers happier. The study says banks should make their online customer service better to keep customers.

Mukesh & Apratul (2018) studied how well POS data works in running the supply chain. Giving customers a good feeling is key to success. POS systems handle retail payments. Reducing costs, keeping from running out of stock, and making more sales are goals. This study looked at how well POS data works in running the supply chain in India. The study checked POS data and ranked stores by how they use POS data in making choices.

Oyebode el ta. (2025) studied how adding AI to POS systems helps manage stock in real time. Managing stock well is very important for small stores. AI can help by watching stock in real time and making stock control automatic. This article talks about how AI helps make stock easier to manage and saves money.

Sakiru (2022) studied POS types and how well they work for business. POS systems record sales. They give businesses more data and help them learn about customers. The paper ends by saying that POS systems are safe and sound for business and let customers pay easily.

Joseph el ta. (2024) studied a web-based Smart Restaurant POS that uses IoT, e-commerce, and stock management in Iloilo City. The system watches sales in real time and makes stock easier. The system used a method to keep making things better. People liked the system and said it was easy to use and helped make things work better.

Lawi el ta. (2019) studied how electronic POS systems affect how well hotels in Nakuru County work. The study found that EPoS data and payment tracking had a good effect on hotels.

**Gap in Empirical Review**

This study looked at past papers and saw that none of them were in Cross Rivers State, where this study is. These papers used other ways to study, but this study would use pearson correlation. This study would highlight the importance of Fintech Integration and Service Innovation of food and drink firms in Cross Rivers State.

**Methodology**

This study looked at four food and drink firms. The study used a group of 710 people and surveyed 251 of them. 248 people answered the surveys well. The study checked if the surveys were valid and reliable. The study gave out the data and then analyzed..

**The relationship between Digital Payments and customer transactions of food and beverage firms in Cross Rivers State**

**Table 1: Responses on the relationship between Digital Payments and customer transactions of food and beverage firms in Cross Rivers State**

| | | 5<br>SA | 4<br>A | 3<br>N | 2<br>DA | 1<br>SD | ∑FX | -<br>X | SD | Decision |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Mobile banking has significantly enhanced the accuracy of transaction processing in deposit money banks across the South-South of Nigeria by minimizing human errors and automating financial operations | 525<br>105<br>42.3 | 188<br>47<br>19.0 | 198<br>66 26.6 | 24<br>12<br>4.8 | 18<br>18 7.3 | 953<br>248<br>100% | 3.84 | 3.84 | Agree |
| 2 | The adoption of mobile banking platforms has improved real-time transaction verification, ensuring that deposits and fund transfers are processed accurately and efficiently | 710<br>142<br>57.3 | 188<br>47 19.0 | 39<br>13 5.2 | 14<br>7 2.8 | 39<br>39 15.7 | 990<br>248<br>100% | 3.99 | 1.470 | Agree |
| 3 | Through mobile banking, customers in the South-South region experience greater reliability in their financial transactions, as digital systems reduce discrepancies common in manual processing | 605<br>121<br>48.8 | 188<br>47 19.0 | 156<br>52 21.0 | 14<br>7 2.8 | 21<br>21 8.5 | 984<br>248<br>100% | 3.97 | 1.256 | Agree |
| 4 | Deposit money banks leveraging mobile banking technologies have strengthened data accuracy and transparency, thereby boosting customer confidence in digital financial services. | 635<br>127<br>51.2 | 320<br>80<br>32.3 | 39<br>13 5.2 | 10<br>5 2.0 | 23<br>23<br>9.3 | 1027<br>248<br>100% | 4.14 | 1.211 | Agree |
| 5 | The integration of mobile banking solutions has led to seamless and precise transaction recording, supporting operational efficiency and trust in South-South Nigeria's banking sector | 705<br>141<br>56.9 | 220<br>55 22.2 | 15<br>5 2.0 | 8<br>4 1.6 | 43<br>43 17.3 | 991<br>248<br>100% | 4.00 | 1.491 | Agree |
| | **Total Grand mean and standard deviation** | | | | | | | **3.988** | **1.332** | |

***Source: Field Survey, 2025***

According to Table 1, 61.3 percent of respondents (152 out of 248) concurred that mobile banking has improved the accuracy of transaction processing in deposit money banks in the South-South region of Nigeria by cutting down on mistakes and automating operations (mean score: 3.84, standard deviation: 3.84). Also, 76.3 percent of respondents

