Nature and Information Engineering Publishing

Journal of Emerging Markets and Management

https://journals.niepublish.com/jemm

REVIEW

Digital Commerce Adoption in Ghana: A Scoping Review of Trends, Drivers, Barriers, and Enablers

Vanessa Enyonam Amenyawu [*] ***, Vivian Amoako Osafo*** ***, Nathan Awelama Atigah*** ***, Naa Adjeley Sackey***

School of Economics and Management, Taiyuan University of Technology, Taiyuan 030024, China

ABSTRACT

The digital economy in Ghana has grown exponentially over the last decade, driven by rising rates of mobile and internet penetration, the growth of fintech and mobile money services, the unexpected pandemic, and the integration of social media into the Ghanaian economic landscape. Nevertheless, scientific evidence that synthesises and maps out literature on digital commerce in the region remains limited. This study conducts a scoping review of digital commerce in Ghana, focusing on empirical literature on the trends, barriers, and enablers that define e-commerce and social commerce adoption in Ghana. Following the five-stage Arksey and O' Malley framework for scoping reviews and the PRISMA ScR guidelines, a structured search was conducted across Scopus, ScienceDirect, Google Scholar, and Ghanaian repositories, covering publications from 2010 to 2025. 220 relevant studies were retrieved, of which 80 studies qualified for inclusion. The findings show that digital commerce in Ghana is uneven, hybrid, combining online and offline modes of commerce. We observed that firm-level adoption was driven by perceived performance benefits, management/government support, organisational readiness, and competitiveness, while consumer adoption was driven by perceived usefulness/convenience, effort/facilitating conditions, social influences, trust, and digital literacy skills. However, adoption remains constrained by high costs/finance, Information and Communication Technologies (ICT)/logistics infrastructure, regulatory fragmentation, and consumer protection issues remain as challenges for digital commerce in Ghana. This study contributes by providing a structured synthesis of fragmented evidence base by highlighting the role of infrastructure and institutional context in influencing digital adoption to inform more targeted policy interventions and future research directions.

*CORRESPONDING AUTHOR:

Vanessa Enyonam Amenyawu, School of Economics and Management, Taiyuan University of Technology, Taiyuan 030024, China;
Email: 2023580051@link.tyut.edu.cn

ARTICLE INFO

Received: 30 March 2026 | Revised: 5 August 2026 | Accepted: 12 August 2026 | Published Online: 19 August 2026
DOI: https://doi.org/10.63385/jemm.v2i3.101095

CITATION

Amenyawu, V.E., Osafo, V.A., Atigah, N.A., et al., 2026. Digital Commerce Adoption in Ghana: A Scoping Review of Trends, Drivers, Barriers, and Enablers. Journal of Emerging Markets and Management. 2(3): 40–64. DOI: https://doi.org/10.63385/jemm.v2i3.101095

COPYRIGHT

Copyright © 2026 by the author(s). Published by Nature and Information Engineering Publishing Sdn. Bhd. This is an open access article under the Creative Commons Attribution 4.0 International (CC BY 4.0) License (https://creativecommons.org/licenses/by/4.0/).

Keywords: E-Commerce; Ghana Digital Commerce; Small and Medium-Sized Enterprises (SME) E-Commerce Adoption; Barriers to Adoption; Mobile Money Integration

1. Introduction

The development of digital commerce has become an important part of modern-day business, influencing how companies conduct business and how consumers participate in commercial activities. E-commerce can no longer be neglected as an aspect of digital technology in today's world due to the way consumers purchase goods and services through online channels. E-commerce, according to the World Trade Organisation, is essentially all about the manufacture, marketing, selling, paying for, and delivery of goods and services via electronic means such as the Internet[1].

In today's digital economy, this has taken on many dimensions beyond what was initially thought, ranging from traditional web e-commerce through websites and e-commerce platforms, mobile commerce, which relies on apps and m-commerce-enabled websites, and even social media platforms such as WhatsApp, Facebook, Instagram, TikTok, etc., which enable buying and selling through their platforms. Together, these different channels increasingly shape how people discover products, compare prices, interact with sellers, and make payments.

Ghana's encounter with e-commerce began in the late 1990s and early 2000s, in parallel with the liberalization of the telecommunications sector and the gradual diffusion of internet access. Early pioneers such as ShopAfrica, which launched in 1998, and eshopafrica.com, which launched in 2001, sought to sell "made in Ghana" and other African products to online consumers, mainly abroad, demonstrating the potential of web-based platforms to extend market reach beyond national borders[2,3]. These entrepreneurial experiments unfolded against a backdrop of very low internet penetration, unreliable fixed-line networks, and high connectivity costs, which significantly constrained both supply and demand for online services[4]. As a result, early Ghanaian business websites in the 2000s functioned as basic "brochure-ware". A landmark survey of 100 corporate sites by Andoh and colleagues[5] found that the vast majority were "Level-1" informational sites providing product details, price lists, and company profiles, while only a small minority offered "Level-2" functionalities such as online ordering and payment, auctions, or product customization.

However, Ghana's digital economy has expanded progressively in the last decade, supported by increasing mobile phone and internet penetration, the spread of smartphones, and the rapid growth of mobile money and fintech. Mobile and internet access have not only enabled a variety of digital commerce practices, including web-based e-commerce (via firm websites and online marketplaces), mobile commerce (m-commerce) (using apps and mobile-optimized sites) and social commerce, conducted through or heavily mediated by social networks such as WhatsApp, Facebook, Instagram, and other emerging platforms but also digital transactions such as mobile money, e-banking and e-services. These developments have opened new channels for production, marketing, and consumption across sectors such as retail, fashion, hospitality, logistics, real estate, and services.

