**Impact of retailer's deployment of mobile technology on supply chain integration in Osogbo, Nigeria.**

Authors

**Ojo, Aderonke Julian, & Ajayi, Adeyinka Peter**

Affiliation:

Department of Transport Management, Redeemer's University, Ede, Osun State, Nigeria

**Abstract**

*This research assessed the effect of retailers' deployment of mobile technology (mobile telephony, social media, and digital payment platforms) on supply chain integration (SCI) in Osogbo Metropolis, Nigeria. A quantitative method was adopted for this study. The impact of retailer's deployment of mobile telephony, social media, and digital payment platforms on supply chain integration (SCI) in Osogbo Metropolis, Nigeria, was analysed using Partial Least Squares SEM (PLS-SEM) with the aid of the SmartPLS-3 software SEM. According to the R-squared value of 0.571, the construct variables (DPP, MT, and SM) collectively account for 57.1 per cent of the variation observed in the exploratory variable (SCI). Suggests a good model fit. The study results showed that FMCG retailers' adoption of mobile technology in the three areas of mobile telephony, digital payment platforms, and social media has no effect on the success of supply chain integration and does not considerably affect the achievement of supply chain integration.*
*Keywords: supply chain integration, mobile telephony, digital payment platform, social media, fast-moving consumer goods, retailers.*

**Keywords:** Migration; Humanitarian; Development; Issue; Nigeria

## Introduction

Supply chain Integration has been changing since technologies began to develop. Mobile telephony is one of these recent technologies that strongly influences business. Earlier, people used mobile phones for a long time for communication. In addition to communication and entertainment, it is also a tool for business transactions. In today's world, the mobile telephony sector has become a haven for social media marketing. For instance, according to Moyo (2022), Techzim reported in 2019 that Zimbabwe will have more than 1.2 million active social media users by the end of 2020. Thus, social media was viewed as a wise strategy for enlarging the field of competition and luring consumer behaviour. Despite all the efforts made by players in the Nigerian mobile phone industry to highlight the value of social media, the impact of social media on consumer behaviour has never been systematically studied. Given the numerous negative social media posts posted almost every day, the impact of social media marketing becomes more apparent. Another concern is how quickly users create new posts on social media platforms. According to Ndurura (2020), on average, social media users post more than thousands of messages daily. These messages significantly impact how other consumers are positively and negatively influenced.

In its most basic form, supply chain integration is the exchange of information between a seller and a buyer, frequently through integrated computer systems. For instance, the buyer's computer may receive real-time data from the retailer's computer (Alfian et al., 2019). Elements of supply chain integration are communication, customers, collaboration, and cooperation (Tarigan et al., 2021). The popularity of mobile phones worldwide, as well as their newer functions, represents a challenge for many companies in the field of customer service. The use of mobile phones among consumers has increased in a very dynamic way. It is no wonder that retailers have noticed a vast potential in mobile marketing, enabling the acquisition of new customers and maintaining those already acquired. The role of technologies in the supply chain took a new turn following the outbreak of the COVID-19 pandemic. Shankar et al. (2020), in their study, posited that due to the lockdowns aimed at containing the spread of coronavirus, retailers were forced to close down physical stores and move more rapidly towards technology-based solutions such as online ordering and execution, click and collect, and robot-assisted operations. Retailers are increasingly deploying mobile technology in order to remain competitive as well as meet the evolving demands of their customer base in Osogbo Metropolis,

Nigeria. Mobile technology, ranging from smartphones to portable inventory management devices, is becoming integral to the operation of retail businesses. These technologies are pivotal in data collection, inventory tracking, customer relationship management, and real-time communication within the supply chain network. Despite the rapid deployment of mobile technology in retail, there appears to be a gap in the systematic study of its impact on supply chain integration, especially within Nigerian metropolises like Osogbo. Supply chain integration is essential for efficiency, responsiveness, and customer satisfaction but can be complex and challenging. However, while the potential benefits are apparent globally, there is limited empirical evidence on how mobile technology deployment impacts supply chain integration in the Nigerian retail sector. Within this background, this study seeks to examine the role of communication and information technology on the supply chain performance of retailers in Osogbo, Nigeria. Thanks to new technologies, growing numbers of telecommunications companies are beginning to explore individual consumer preferences. This study investigated the impact of retailers' deployment of mobile technology on supply chain integration within the context of Osogbo, Nigeria. The specific objective of the study is to examine the extent to which mobile telephony, social media apps (Facebook, WhatsApp), and digital payment platforms impacted the supply chain integration activities of FMCGs in Osogbo.