(189) agreed that mobile banking platforms have made transaction verification faster, ensuring deposits and transfers are processed accurately (mean score: 3.99, standard deviation: 1.470). Because of mobile banking, customers in the South-South see their transactions as more reliable, since digital systems lower the chance of errors that often happen with manual processing. 67.8 percent of respondents (168) agreed with this, giving a mean score of 3.97 and a standard deviation of 1.256. Deposit money banks that use mobile banking tech have made data more accurate and clear, raising customer confidence in digital services. 83.5 percent of respondents (207) agreed (mean score: 4.14, standard deviation: 1.211). The use of mobile banking solutions has created easier and more exact transaction recording, aiding efficient operations and trust in the banking sector of South-South Nigeria. 79.1 percent agreed, with a mean score of 4.00 and a standard deviation of 1.491.

**The relationship between POS Integration and operational efficiency of food and beverage firms in Cross Rivers State**

**Table 2: Responses on the relationship between POS Integration and operational efficiency of food and beverage firms in Cross Rivers State**

| | | 5 SA | 4 A | 3 N | 2 DA | 1 SD | ∑FX | - X | SD | Decision |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | The use of Automated Teller Machines (ATMs) has greatly enhanced quick service delivery in deposit money banks by allowing customers to perform transactions without waiting in long queues | 435<br>87<br>35.1 | 352<br>88<br>35.5 | 15<br>5 2.0 | 52<br>26<br>10.5 | 42<br>42 16.9 | 896<br>248<br>100% | 3.61 | 1.474 | Agree |
| 2 | ATMs provide customers with round-the-clock access to banking services, thereby improving service speed and convenience beyond traditional banking hours. | 470<br>94 37.9 | 392<br>98 39.5 | 15<br>5<br>2.0 | 10<br>5<br>2.0 | 46<br>46<br>18.5 | 933<br>248<br>100% | 3.76 | 1.450 | Agree |
| 3 | The deployment of ATMs has reduced the workload on bank staff, enabling faster and more efficient service both inside and outside the banking halls | 610<br>122<br>49.2 | 444<br>111<br>44.8 | 15<br>5<br>2.0 | 4<br>2<br>0.8 | 8<br>8<br>3.2 | 1081<br>248<br>100% | 4.36 | .842 | Agree |
| 4 | Through automated cash dispensing and real-time transaction processing, ATMs contribute to the prompt handling of withdrawals, deposits, and balance inquiries | 540<br>108<br>43.5 | 508<br>127<br>51.2 | 12<br>4<br>1.6 | 16<br>8<br>3.2 | 1<br>1<br>0.4 | 1077<br>248<br>100% | 4.34 | .708 | Agree |
| 5 | The integration of ATMs into banking operations has strengthened customer satisfaction by ensuring quick, reliable, and accessible financial services | 445<br>89 35.9 | 456<br>114<br>46.0 | 12<br>4<br>1.6 | 50<br>25<br>10.1 | 16<br>16<br>6.5 | 979<br>248<br>100% | 3.95 | 1.167 | Agree |
| | **Total Grand mean and standard deviation** | | | | | | | **4.004** | **1.1282** | |

***Source: Field Survey, 2025***

According to Table 2, 70.6 percent of respondents (175 out of 248) concurred that Automated Teller Machines (ATMs) have improved the speed of service in deposit money banks. ATMs let customers do transactions without waiting, and the data shows a mean score of 3.61 with a standard deviation of 1.474. ATMs give customers constant access to banking, making service faster and easier at all times. 77.4 percent of respondents (192) agreed, giving a mean score of 3.76 with a standard deviation of 1.450.

The use of ATMs has lightened the load for bank workers, leading to quicker service in the bank and outside. About 94 percent of respondents (233) agreed, resulting in a mean score of 4.36 with a standard deviation of .842. ATMs assist in quick withdrawals, deposits, and balance checks with automated cash dispensing and real-time processing. Around 94.7 percent of respondents (235) agreed, and the mean score was 4.34 with a .708 standard deviation. ATM integration has also improved customer happiness by ensuring quick, reliable, and easy-to-reach financial services, with 81.9 percent of respondents (203) in agreement and a mean score of 3.95 with a standard deviation of 1.167.