The global market for e-commerce sales continues to grow. The B2C e-commerce market grew from $3 trillion in 2019 to $5.2 trillion in 2024 and is projected to grow to $9.8 trillion by 2033; an average annual growth rate of 6.63% from 2025 to 2033[6]. Despite this global growth, there remains a gap between the digital potential and infrastructural limitations in Ghana's digital business strategy. Recent policy developments have emphasized the importance of digital commerce as a means of promoting economic transformation. For instance, Ghana's National E-commerce Strategy (2025–2029)[7] recognizes the importance of e-commerce in transforming the economy. Furthermore, the African Continental Free Trade Area (AfCFTA)[8] emphasizes the need to enhance incentives for cross-border digital trade. Both policies recognize the importance of digital trade in economic transformation, yet practical implementation challenges persist.

Research on e-commerce in Ghana has been seen to grow through studies conducted in information systems, marketing, entrepreneurship, legal aspects, logistics, and developmental issues. Yet, this body of literature remains frag-

mented across varying concepts remains fragmented across concepts, sectors, levels of analysis and nomenclature used (e-commerce, m-commerce, s-commerce, digital trade, online shopping, mobile money commerce). Studies often examine e-commerce, mobile commerce, and social commerce in isolation. Some employ different theoretical lenses and focus on specific populations such as SMEs or consumers without integration into a broader analytical framework.

While prior evidence syntheses have focused on the adoption of e-commerce in developing countries at large or ICT diffusion in Sub-Saharan Africa more generally, the nature of these reviews tends to aggregate evidence across several country contexts, which limits their ability to address specific country-level institutional arrangements, infrastructural conditions, and socio-cultural factors. Very few country-level reviews exist on the topic of digital commerce in Africa, and the limited number that exist is largely confined to addressing only specific aspects such as consumer behavioral intention or SME adoption in isolation. Moreover, the rapid growth of mobile money ecosystems and social commerce via informal platforms that characterize Ghana's digital economy has not been captured in Ghana-specific synthesis.

This study addresses this gap by conducting the first scoping review that combines empirical evidence on e-commerce, mobile commerce, and social commerce adoption trends, barriers, and enablers across multiple levels of analysis, sectors, and time periods (2010–2025) in the case of Ghana. By doing so, the study moves beyond sector-specific or level-specific studies to provide a structured, cross-cutting synthesis that can inform both theory development and policy design in Ghana, where digital commerce is expanding rapidly.

Guided by the Arksey and O' Malley framework, the review seeks to address four primary questions:

1. What is the current state of e-commerce and social commerce adoption in Ghana?
2. What barriers hinder the adoption of e-commerce and social commerce in Ghana?
3. What enablers or drivers facilitate the adoption of e-commerce and social commerce in Ghana?
4. What gaps exist in the current literature on digital commerce adoption in Ghana?

The next section discusses the research methodology used, followed by the synthesis of the findings, furthered by the conclusion and implications of the results.

2. Materials and Methods

An empirical review helps researchers pinpoint critical gaps in existing knowledge, highlight opportunities for meaningful contributions, and outline directions for future research[9]. A scoping review (SR) is a form of evidence synthesis that uses systematic and transparent methods to identify and map the breadth of evidence available on a particular topic, concept, or issue, usually irrespective of study design or source of evidence[10]. It aims to examine the extent, range, and nature of research on a topic, clarify key concepts and definitions in the literature, as well as identify gaps in knowledge and areas where further primary research or a full systematic review may be warranted.

The scope and range of literature on the digital commerce landscape is the focus of this review. As a result, the SR was deemed appropriate for its flexibility and usefulness in providing an in-depth and rigorous review of the use of digital commerce in Ghana. The review adapted the Arksey and O' Malley (2005) framework, which proposed the usage of a 5-stage framework to identify and map the available evidence in literature on a given topic under investigation. Elements of PRISMA and PRISMA-ScR were also incorporated to enhance transparency in reporting the search, screening, and inclusion process.

The application of the 5-stage framework in this study is outlined as follows.

2.1. Stage 1: Identifying the Research Questions

With the objective of investigating the trends, barriers, adoption, and gaps in research of digital commerce in Ghana, the research question posed was: What is the current state of e-commerce and social commerce adoption in Ghana? What barriers hinder the adoption of e-commerce and social commerce in Ghana? What enablers or drivers facilitate the adoption of e-commerce and social commerce in Ghana? What gaps exist in the current literature on digital commerce adoption in Ghana? To address these questions, the following objectives were derived. Firstly, the researchers set out

to identify empirical evidence on e-commerce and social commerce in Ghana. Secondly, map out and synthesize the trends identified and discuss. Finally, highlight gaps in the empirical evidence gathered.

2.2. Stage 2: Identifying Relevant Studies

2.2.1. Information Sources and Search Strategy

Searches were conducted in Scopus, ScienceDirect, Google Scholar, ResearchGate, and Ghana-based repositories such as university theses and institutional reports. The selection of these databases was guided by the need to capture interdisciplinary research on e-commerce, digital technologies, and development contexts.

The Search strings combined e-commerce and adoption terms with the Ghana context and limited results to English-language publications (2010–2025).