## Literature Review

In today's world, the mobile technology sector has become a haven for social media marketing. Thus, social media was viewed as a wise strategy for enlarging the field of competition and luring consumer behaviour. Despite all the efforts made by players in the Nigerian mobile phone industry to highlight the value of social media, the impact of social media on consumer behaviour has never been systematically studied. Given the numerous negative social media posts posted almost every day, the impact of social media marketing becomes more apparent. Another concern is how quickly users create new posts on social media platforms. According to Ndurura (2020), on average, social media users post thousands of messages daily. These messages significantly impact how other consumers are positively and negatively influenced. The use of internet-based media that enables people to participate in the marketing, selling, comparing, rating, purchasing, and sharing of goods and services in offline and online marketplaces and communities is reiterated by Zhou et al. (2013). Therefore, using social media effectively, communicating a strong brand relationship, and incorporating the concept of brand personality. This technology enhances customer relationship building

through social and resource exchanges and positively impacts customer satisfaction. According to Lal et al. (2018), the literature has generally acknowledged the global adoption of information and communication technology (ICT) devices to improve supply chain integration performance.

Ramanathan et al. (2018) observed that business relationships between retailers and customers are improved when ICT devices like mobile phones and Geographical Positioning Systems (GPS) are combined with social media platforms to leverage a robust customer-centric relationship. Evidence also exists that buttressed the utilisation of social media by retail networks to design a model with exclusive service operations and marketing approaches that predicted customer loyalty among retailers in the United Kingdom (Ramanathan et al., 2018). Numerous researchers have explored the impact of mobile technology on supply chain integration. Alzoubi (2018) says mobile apps can enhance communication between wholesalers and retailers, reducing lead times. At the same time, Bhandari (2014), Farr-Wharton (2014), and Hole et al. (2019) assert that mobile technology plays a significant role in providing inventory visibility, which is crucial to supply chain responsiveness.

Furthermore, the role of mobile technology in enhancing supply chain integration was investigated by scholars such as Li et al. (2009), Saengchai and Jermsittiparsert (2019) and Tiwari (2021). The search revealed that using mobile applications for inventory management significantly improves stock record accuracy. An existing review on information technology tools and the supply chain performance of online retailers in the Calabar metropolis, Cross River State, Nigeria, by Awara et al. (2018) reveals that supply chain management begins and ends with the customers. The primary objective of supply chain integration and collaboration is to improve the performance of supply chain activities by adding value and meeting customer demands and needs in an effective and efficient manner. Furthermore, Kilay et al. (2022) focus on the implications of open innovation and proferred solutions for the digitalization of micro, small, and medium-sized enterprises (MSMEs) in Indonesia by analysing the effects of e-payment and e-commerce services on supply chain performance. The study's findings show that the performance of MSME supply chains in Indonesia is positively and significantly impacted by e-payment and e-commerce service variables.

Waheed et al. (2021) also appraised the effect of mobile social apps (MSAPs) on consumer's purchase attitudes, emphasising the role of trust and technological factors in developing nations. The study states

multidimensional insights for strategic management to explicitly focus on evolving MSAPs together with TF (technological factor) and TRF (trust factor) mechanisms to reinforce COPA (consumer's online purchase attitude) in a widespread and dynamic way in today's digital and competitive era. In a study on the impact of social media on consumer purchasing behaviour in Zimbabwe's mobile telephony industry, Makudza et al. (2020) found that social media influences consumers' propensity to make purchases. However, there is a need to stimulate consumer interest using the correct social variables. This study has adopted a digital platform based on innovation management theory to explain the impact of retailers' deployment of mobile telephoning, social media, and digital payment platforms on supply chain integration (SCI) among chain members in Osogbo Metropolis, Nigeria.

The theory suggested a new look at existing business processes, using digital applications to connect with customers and analytics to predict customer needs (Bouwer, 2017). A new paradigm was suggested for how organisations should manage the innovation of new products or services of value. With the increase in speed and agility to develop and deliver new complex technologies, big-data analytics and digital platforms became significantly essential to driving innovation and growth in the global competitive market (Burchardt et al., 2019). A digital platform is a new as-a-service business model ecosystem where online Internet-based cloud computing technologies are used as the infrastructure to connect collaborative and interactive networks of suppliers and consumers in real-time as the value proposition (Parker et al., 2016). In most cases, the new inventions developed within the digital platform ecosystem can be sold directly to consumers, which can be described as a B2C (business-to-consumer) business model. This model means that digital innovation platforms can become very complex.

**Methodology**

This study employed the positivist paradigm. It is also a cross-sectional study, where primarily sourced data were collected from a representative subset of the general population at a specific point in time. The research protocol was approved by the ethical committee of the Redeemer's University. All participants were informed of the aim of the research. This is in line with the guiding principles of the ethical protocol the research protocol also provided necessary reassurance of confidentiality for all participants in the study. Furthermore, to strengthen the confidentiality of the sourced information, all sourced data were documented by code, rather than the respondent's name.

The questionnaire which was comprised of five (5) sections contained pre-tested items which measured the study objectives. The information retrieved from the questionnaires was transferred into a Microsoft Excel (2010) workbook sheet which was the platform where the database management was done; this helped in putting the data in good shape. The statistical analyses were performed using IBM SPSS (Statistical Package for Social Sciences), version 23.