**Test of Hypotheses**

**Digital Payments have significant relationship with customer transactions of food and beverage firms in Cross Rivers State**

**Table 3: One-Sample Kolmogorov-Smirnov Test**

| | | Mobile banking has significantly enhanced the accuracy of transaction processing in deposit money banks across the South-South of Nigeria by minimizing human errors and automating financial operations. | The adoption of mobile banking platforms has improved real-time transaction verification, ensuring that deposits and fund transfers are processed accurately and efficiently. | Through mobile banking, customers in the South-South region experience greater reliability in their financial transactions, as digital systems reduce discrepancies common in manual processing. | Deposit money banks leveraging mobile banking technologies have strengthened data accuracy and transparency, thereby boosting customer confidence in digital financial services. | The integration of mobile banking solutions has led to seamless and precise transaction recording, supporting operational efficiency and trust in South-South Nigeria's banking sector |
|---|---|---|---|---|---|---|
| N | | 248 | 248 | 248 | 248 | 248 |
| Uniform Parameters[a,b] | Minimum | 1 | 1 | 1 | 1 | 1 |
| | Maximum | 5 | 5 | 5 | 5 | 5 |
| Most Extreme Differences | Absolute | .423 | .573 | .488 | .585 | .569 |
| | Positive | .073 | .157 | .085 | .093 | .173 |
| | Negative | -.423 | -.573 | -.488 | -.585 | -.569 |
| Kolmogorov-Smirnov Z | | 6.668 | 9.017 | 7.684 | 9.208 | 8.954 |
| Asymp. Sig. (2-tailed) | | .000 | .000 | .000 | .000 | .000 |

a. Test distribution is Uniform.

b. Calculated from data.

***Source: Researchers' computation from Field Survey Data, 2025***

**Decision Rule**

If the calculated Z-value is greater than the critical Z-value (i.e $Z_{cal} > Z_{critical}$), reject the null hypothesis and accept the alternative hypothesis accordingly.

**Result**

With Kolmogorov-Smirnon Z – value ranges from 6.668 < 9.017 and on Asymp. Significance of 0.000, the responses from the respondents as display in the table is normally distributed. This affirms the assertion of the most of the respondents that **Digital Payments had significant positive relationship with customer transactions of food and beverage firms in Cross Rivers State**

**Decision**

Furthermore, comparing the calculated Z- value ranges from 6.668 < 9.017 against the critical Z- value of 0.000 (2-tailed test at 95 percent level of confidence) the null hypothesis were rejected. Thus the alternative hypothesis was accepted which states that **Digital Payments had significant positive relationship with customer transactions of food and beverage firms in Cross Rivers State**

**POS Integration has significant relationship operational efficiency of food and beverage firms in Cross Rivers State**

**Table 4: One-Sample Kolmogorov-Smirnov Test**

| | | The use of Automated Teller Machines (ATMs) has greatly enhanced quick service delivery in deposit money banks by allowing customers to perform transactions without waiting in long queues. | ATMs provide customers with round-the-clock access to banking services, thereby improving service speed and convenience beyond traditional banking hours. | The deployment of ATMs has reduced the workload on bank staff, enabling faster and more efficient service both inside and outside the banking halls. | Through automated cash dispensing and real-time transaction processing, ATMs contribute to the prompt handling of withdrawals, deposits, and balance inquiries. | The integration of ATMs into banking operations has strengthened customer satisfaction by ensuring quick, reliable, and accessible financial services |
|---|---|---|---|---|---|---|
| N | | 248 | 248 | 248 | 248 | 248 |
| Uniform Parameters[a,b] | Minimum | 1 | 1 | 1 | 1 | 1 |
| | Maximum | 5 | 5 | 5 | 5 | 5 |
| Most Extreme Differences | Absolute | .456 | .524 | .690 | .698 | .569 |
| | Positive | .169 | .185 | .032 | .004 | .065 |
| | Negative | -.456 | -.524 | -.690 | -.698 | -.569 |
| Kolmogorov-Smirnov Z | | 7.176 | 8.255 | 10.859 | 10.986 | 8.954 |
| Asymp. Sig. (2-tailed) | | .000 | .000 | .000 | .000 | .000 |

a. Test distribution is Uniform.
b. Calculated from data.