An example Scopus string was: TITLE-ABS-KEY ((“e-commerce” OR “electronic commerce” OR “social commerce” OR “online shopping” OR “digital commerce” OR “internet shopping” OR “online retail” OR “digital marketplace” OR “e-business”) AND (adoption OR acceptance OR diffusion OR utilization OR implementation OR intention OR perception OR attitude OR behavior) AND (Ghana)) AND PUBYEAR > 2009 AND (LIMIT-TO (LANGUAGE, “English”)). A simplified Google Scholar string was (“e-commerce” OR “social commerce” OR “digital commerce”) AND (adoption OR diffusion OR barriers OR enablers OR “drivers of adoption”) AND Ghana.

Additional keyword combinations were used to capture related phenomena such as digital trade and mobile commerce: “e-commerce” OR “electronic commerce” OR “online shopping” OR “digital trade” OR “social commerce” OR “mobile commerce” AND Ghana. Backward and forward citation tracking of key Ghanaian e-commerce studies on SME adoption, ICT and e-business, cybercrime, and consumer protection was used to identify further relevant publications.

2.2.2. Eligibility Criteria

Inclusion and exclusion criteria were established to serve as parameters for relevant publications during the screening process.

The inclusion criteria were identified as follows:

1. Empirical studies examining e-commerce, m-commerce, social commerce, or closely related digital transaction practices, such as online banking and mobile payments, when explicitly linked to commerce.
2. Studies focused only on Ghana-specific empirical findings.
3. Study type, which included peer-reviewed journal articles, conference papers, theses, and substantive reports with primary or secondary empirical data that is quantitative, qualitative, or mixed-methods.
4. Studies published between 2010 and 2025, capturing the period of significant mobile internet and mobile money expansion in Ghana.

For the exclusion criteria:

1. Conceptual or purely theoretical studies without empirical data.
2. Studies addressing general ICT or internet use without a clear commercial transaction component.
3. Studies in global or regional context that mention Ghana but do not provide Ghana-specific data.
4. Studies published before 2010.

2.3. Stage 3: Selection of Relevant Studies

All search results were uploaded to Zotero for duplicate checking and screening purposes. The screening of records was done in two rounds. In the first round, title and abstract screening were conducted to check for duplicates and studies outside the scope of the review against the eligibility criteria. At this stage, records were excluded if they were clearly outside the scope of the review (e.g., no Ghana-specific data, no commercial transaction component, purely theoretical or conceptual in nature, or published before 2010).

In the second round, full-text screening was applied to all records that passed the title and abstract stage. Full-text records were excluded if they did not meet the empirical data requirement, if Ghana-specific findings could not be disaggregated from broader regional or global analyses, or if the study did not address digital commerce adoption, barriers, or enablers as a primary focus.

In total, 220 records were found across all the databases. After removing 2 duplicates, 218 records proceeded to title and abstract screening. Of these, 32 were excluded at the title and abstract stage, leaving 186 records for full-text as-

sessment. All 186 full-text records were assessed against the eligibility criteria; 106 were excluded at this stage upon full-text review; 80 records remained eligible for data charting. The record screening and selection process has been illustrated through the PRISMA 2020 Flow Diagram in **Figure 1** below.

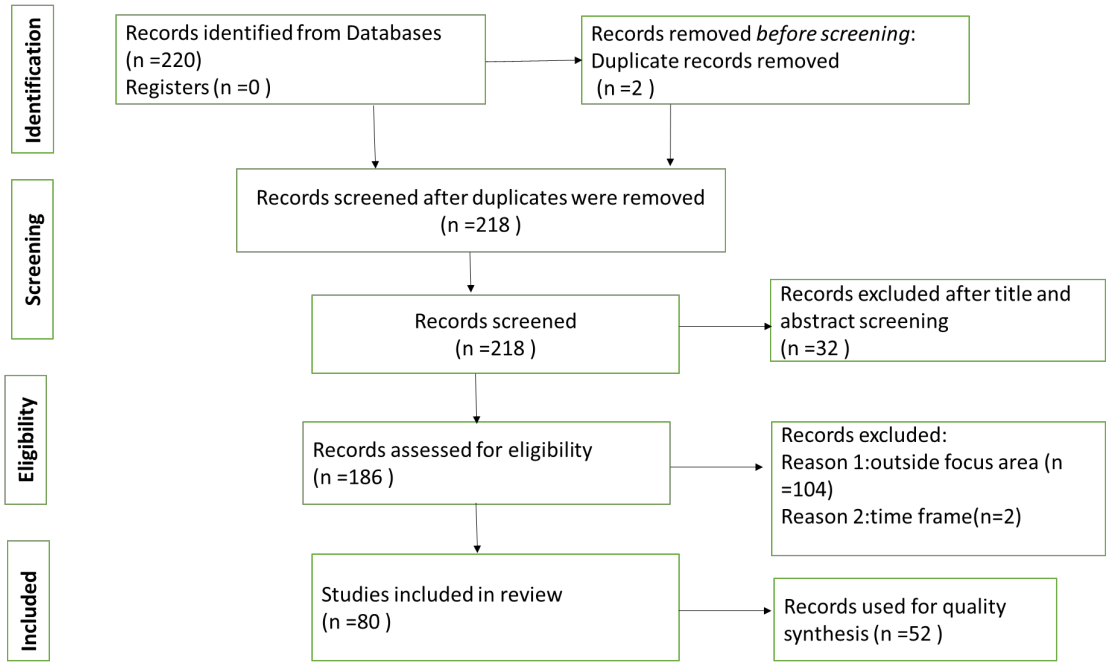


Figure 1. PRISMA Flow Diagram of the study selection process.