**Scale Development**

Some of the variables that are used in this study have been used in previous studies with objective scales or scientific measurements developed for them. The provision of scientific measurement for various SCI criteria has been an age-long practice in the field (Bodjrenou et al., 2019, Kapoor et al., 2021), and the contemporary works of other authors (Ajayi, 2016, Masa'deh et al., 2022, Ajayi, 2024). Since SCI is the exogenous variable, there is a need to provide operational constructs for the endogenous variables since there is a little evidence of their representation in the available literature. To this end, measurable operational definitions were provided for constructs that measured the impact of the deployment of mobile technology on the achievement of SCI using the works of various authors that have contributed to the existing literature in this regard (Amit et al., 2012, Ajayi et al., 2014, Ajayi, 2016, Attinasi et al., 2022, Ojo et al, 2023). The research team held a pre-field exercise which helped in ensuring the validity and reliability of the research instruments. Moreover, the Cronbach alpha test was done on each of the constructed multi-item instruments to observe their internal reliability and ability to effectively measure the research variables. As a rule of thumb, a Cronbach's alpha lower than 0.60 means poor reliability, values between 0.6 and 0.7 are acceptable and values equal to or higher than 0.70 indicate good scale reliability (Ajayi, et al., 2014, Ajayi, 2020, Chen et al., 2023). The SCI subscale which consisted of 9 items has a Cronbach's alpha of .85 ($a = .85$), and the influence of SES in SCI with a subscale with 10 items has a Cronbach's alpha of .81 ($a = .81$).

**Model Specification and Analysis**

To analyse the data, partial least squares techniques were applied. To achieve the stated objective, the model is at this moment specified in line with the under-listed null hypotheses (H03) that: Deploying mobile telephony, social media, and digital payment platforms (point of sale) does not significantly predict supply chain performance and integration.

### Assessment of the Measuring Model

The assessment for the SEM includes factor loadings, composite reliability, construct validity, and discriminant validity. The question items for the construct variables must satisfy these conditions before being considered fit in the SEM.

### Analysis of Data and Interpretation

**Table 1:** Factor Loadings, Construct Validity and Reliability

| Constructs | Items | Factor Loading | Cronbach's Alpha | Composite Reliability (CR) | Average Variance Extracted (AVE) |
|---|---|---|---|---|---|
| Digital Payment Platform (DPP) | DPP-1 | 0.882 | 0.832 | 0.901 | 0.754 |
| | DPP-3 | 0.956 | | | |
| | DPP-5 | 0.755 | | | |
| Mobile Telephoning (MT) | MT-1 | 0.904 | 0.778 | 0.900 | 0.818 |
| | MT-3 | 0.905 | | | |
| Social Media (SM) | SM-2 | 0.770 | 0.819 | 0.864 | 0.683 |
| | SM-4 | 0.744 | | | |
| | SM-5 | 0.950 | | | |
| Supply Chain Integration (SCI) | SCI-1 | 0.853 | 0.840 | 0.903 | 0.757 |
| | SCI-3 | 0.857 | | | |
| | SCI-5 | 0.900 | | | |

**Source:** SmartPLS-3 (2022)

Table 1 shows the items that were retained following the assessment of the measuring instrument. Items excluded did not meet the standardised factor loading requirement for an SEM. The results reveal that the factor loadings for each of the retained items are above the minimum required threshold of 0.7. Factor loading over 0.7 is desirable (Vinzi et al., 2010). Therefore, the items are fit to measure their respective construct variables.

Cronbach's alpha and composite reliability statistics help establish the internal consistency of the items when jointly measuring or reflecting their constructs. The minimum acceptable statistic for these tests is 0.7. The result reveals that Cronbach's alpha statistics for all the construct variables are above 0.7 (DPP = 0.83, MT = 0.78, SM = 0.82, & SCI = 0.84). Similarly, the composite reliability coefficients of the variables are also above the minimum benchmark of 0.7 (DPP = 0.90, MT = 0.90, SM = 0.86, SCI = 0.90). These results imply that none of the construct variables have reliability problems.

The average variance extracted (AVE) is widely used to show the convergent validity of construct variables. It establishes that the measures of a particular construct that should be connected are related. It is expected that each variable should have an AVE within the 0.5 threshold. The results in Table 1 show that all the constructs have AVEs above this threshold (DPP = 0.75, MT = 0.82, SM = 0.68, SCI = 0.76), establishing their convergent validity.