***Source: Researchers' computation from Field Survey Data, 2025***

**Decision Rule**

If the calculated Z-value is greater than the critical Z-value (i.e $Z_{cal} > Z_{critical}$), reject the null hypothesis and accept the alternative hypothesis accordingly.

**Result**

With Kolmogorov-Smirnon Z – value ranges from 7.176 < 10.859 and on Asymp. Significance of 0.000, the responses from the respondents as display in the table is normally distributed. This affirms the assertion of the most of the respondents that **POS Integration had significant positive relationship operational efficiency of food and beverage firms in Cross Rivers State**

**Decision**

Furthermore, comparing the calculated Z- value ranges from 7.176 < 10.859 against the critical Z- value of 0.000 (2-tailed test at 95 percent level of confidence) the null hypothesis were rejected. Thus the alternative hypothesis was accepted which states that **POS Integration had significant positive relationship operational efficiency of food and beverage firms in Cross Rivers State**

**Discussion of Findings**

From the result of hypotheses one, the calculated Z- value ranges from 7.176 < 10.859 against the critical Z- value of 0.000 From the result of hypotheses one, which implies that POS Integration had significant positive relationship operational efficiency of food and beverage firms in Cross Rivers State, Nigeria. In support of the result, in the literature, Mohammed et al. (2022) conducted a study on the payments system innovations on the performance of commercial banks in Nigeria, *ex post factor* research design was adopted for the study. The population of the study comprises all the banks operating in Nigeria The results of the study will fill the knowledge gap and will benefit both regulators and operators in making decision-making process and development of new policies that will aid the promotion of innovative products for safe reliable, and credible payments system and in identify payments system technology, projects and initiatives that are significantly viable, respectively. Arinze- et al. (2023) conducted a study on the Cashless banking has gained popularity over the years, with the increasing adoption of digital payment methods, such as mobile payments, internet banking, and electronic fund transfers.. The findings will provide

insights into the impact of cashless banking on the performance of deposit banks and the factors that influence this relationship.

From the results of Hypothesis Two, the calculated Z-value ranges from 6.668 to 9.017 against the critical Z-value of 0.000, which implies that digital payments have a significant positive relationship with customer transactions in food and beverage firms in Cross River State, Nigeria.

In support of this finding, Ehiedu et al. (2023) examined the effect of e-payment systems (EPS) on the efficiency of banks in Nigeria. Their analysis reported a p-value of 0.333, indicating that there is no discernible effect of EPS on banking efficiency in Nigeria. Okoro (2023) investigated the impact of selected e-payment instruments on the intermediation efficiency of the Nigerian economy and found a significant relationship between ATMs, PoS systems, internet services, and the intermediation efficiency of the Nigerian economy.

Pueblos and Timoteo (2023) studied the impact of e-payment platforms among selected micro-entrepreneurs in Taguig City. They found that an effective e-payment platform is characterized by ease of learning, control, and navigation, as well as enhanced security for financial transactions. The study also revealed that e-payment platforms can increase sales, improve collection convenience, and simplify salary disbursement. However, technical issues were identified as the most common challenges encountered in using e-payment platforms.

**Conclusion**

The study concluded that Digital Payments and POS Integration had significant positive relationship with customer transactions and operational efficiency of food and beverage firms in Cross Rivers State, Nigeria. The integration of financial technology (Fintech) has become a key driver of service innovation among food and beverage firms in Cross River State, Nigeria. By adopting digital payment systems, mobile banking, and data-driven financial solutions, these firms have enhanced operational efficiency, improved customer convenience, and strengthened financial management. Fintech integration not only streamlines transactions but also fosters innovation in customer service and business models. Therefore, sustained investment in digital infrastructure, staff training, and regulatory support is essential to fully harness the benefits of Fintech for the growth and competitiveness of the food and beverage industry in the state.

**Recommendations**

Based on the findings, the following recommendations were proffered

i. Food and beverage firms in Cross River State should invest in secure and user-friendly digital payment platforms to enhance transaction efficiency, build customer trust, and improve overall service experience.
ii. Food and beverage firms in Cross River State should adopt and regularly upgrade Point-of-Sale (POS) systems to streamline sales processes, reduce transaction errors, and enhance overall operational efficiency.

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