Unlike systematic reviews, which require formal quality assessment, the study employed a scoping review design, which sought to prioritise comprehensiveness and coverage over appraisal. Although a formal quality appraisal was not conducted, we ensured that the included studies were predominantly peer-reviewed and employed a range of methodological approaches. This diversity not only provided a broad perspective on the topic but also introduced variation in methodological rigor. Without formal appraisal, studies of varying methodological strength contributed equally to the synthesis, which should be considered when interpreting the findings.

2.4. Stage 4: Charting the Retrieved Data

Following the selection phase, data charting was conducted for the articles selected. Data charting involved systematic extraction and organization of key information from each of the articles into a structured Excel spreadsheet, aligned with the review's objectives and research questions. Arksey and O' Malley's guidance and subsequent scoping-review refinements informed the process. A structured charting template was developed and implemented in Microsoft Excel. The following key fields were charted from each of the articles: bibliographic details (author(s), year of publication, journal or outlet, document type: journal article, conference paper, thesis, report), study design and methods (quantitative, qualitative, or mixed-methods), data-collection methods (survey, interviews, focus groups, case study, secondary data), study population and setting (consumers, firms, SMEs) sector or domain (retail, fashion, manufacturing, logistics, agriculture, hospitality/tourism, banking/fintech) and geographical location within Ghana (regional, urban vs. rural; city vs. towns), digital commerce platform (web-based e-commerce, social commerce, mobile commerce, and related digital payment practices), theoretical/conceptual framework used (core models or lenses used) and the key findings/outcomes. A test run of the charting template was performed on a small sample of articles to refine categories and ensure consistency in data extraction. In line with scoping-review practice, the charting process was iterative. As familiarity with the corpus increased, fields were refined, subdivided, or expanded, and new categories were added where recurrent themes emerged that were not

adequately captured in the initial template. Adjustments to the charting form were documented to maintain transparency.

2.5. Stage 5: Collating, Summarizing, and Reporting Results

In the final stage of the review, the charted data were collated, summarized, and synthesized to generate an integrated overview of e-commerce and social commerce adoption in Ghana. This stage combined a descriptive, primarily quantitative mapping of the evidence base and a thematic, primarily qualitative synthesis of findings organized around the review questions on trends, adoption patterns, barriers, and gaps.

Thematic analysis was conducted inductively across all the included papers. All papers were systematically read in full, during which recurring concepts were identified, including adoption factors, growth patterns, and institutional policy and regulation. These concepts were progressively grouped according to their similarities and relationships, leading to the formation of broader themes. Following this process, a subset of 52 papers was identified as providing sufficiently specific and detailed evidence to contribute substantively to the emerging themes. To select the 52 papers, the authors followed an inductive coding approach. This was done by systematically reading each of the papers, then identifying repeated concepts such as adoption factors, growth patterns and institutional policy or regulation. These concepts were further categorized according to their similarities and relations, which resulted in the formation of the larger themes. Out of the 80 papers, 52 papers were selected because they provided specific and detailed evidence relevant to the themes identified without significant overlap among several themes, enabling better synthesis of themes in the discussion session subsequently. The authors, however, acknowledge that this method involved an inherent interpretative judgement because the criteria distinguishing between what is thematically relevant and what is not were based solely on a reading of the studies, rather than any kind of pre-selected exclusion criteria list.

3. Results

From the 220 articles identified from the databases, 2 records were removed as duplicates and 32 records were removed at the first stage of screening for eligibility. The second phase of screening resulted in 106 records being excluded, resulting in 80 studies being selected for data charting. The 80 records selected from the full-text assessment studies were imported into the Zotero reference manager. These 80 studies were subjected to descriptive and bibliometric analysis to map the research trends, geography, and methods in Excel. Subsequently, a subset of 52 papers was selected for in-depth thematic analysis. To answer our research question, the thematic analysis showed that empirical studies on e-commerce in Ghana could broadly be classified into five themes: evolution and trends in e-commerce, adoption, barriers, consumer behaviour, and policy (**Table 1**), which are discussed in detail in the sub-sections presented later.

Table 1. Classification of studies according to themes.

Themes	Sub-Themes	References
Adoption of E-Commerce	Consumer-level adoption and technology acceptance	Acheampong et al. [11]; Fosu et al. [12]; Ofori and Appiah-Nimo [13]
	SME/Firm-level adoption	Anabila et al. [14]; Newman [15]; Ocloo et al. [16]; Taylor and Owusu [17]; Mensah and Xu [18]
	Social commerce adoption	Owusu et al. [19]; Shi et al. [20]; Nutsugah et al. [21]
	Online banking/financial e-services	Adadevoh [22]; Jibril et al. [23]; Owusu et al. [24]; Baah-Acquah and Freeman [25]
Barriers/ Challenges of E-Commerce	Infrastructure and Implementation barriers	Adzroe and Ingirige [26]; Asare et al. [27]; Kumaning and Godfred [28]; Ocloo et al. [29]
	Institutional operational constraints	Otoo et al. [30]; Owusu-Adjei [31]; Attakora-Amaniampong et al. [32]; Mills and Baafi [33]
Evolution/Trends in E-Commerce in Ghana	Development and impact of e-commerce	Frimpong et al. [34]; Sampene [35]; Abubakari [36]; Tamakloe et al. [37]
	Emerging e-commerce models	Bemile et al. [38]; Frimpong and Gyamfi [39]; Kabo-Bah and Bannor [40]; Mannah-Blankson et al. [41]; Kumar et al. [42]

Table 1. *Cont.*

Themes	Sub-Themes	References
Consumer Behaviour and Trust	Consumer trust	Antwi [2]; Asante et al. [43]; Danquah and Dong [44]; Fan and Nunyuie [45]; Mintah [46]
	Consumer perception	Antwi et al. [47]; Apau and Koranteng [48]; Ofori [49]; El Koufi et al. [50]; Agyemang et al. [51]
Regulation/Policy	Consumer protection and legal frameworks	Acheampong et al. [52]; Dowuona-Hammond et al. [53]; Faith et al. [54]; Manteaw [55]
	Taxation, cybersecurity policy and digital governance	Abubakari [56]; Adu and Adjei [57]; Mensah et al. [58]; Mensah et al. [59]

Source: Authors' extraction table.