**Table 2:** Fornell-Larcker Criterion

| Construct | DPP | MT | SM | SCI |
|-----------|-----|-----|-----|-----|
| DPP | **0.868** | | | |
| MT | 0.552 | **0.904** | | |
| SM | 0.221 | 0.081 | **0.826** | |
| SCI | 0.276 | 0.206 | 0.236 | **0.870** |

**Source:** SmartPLS-3 (2022)

The Fornell-Larcker criterion is a widely accepted means of determining discriminant validity. It takes into account the square root of each construct's AVE. According to Fornell and Larcker (1981), discriminant validity is implied if the square root of the AVE for each construct is greater than any of the corresponding correlation coefficients. The result in Table 2 indicates that the square roots of the AVEs (bolded) are more significant than all the inter-construct correlations. It suggests that the constructs do not have a discriminant validity problem.

**Table 3:** Heteroriat-Monotrait (HTMT) Criterion

|  | DPP | MT | SM | SCI |
|---|---|---|---|---|
| DPP |  |  |  |  |
| MT | 0.686 |  |  |  |
| SM | 0.268 | 0.163 |  |  |
| SCI | 0.337 | 0.257 | 0.205 |  |

**Source: SmartPLS-3 (2022)**

The heterotrait-monotrait (HTMT) criterion is based on the multitrait-multimethod matrix. This method is an improvement over the Fornell-Larcker criterion. Discriminant validity is a concern if any HTMT ratio is equal to or above 0.9. The result of the HTMT ratios in Table 3 indicates that all the values are below the 0.9 threshold, suggesting that the discriminant validity condition is satisfied.

**Structural Model**
Figure 1: PLS Algorithm
Table 4: Model Fit
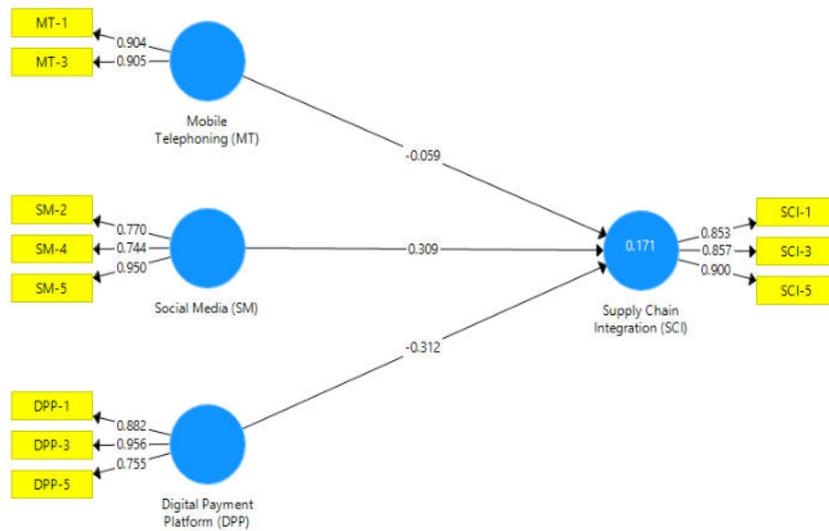
| | R Square | R Square Adjusted |
|---|---|---|
| Supply Chain Integration (SCI) | 0.571 | 0.563 |

**Source:** Smart PLS-3

Table 4 reveals the model fit result of the structural model. The R-squared value of 0.571 implies that the construct variables (DPP, MT, and SM) jointly explain 57.1 per cent of the total variation in the exploratory variable (SCI). Suggests a good model fit.

**Table 5:** Bootstrapping Result

| Path | Beta | T Statistics | P-values | Decision |
|---|---|---|---|---|
| Digital Payment Platform (DPP) -> Supply Chain Integration (SCI) | -0.312 | 5.085 | 0.000 | Supported |
| Mobile Telephoning (MT) -> Supply Chain Integration (SCI) | -0.059 | 0.941 | 0.347 | Rejected |
| Social Media (SM) > Supply Chain Integration (SCI) | 0.309 | 6.684 | 0.000 | Supported |

**Source: SmartPLS-3**

The result of the estimates in Table 5 shows a negative coefficient (β = -0.312) for the path involving digital payment platforms (DPP) and supply chain integration (SCI). Suggests an inverse relationship between the variables, such that a 100 per cent improvement in DPP usage results in a 31.2 per cent decrease in SCI. At the 5% level (p = 0<0.05), the path's t-statistic (t = 5.085) is statistically significant. The result implies that the retailer's deployment of a digital payment platform (point of sales) in supply chain integration is significantly predicted by the retailer's deployment of the digital payment platform (point of sales) in their operational transaction.

Similarly, there is a negative coefficient (β = -0.059) for the path involving mobile telephoning (MT) and supply chain integration (SCI). This similarity suggests an inverse relationship between the variables, where a 100 per cent increase in usage of MT only reduces SCI by 5.9 per cent. However, the t-statistic of this path (t = 0.941) is not statistically significant at the 5% level (p = 0.35 > 0.05). This result implies

that retailers' deployment of mobile telephoning in their operational transactions does not significantly predict supply chain integration. Furthermore, Table 5 shows a positive coefficient (β = -0.309) for the social media (SM) to supply chain integration (SCI) path. It suggests a direct relationship, where a 100 per cent improvement in the deployment of SM increases SCI by 31 per cent. At the 5% level (p = 0<0.05), the path's t-statistic (t = 6.68) is statistically significant. The result implies that retailers' deployment of social media in their operational transactions significantly predicts supply chain integration.