Overview of Studies

Since 2010, the number of studies on e-commerce in Ghana has steadily increased (**Figure 2**). 80 papers were represented in the literature. The increasing number of publications in this field from 2019 to 2025 reflects the growing interest in and recognition of the importance of digital commerce in Ghana.

This growth from 2019 was a result of three major reasons. First, the COVID-19 pandemic, which began in late 2019, created a necessity-driven adoption highlighting the need for more research into digital commerce possibilities. Second, the rapid expansion of mobile money systems and the usage of smartphones during this time lowered barriers to digital participation significantly. Thirdly, literature suggests that researchers, policymakers, and organizations became increasingly aware of the potential of digital commerce adoption for the overall growth of the economy.

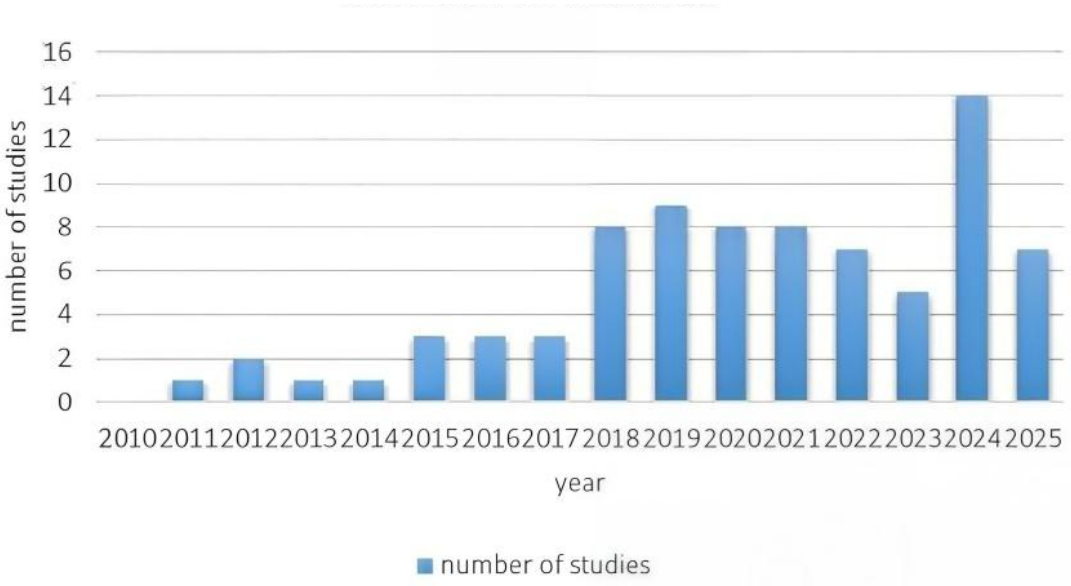


Figure 2. Overview of studies over the years.

Source: Authors' extraction table.

In addition, the types of commerce activity under 5 sections (e-commerce, social commerce, mobile commerce, mixed commerce, and digital marketing) further categorized the studies. **Figure 3** shows the number of studies across the types of commerce identified in the review. Overall, these studies revealed a clear upward trajectory for most categories, especially e-commerce, which experienced a pronounced rise in the number of studies from ranges of 1 to 3 studies per year before 2017 to 8–10 after 2017. Mobile commerce and mixed commerce remained relatively stable, showing only modest fluctuations over the period. Studies on digital marketing appeared only once in 2024, and the reason for this can be identified as either a lack of subsequent studies or a limitation in the dataset.

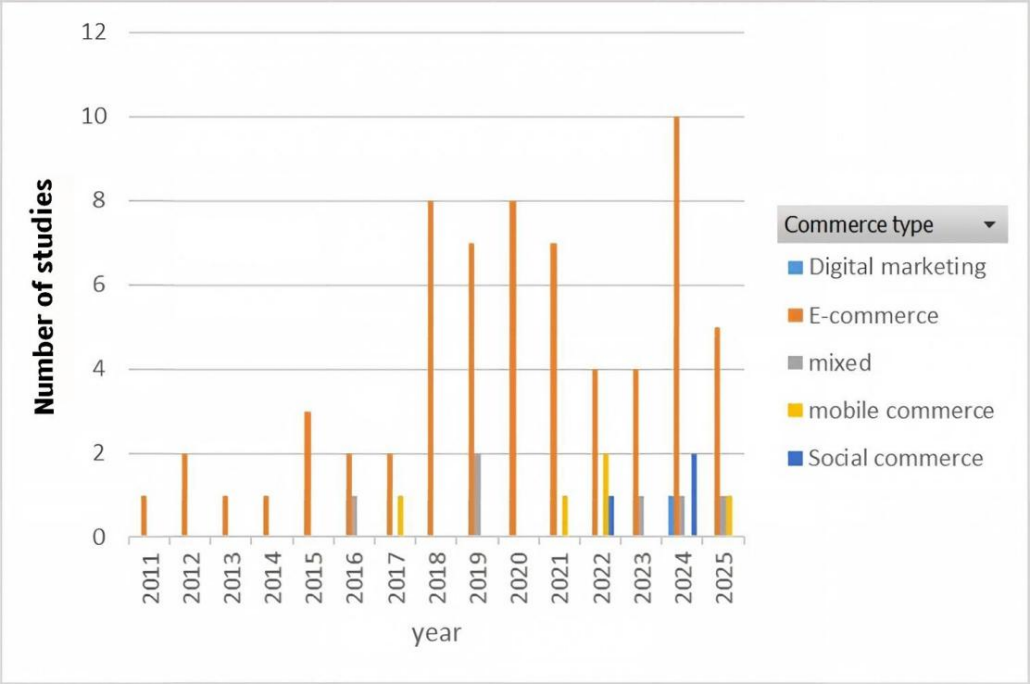


Figure 3. Classification of studies according to types of commerce.

Source: Authors' extraction table.

3.1. Growth Trends in E-Commerce and Social Commerce in Ghana

E-commerce in Ghana is seen to have evolved from nascent experimentation in the early 2010s to more widespread, though uneven, adoption between the late 2010s and early 2020s. Technological and infrastructural enablers, rather than a fully mature digital transformation, have primarily driven this growth trajectory.

Empirical evidence suggests that this growth can be attributed to the rise in mobile penetration, internet connectivity and mobile money usage, with recent estimates suggesting tens of millions of active internet users and penetration rates approaching two-thirds of the population, alongside strong growth in electronic transactions and mobile money interoperability volumes[60]. These have significantly lowered barriers to entry and enabled broader participation in digital commerce. This development has supported the emergence of a diverse and evolving platform ecosystem in which multinational and local players such as Jumia, Kikuu, Tonaton, and Jiji dominate consumer-facing markets. While most small and medium-sized enterprises (SMEs) have followed a gradual adoption, by initially adopting basic, informational, or "e-broadcast" web presences and slowly and gradually starting to upgrade to transactional and integrated e-commerce functionalities[61,62]. This pattern indicates that Ghana's digital expansion is better understood as an infrastructure-enabled but still limited process, rather than a fully integrated digital system.

To narrow it down, findings on e-commerce demand indicate that the growth of e-commerce has reflected in increased participation among specific groups depending on diverse factors such as users themselves as well as the perceived benefits of engaging in e-commerce. For instance, Gbeve[60], while studying the socio-economic condition of e-commerce, found a high level of awareness of the availability of e-commerce among smartphone users, who engaged in online purchasing and selling and use of mobile money and marketing using social media. Similar to the above observation but more specific, Frimpong et al.[34] showed that online shopping is growing particularly among millennials and males, with factors like performance expectancy and trust emerging as the main drivers of intention to use e-commerce. Even in the context of relatively low national Internet penetration in certain areas, Jibril et al.[63] found that perceived convenience, which is strengthened by supportive government infrastructure and favorable pricing structures, is central to initial adoption of online retail stores among consumers. Further indicating that, this growth in e-commerce is

not confined to highly connected populations but is also gradually emerging among users in less digitally developed environments. These findings collectively show a wide spread of consumer participation in e-commerce growth across diverse users over time; however, growth distribution is still uneven and tends to mainly benefit consumers who have more access to technology.

Growth trends are also not uniform among sectors, with some sectors showing a faster rate of digital commerce adoption compared to others. For instance, in some sector-specific analyses, early adoption trends are witnessed in industries like music and the creative sector due to the internet-based distribution systems, which have made them some of the earliest adopters of digital commerce [64]. Consumer study on the fashion industry revealed that fashion SMEs in Kumasi extensively employed mobile commerce and social media, reshaping their business models, advertising, and payment practices, and positioning the fashion sector as a leading adopter of e-commerce [65]. Similarly, other supportive industries like logistics and transport have grown in tandem with the growth in e-commerce by becoming part of the processes through the involvement of local and foreign players such as DHL, FedEx, and developing systems for conducting B2B transactions [2,66]. On the other hand, other sectors like the hospitality industry experience growth in digital commerce that is less complete, whereby the growth in technology adoption is evident but hampered by inadequate online payment systems and poor internet access [28]. From these patterns, it can be said sectorally that there are different growth trends progressing at varying speeds and influenced by various structural factors.

In addition to sectoral diversities, growth in e-commerce in Ghana is accompanied by geographical differences. Research findings from the Upper East Region of Ghana show that electronic commerce has been adopted in the undeveloped regions. This adoption takes place in the form of pure play and click and mortar forms of business. Nevertheless, these developments are hindered by the cost of access to data and lack of digital literacy [67]. In this regard, we observe that geographical expansion has been occurring, although still constrained by structural inequalities.

The rise of e-commerce in Ghana can be seen in the fast-growing trend of social commerce, which is another form of digital commerce. According to research findings, social media commerce has become widespread, especially among young people in Ghana who utilize Facebook, WhatsApp, and Instagram for advertising purposes, customer relations management, and payment coordination and product delivery [20]. In addition, it can be observed that some of the growth in digital commerce can be found beyond formal e-commerce sites and instead on less formal and more accessible digital platforms.