**Discussion of Results**

The analysis revealed that supply chain integration is significantly predicted by retailers' deployment of social media in their operational transactions because PLS-SEM makes no distributional assumptions. Since they show that the construct explains more than 50% of the indicator's variance, indicator loadings above 0.708 are advised; this offers acceptable indicator reliability because all of them are above 0.7. The conventional metric was proposed by Fornell and Larcker (1981). It was suggested to compare each construct's squared variance within (AVE) to the squared inter-construct correlation of that construct and all other reflectively measured constructs in the structural model in order to determine the shared variance between the constructs. The result of the Fornell-Larcker criterion indicates that the square roots of the AVEs (bolded) are more significant than all the inter-construct correlations.

These AVEs suggest that the constructs do not have a discriminant validity problem. Heterotrait monotrait (HTMT) of correlations (Henseler et al., 2015) is used to assess discriminant validity. The HTMT is calculated by dividing the heterotrait-heteromethod correlations, which are the mean value of the indicator correlations across constructs, by the monotrait-heteromethod correlations, which are the (geometric) mean of the average correlations for the indicators representing the same construct. Moreover, Discriminant validity problems occur when HTMT values are higher than 0.90. Therefore, HTMT in the table indicates that all the values are below the 0.9 threshold, suggesting that the discriminant validity condition is satisfied. The nonparametric approach PLS-SEM uses bootstrapping to estimate standard errors and calculate confidence intervals. Bootstrap confidence intervals were used to test whether the HTMT significantly differed from 1.0 or a reduced threshold value, such as 0.9 or 0.85 (Henseler et al., 2015) .

The result of the findings reveals that the measured constructs (DPP, SM, MT, and SCI) all have an excellent standing internally, the average variance extracted scores for each construct revealed high Cronbach's alpha and the composite reliability values, as well as good convergent validity. The HTMT criterion and the discriminant validity confirmed through the Fornell-Larcker criterion suggest that each construct is distinct in the study. Examining the relationship between DPP and SCI, the findings revealed that the negative coefficient indicates an inverse relationship; this suggests that an increase in the adoption of DPP correlates with a decrease in SCI.

An in-depth look into this result might make it appear counterintuitive since digital payment platforms are mainly supposed to modernise transaction processes and increase efficiency. However, there could be many reasons for this outcome; for instance, DPP implementation could face varied challenges, leading to SCI reduction. In a study, Beck et al. (2018) indicated that even though integrating digital payment systems can yield efficiencies, it might also require significant changes to business practices. The negative correlation between MT usage and SCI, which was insignificant, might suggest that more than mobile telephony is needed to drive impactful integration within supply chain activities in the retail sector, which aligns with the search of de Vass (2018). This result is in line with the work of Awa et al. (2015), Rogers (2016), and Hanelt et al. (2021), suggesting that mobile telephony needs to be part of a larger, more comprehensive digital transformation strategy to influence supply chain integration significantly.

Equally, the positive relationship between SM and SCI specifies that social media tools positively contribute to supply chain integration. This result aligned with past research findings by Habjan (2014) and Huang et al. (2020), which state that integrating social media can facilitate improved collaboration and better communication among supply chain partners and enhance information sharing, leading to improved supply chain performance.

Meanwhile, the structural model indicates that the independent variables (DPP, MT, and SM) explain significant variance in SCI. This model suggests that these technology-related variables influence supply chain integration to a substantial extent. The contradictory outcomes for DPP, MT and SM's beneficial influence provide evidence that technological interventions do not all contribute equally to improved supply chain integration. The observation was that the data could corroborate the overall trend of digitalisation and its beneficial effects on supply chains, which is consistent with Chae's (2018)

research. Given the unexpected negative correlation between DPP usage and SCI, subsequent research is warranted. Could these results be influenced by local factors specific to the Osogbo metropolis or the larger Nigerian context? What role do culture, infrastructure, or economic conditions play in adopting digital payment platforms and their effect on the supply chain? These are pertinent questions for ongoing research. The analysis using SmartPLS-3 revealed several conclusions regarding the impact of digital platforms on supply chain integration among retailers in Osogbo, Nigeria. The results identified strong internal consistency and reliability in the measurement of the constructs, along with a satisfactory level of model fit indicated by an R-squared value of 0.571 for SCI. These outcomes are in alignment with existing literature, such as that of (Ganbold et al., 2021), that underscores the positive impact of technology on supply chain operations.