Further evidence from surveys and qualitative studies demonstrates that the adoption of social media and e-commerce (SMEA) is positively related to entrepreneurial intentions, with many youths and micro-firms particularly within industries like fashion, beauty, and information technology, relying on social commerce as an entry strategy for engaging in economic activities using minimum capital [20]. This shows that the development of digital commerce does not only lead to higher consumerism but also facilitates alternative modes of micro-entrepreneurship. Nonetheless, although the utilization of social commerce via informal channels is widespread, it lacks empirical documentation in the Ghanaian context, indicating a possible gap in the literature on the subject matter.

COVID-19 and Digital Commerce

The onset of the COVID-19 pandemic was the defining moment in the transformation of Ghana's e-commerce environment, not only due to its role as a disruptor but because it acted as an accelerator to push through a digital transition in a much faster manner. Although there has been ample research carried out on the role of pandemics as accelerators of digital change in other nations, there has been less research done specifically in relation to Ghana or even Sub-Saharan Africa, making a synthesis in this area necessary. From the readings undertaken in this literature review, one thing that becomes evident is that the coronavirus outbreak led to the greater use of e-commerce and its evolution from an ancillary means of purchasing goods into one of necessity. Studies conducted among Ghanaian consumers and businesses suggest that lockdowns forced a swift move to online shopping. Thus, institutionalizing the use of technology in everyday activities. This implies that there has been a fast-tracking of what could have taken time for consumers to adopt and incorporate into their daily routines

The key factor in the transition is the restructuring of factors that influence technology adoption in crises. The

empirical study carried out using a survey of employees and customers of online firms operating in Ga East[51] revealed that during the coronavirus outbreak, the usefulness of e-commerce, self-efficacy, and ease of use were significantly influential factors, whereas trust and security were found to be statistically insignificant. This result is counterintuitive to traditional technology acceptance, which assumes trust to be an important factor in adopting technology. Such a change in dynamic is understandable given the state of necessity brought about by the coronavirus outbreak. As face-to-face purchasing was difficult, consumers were more interested in the practicality of online purchases than the risks associated with them. Antwi et al.[68], in a bid to understand what drives online shopping among tertiary students in Ghana, found that the pandemic made e-commerce "more indispensable than ever", especially during lockdowns, by empirically showing that attitude and subjective norm influenced by online reviews and recommendations positively affect purchase intention, whereas perceived risk does not affect students' purchase intention in the crisis context. Under these scenarios, necessity minimized the significance of the risk element, making utility the key motivator behind adoption. This implies that adoption during a crisis is quite flexible and that theories such as Technology Acceptance Model (TAM) require reevaluation under crisis scenarios.

Apart from the individual-level adoption, the outbreak of the pandemic has also been accompanied by the emergence of a more profound digital relationship among SMEs and their customers. As a cross-sectional study of online SMEs located in the Accra-Tema region carried out during the height of the lockdown and when online shopping "had gained great momentum" reveals, the marketing strategy of these businesses, together with the quality of services they provided, was important for influencing customer satisfaction and loyalty through their e-channel[69]. Such an outcome contributed to the better retention of consumers and their greater dependency on digital tools. Clearly, the relationship between consumers and businesses went beyond simple transactions in favor of more meaningful relationships that revolved around the usage of e-channels. These suggests that the pandemic not only amplified the magnitude of online shopping but also improved the depth of digital interaction in the retail sector of Ghana.

Nevertheless, this progress was not equally shared, since existing structural limitations prevented some entities from fully taking advantage of the increased demand online. The study by Laar et al.[67] indicates persisting challenges in logistics inefficiencies, infrastructure inadequacies, and digital competency, especially for small enterprises and informal sectors. Although there was an upsurge in the uptake of online services, many firms did not have the capability to shift to the use of digital technologies. These discrepancies reflect the existence of a critical asymmetry: even though the onset of the pandemic stimulated the demand for services, the preparedness on the supply side was not equitable. Consequently, the gains of the growth in the usage of e-commerce are realized only by better-endowed firms.

At the same time, the pandemic facilitated an even greater expansion of the digital commerce industry to include not only payments but also logistics and policy reactions. Combining evidence from all around the world, Mensah's[4] research indicates that there has been a great shift towards using digital wallets, mobile money, and cashless transactions. Similarly, there have been innovations in the field of logistics in terms of drone-based delivery solutions. Research documenting Ghana's collaboration with Zipline[70] illustrates how drone technology, which was initially used for medical delivery services, has been envisioned as part of the future infrastructure required for e-commerce through innovative ideas like multi-firm drone terminal e-malls. The point here is that the coronavirus pandemic led not just to changed behavior, but also led to experimentation with advanced delivery technologies.

Concurrently, at the macro-fiscal level, fiscal policies like the imposition of electronic transaction tax (e-levy) demonstrate the government's effort to tap into the increasing use of digital financial services. According to Abubakari[56], the adoption of e-levy can be attributed to the financial crisis created by the pandemic, which led to the depletion of conventional tax bases, necessitating a policy adjustment towards taxing mobile money and internet transactions. Nonetheless, the potential negative impact on cost-sensitive individuals indicated by survey results demonstrates an inherent tension between such taxation risks and the sustainability of digital adoption.

3.2. Consumer and Firm-Level Adoption of E-Commerce

A mix of factors shapes the diffusion of e-commerce in Ghana from consumers, firms, and other systems. In this review, we classified the drivers for e-commerce adoption into two dimensions: consumer-based and SME firm-based. **Figure 4** illustrates the number of articles in each category.