Notably, the study presented an intriguing result with a negative coefficient between the usage of digital payment platforms (DPP) and SCI, suggesting an inverse relationship that could signal potential challenges in assimilating digital payment methods with existing supply chain processes. This finding deviates from the expected positive influence of technological adoption on supply chain integration. However, it could reflect specific contextual challenges within the Osogbo retail environment, such as infrastructure issues or compatibility problems with existing systems. It urges further investigation and implies that merely deploying digital technologies guarantees improved supply chain integration. Meanwhile, the positive relationship indicated by social media's (SM) use asserts the vital role of social platforms in enhancing supply chain coordination and communication, a sentiment echoed by contemporary research. This aspect of the findings aligns with the exertion of Kraus et al., (2021) on the current global narrative of the digital transformation of supply chains, emphasising the importance of social media as a facilitator of information sharing and collaboration.

On the other hand, the insignificant relationship between mobile telephoning (MT) and SCI could suggest that in Osogbo, more traditional business communication methods through mobile telephony are not substantially influencing supply chain integration or that the study does not succeed in best capturing the measure of impact. The results suggest that while digital payment platforms and social media significantly impact supply chain integration, the relationship between mobile telephoning and supply chain integration needs to be supported in the studied model. These findings align with recent research by Ivanov et al. (2019) on the evolving role of digital

technologies in shaping supply chain dynamics. This present study contributes to the literature by providing empirical evidence of the varying impacts of different digital platforms on supply chain integration within an emerging market context. These insights highlight that while technology adoption is generally beneficial, its integration into supply chain processes warrant careful consideration, due to its complex nature that can be influenced by numerous factors .

**Conclusion and Recommendations**

The paper examines the role mobile telephony, social media apps (Facebook, WhatsApp), and POS play in the supply chain integration activities of FMCGs in Osogbo, Nigeria. The impact of mobile telephony, social media apps (Facebook, WhatsApp), and POS, mainly those derived directly from consumers, has become crucial for efficient supply and demand management in supply chain integration. With information directly from the market, taking initiatives to improve supply chain integration is more accessible. Accomplishing tremendous success in supply chain integration in Nigeria will become a prerequisite to intensifying the use of new technologies to communicate with consumers and process and share information about customer behaviour, preferences, and general purchase patterns. At that point, the data collected from consumers through mobile phones will improve the effectiveness of retailers' marketing activities and enhance information about exact demand in all connectivity of supply chain integration.

Moreover, retailers should focus more on mobile telephony, social media apps (Facebook, WhatsApp), and POS to improve supply chain integration and provide a wide varieties of functions, such as increasing access to potential buyers and also providing market information . Mobile telephony, social media apps (Facebook, WhatsApp), and POS play significant roles in supply chain integration, which could provide significant economic and social benefits, adding value, reducing product losses, and making developing countries more globally competitive for organisations. To make their supply chain integration more effective, the act of promoting mobile telephony and social media apps (Facebook, WhatsApp) by feeling the customers' experience and encouraging customers' feedback.

**Implications and Future Research**

The search revealed that while adopting mobile technology in retail positively influences supply chain integration in several ways, not all mobile technologies have the same impact. Social media usage

positively affects integration, offering significant opportunities to enhance coordination and efficiency across the supply chain. In contrast, although widely adopted, digital payment platforms and mobile telephony have yet to show the expected positive impact on regional supply chain integration. Retailers and supply chain managers must look beyond adoption and address implementing technologies to realise their potential benefits. Planning and developing strategies that support the efficient use of technology in retail supply chains requires consideration of the findings of this study by policymakers, technology providers, and supply chain stakeholders. For practitioners in the Osogbo metropolis and similar emerging markets, investing in technology and the processes and training that ensure these tools are used to their total capacity may be beneficial. The unexpected findings regarding digital payment platforms warrant further local investigation, which could provide specific insights and lead to targeted interventions. In sum, the retail sector's technology deployment can significantly enhance supply chain integration, but this depends on the nature of the technology and the context of its use. Future research directions should explore the barriers to effective integration of digital payment platforms in emerging markets and devise strategies to harness mobile telephony more effectively for supply chain integration. Additionally, given the positive impact of social media, retailers in emerging markets should be encouraged to leverage these platforms for improved supply chain performance.

In conclusion, for retailers in Osogbo, the deployment of digital technologies is a multifaceted endeavour with varied implications for supply chain integration. While social media paves the way for enhancing supply chain communication, the expected benefits of digital payment platforms and mobile telephony need further exploration, especially regarding their integration into the existing supply chain structures. Retailers and supply chain stakeholders should approach the integration of digital technologies with a strategic mindset, ensuring that compatibility, infrastructure, and adoption barriers are adequately addressed to realise the full potential benefits of supply chain integration.

**References**

Ajayi, D. D. and Ajayi, A.P(2014). Trend analysis of crime incidences and crime vulnerability differentials on urban transport facilities in Ibadan. *Journal of Intelligent Transportation and Urban Planning.* 2(2): 85-87.

Ajayi, A. P. (2016). Analytical study of supply chain collaboration guiding forestry products supply in a developing economy. *International Journal of Business Performance and Supply Chain Modelling,* 8(4): 277-298.

Ajayi, A. P and Mazinyo, S. P (2020). Socio-economic situation and substance use disorder influence safety practices among truckers. *The Open Transportation Journal*, 14(1): 78-85.

Ajayi, A.P (2020). Uber: examination of socio-economic situation of its clienteles and security components in Lagos', *Journal of Transportation Security,* 13: 1–17, .

Ajayi, A.P. (2024) Performance analysis with structural equation modelling among food cold chain operators in Ibadan. *Int. J. Logistics Systems and Management.*  1-28 (In press).

Alfian, G., Ijaz, M. F., Syafrudin, M., Syaekhoni, M. A., Fitriyani, N. L., & Rhee, J. (2019). Customer behavior analysis using real-time data processing: A case study of digital signage-based online stores. *Asia Pacific Journal of Marketing and Logistics*, *31*(1), 265-290.

Amit, P and Kameshvari B (2012). A Study on Consumer Behaviour of Organized and Unorganized Retail Outlets in Vadodara City. *International Journal of Engineering and Management Sciences,* 3(4): 466-474.

Attinasi, M.G. Balatti, M. Mancini, M and Metelli, L (2022). Supply chain disruptions and the effects on the global economy. Published as part of the ECB Economic Bulletin, Issue 8/2021. (www.ecb.europa.eu).

Awa, H. O., Ojiabo, O. U., & Emecheta, B. C. (2015). Integrating TAM, TPB and TOE frameworks and expanding their characteristic constructs for e-commerce adoption by SMEs. *Journal of Science & Technology Policy Management*, 6(1), 76-94.

Awara, N. F., Udoh, E. G., & Anyadighibe, J. A. (2018). Information technology tools and supply Chain performance of online retailers in Calabar metropolis, Cross River State, Nigeria. *Global Journal of Social Sciences*, *17*, 55–67.

Beck, T., Pamuk, H., Ramrattan, R., & Uras, B. R. (2018). Payment instruments, finance and development. *Journal of Development Economics*, *133*, 162-186.

Bhandari, R. (2014). Impact of technology on logistics and supply chain management. *IOSR journal of business and management*, 2(17), 19-24.

Bodjrenou, K., Xu, M and Bomboma, K (2019). Antecedents of organizational commitment: a review of personal and organizational factors. *Open Journal of Social Sciences, 7*(5)

Bouwer, L. (2017). Innovation Management Theory Evolution Map. *Available at SSRN 3222848*.

Burchardt, C., & Maisch, B. (2019). Digitalisation needs a cultural change—examples of applying. Agility and open innovation will drive the digital transformation. *Procedia Cirp*, *84*, 112-117.

Chae, H.-C., Koh, E.C., & Park, K.O. (2018). Information technology capability and firm performance: Role of industry. *Journal of Information & Management*, 55(5), 525-546

Chen, M, Tong, X. Liu, H and Gu, J (2023).The impact of supply chain concentration on integration and business performance, *International Journal of Production Economics*, 257: 08781.

De Vass, T. (2018). *The "Internet of Things" enabled supply chain integration and performance: a mixed method investigation of the Australian retail industry* (Doctoral dissertation, Victoria University).

Farr-Wharton, G., Choi, J. H. J., & Foth, M. (2014, December). Food talks back: exploring the role of mobile applications in reducing domestic food wastage. In *Proceedings of the 26th Australian computer-human interaction conference on designing futures: The future of design* 352-361.

Fornell, C., & Larcker, D. F. (1981). Structural equation models with unobservable variables and Measurement error: Algebra and statistics.

Ganbold, O., Matsui, Y., & Rotaru, K. (2021). Effect of information technology-enabled supply chain integration on firm's operational performance. *Journal of Enterprise Information Management*, *34*(3), 948-989.

Habjan, A., Andriopoulos, C., & Gotsi, M. (2014). The role of GPS-enabled information in transforming operational decision making: an

exploratory study. *European Journal of Information Systems*, 23, 481-502.

Hanelt, A., Bohnsack, R., Marz, D., & Antunes Marante, C. (2021). A systematic review of the literature on digital transformation: Insights and implications for strategy and organizational change. *Journal of management studies*, *58*(5), 1159-1197.

Henseler, J., Ringle, C. M., & Sarstedt, M. (2015). A new criterion for assessing discriminant Validity in variance-based structural equation modelling. *Journal of the academy of marketing science*, *43*, 115-135.

Hole, Y., Pawar, M. S., & Khedkar, E. B. (2019, November). Omni channel retailing: An opportunity and challenges in the Indian market. In *Journal of Physics: Conference Series* (Vol. 1362, No. 1, p. 012121). IOP Publishing.

Huang, S., Potter, A., & Eyers, D. (2020). Social media in operations and supply chain management: State-of-the-Art and research directions. *International Journal of Production Research*, *58*(6), 1893-1925.

Ivanov, D., Dolgui, A., & Sokolov, B. (2019). The impact of digital technology and Industry 4.0 on the ripple effect and supply chain risk analytics. *International journal of production research*, *57*(3), 829-846.

Kapoor, S., Banerjee, S and Signor, P (2021). The role of retailers during brand scandals: Insights from a case study. *International Journal of Retail & Distribution Management 50(2)*: 276-298.

Kilay, A. L., Simamora, B. H., & Putra, D. P. (2022). The influence of e-payment and e-commerce Services on supply chain performance: Implications of open innovation and solutions for the Digitalization of Indonesia's micro, small, and medium enterprises (MSMEs). *Journal of Open Innovation: Technology, Market, and Complexity*, *8*(3), 119.

Kraus, S., Jones, P., Kailer, N., Weinmann, A., Chaparro-Banegas, N., & Roig-Tierno, N. (2021). Digital transformation: An overview of the current state of the art of research. *Sage Open*, *11*(3), 21582440211047576.

Lal, M. Shukla C. & Tarangini (2018). Study of Effectiveness of POS Data in Managing Supply Chain. *Industrial Engineering Journal11*(10), 1-9.

Li, G., Yang, H., Sun, L., & Sohal, A. S. (2009). The impact of IT implementation on supply chain integration and performance. *International journal of production economics*, *120*(1), 125-138.

Moyo, T., Proches, C. G., Mutambara, E., & Singh, U. G. (2022). The Nexus between Twitter, as a social blog, and social capital in corporate reputation behaviour for the Zimbabwe telecommunications industry. *Gender and behaviour*, *20*(1), 18827-18851.

Makudza, F., Mugarisanwa, C., & Siziba, S. (2020). The effect of social media on consumer Purchase behaviour in the mobile telephony industry in Zimbabwe. *Dutch Journal of Finance and Management*, *4*(2), em0065.

Masa'deh, R., Muheisen, I., Obeidat, B and Bany Mohammad, A. (2022). The Impact of Supply Chain Integration on Operational Performance: An Empirical Study. Sustainability, 14(24): 16634. MDPI AG.

Ndurura, N. (2020). The significance of social media as a marketing tool. *International Journal of Business and Environmental Studies*, *7*(1), 12-26.

Ojo A.J. Ogundipe S. Irinyemi, A.B. Shima-Kohol A. Ajayi, A.P. and Oluwakoya A. (2023). Fast Moving Consumer Goods retailers socioeconomic attributes and their Impact on Supply Chain Integration in Osogbo. *Innovations*. 75(1) 179-189.

Ojo, A. J, (2023). Effect of Supply Chain Integration on Performance of Fast-Moving Consumer Goods [FMCGs] Retailers in Osogbo Metropolis, Nigeria. (Unpublished PhD Thesis).

Parker, G. G., Van Alstyne, M. W., & Choudary, S. P. (2016). Platform revolution: Honetworked markets are transforming the economy, and how can you make them work for you? *WW Norton & Company*.

Ramanathan, U., Subramanian, N. & Parrot, G. (2018). The role of social media in retail network operations and marketing enhance customer satisfaction. *International Journal of Operations \& Production Management*. (37)105-123.

Rogers, D. L. (2016). *The digital transformation playbook: Rethink your business for the digital age*. Columbia University Press.

Saengchai, S., & Jermsittiparsert, K. (2019). Improving sustainability performance through internet of things capability in thailand: mediating role of IOT enabled supply chain integration. *International Journal of Supply Chain Management*, *8*(5), 572-584.

Shankar, V., Kalyanam, K., Setia, P., Golmohammadi, A., Tirunillai, S., Douglass, T. & Waddoups, R. (2021). How technology is changing retail. *Journal of Retailing*, *97*(1), 13-27.

Tarigan, Z., Jiputra, J., & Siagian, H. (2021). The effect of supply chain practices on retailer performance with information technology as a moderating variable. *International Journal of Data and Network Science*, *5*(1), 47-54.

Tiwari, S. (2021). Supply chain integration and Industry 4.0: a systematic literature review. *Benchmarking: An International Journal*, *28*(3), 990-1030.

Waheed, A., Zhang, Q., Farrukh, M., & Khan, S. Z. (2021). Effect of mobile social apps on Consumer's purchase attitude: role of trust and technological factors in developing nations. *Sage Open*, *11*(2), 21582440211006714.

Zhu, Q., Sarkis, J., & Lai, K. H. (2013). Institutional-based Antecedents and performance outcomes of internal and external green supply chain management practices. *Journal of Purchasing and Supply Management,* 19(2), 106–117.

www.**techzim**.co.zw/**2019**/04/global-report-there-are-12-million-zimbabweans-on-social-media/