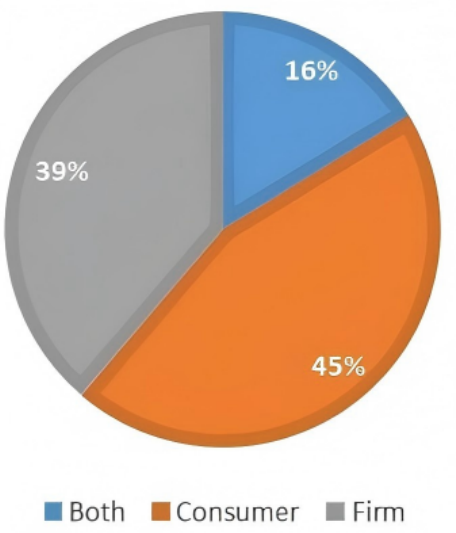


Figure 4. Classification according to study focus.
Source: Authors' extraction table.

From the figure, we identified that consumer-focused studies are more than firm-focused studies. This implies that compared to consumer behavior, SME e-commerce adoption is still relatively understudied. Existing research reveals that the adoption process involves both cognitive and context-based determinants. Cognitive determinants refer to the perceptions of usefulness and ease-of-use. Context-based determinants include issues related to trust, social influence, and infrastructure. This section covers all the findings discussed above under the recurring themes.

3.2.1. Consumer-Level Adoption Drivers and Enablers

The use of e-commerce services by consumers in Ghana can be grouped around five key recurring thematic clusters based on the literature. These include perceived usefulness and perceived ease of use, trust and security perceptions, social influence and peer effect, infrastructure and access conditions, and demographic and contextual moderators. What emerges from the reviewed literature, though, is that the above clusters do not operate separately from each other. Rather, they form a conditional sequence where cognitive perception leads to an intention to adopt, trust will determine whether intention will lead to action, and infrastructure sets the parameters for both.

Perceived usefulness and ease of use emerged consistently as the foundational driver of adoption intention in studies using the Unified Theory of Acceptance and Use of Technology (UTAUT) model and the Technology Acceptance Model; however, their impact differs based on the segment of users [48,71]. Although Amofah and Chai [71] note the significance of performance expectancy and social influence, Pobee [72] finds that these do not play a crucial role for Generation Z, with effort expectancy, information quality, and system quality emerging as more important considerations. This disparity reveals that cognitive assessments are not the only relevant drivers in the case of young and tech-savvy generations who value smooth functionality and robust systems over performance outcomes. Therefore, we observe that when users become familiar with digital technology, adoption shifts from whether a system is useful to its functionality. Further indicating that sticking to static application of TAM or UTAUT may not adequately capture drivers in advancing technologically literate populations.

While cognitive constructs explain why consumers form positive intentions, trust illustrates why there is a failure between actual behavior and intention. Across the literature, trust emerges as a major integrative component that determines whether positive perceptions translate into actual adoption. It serves as the key mediator in the relationship between UTAUT factors and adoption intention [71]. It is a significant factor that influences the adoption of unfamiliar C2C platforms [73], and even in the context of mobile commerce; trust and perceived reliability become more important than price factors [74]. Therefore, the presence of such consistent results proves that trust is not merely an additional variable but a necessary condition for adoption. However, what is important from an analytical point of view is not just the importance of trust, which is already evident from the broader literature on technology adoption, but rather the fact that in the Ghanaian situation, the antecedents of trust are institutional rather than interpersonal. While Ofori et al. [73] discovered that structural assurance (legal and platform-based assurances) was a better predictor of trust than familiarity, Gyapong [75] re-

vealed that platform reputation and information transparency were better at building trust than repeated interaction. Such a trend implies that in a situation where the use of e-commerce platforms is still new and there are no adequate consumer protection mechanisms, trust cannot be generated through usage. These observations interestingly come at a contrast to findings in the pandemic period, where trust was found to be insignificant[25]. This divergence points to trust being a context-dependent driver, which can be seen to be a critical under stable conditions but become a secondary consideration under other circumstances.

The importance of social influence in the adoption process seems to be more context-dependent and less consistent across the studies. While some researchers found out that there was a considerable direct impact of social influence on the intention to adopt[71]; others found the impact to be insignificant, especially for younger users[76]. This inconsistency becomes easier to understand if one considers the very social influence works when it is broken down into different components. The direct social influence that stems from the impact of family members, peers, and community seems to be becoming less relevant as the user gains more independence online. Indirect types of social influence are also worth consideration. Apau and Koranteng[48] proves that online reviews and recommendations contribute to the formation of attitudes and further affect the purchase intention. This fact suggests a shift in how social influence operates, moving from direct interpersonal pressure to digitally mediated forms embedded within platforms. Ultimately, its impact varies depending on how users engage with online environments and the extent to which they rely on peer-generated content.

Beyond cognitive and social factors, the infrastructure conditions also make a huge difference in adoption processes. According to literature on digital financial services, enabling factors such as accessibility of networks, devices, agents, and transactions cost have been found to make huge impact on adoption irrespective of sociodemographic segments[77]. Further research studies[2,13,68] point to the fact that while internet access may be increasingly available to more users, there is still the issue of the quality of the experience and cyber threat perception among them. It shows that not only is the adoption process behavioral but also structural, since users can only do what they intend, depending on the availability of reliable digital and financial infrastructure.

Collectively, these findings confirm that Ghana's consumer-level adoption of e-commerce, social commerce, and m-commerce can be analyzed in terms of the relationship between perception, trust, social issues, and infrastructural factors. In the case of intention, it is motivated by perceived usefulness and ease of use, but conversion depends on trust and social influence, which may vary depending on context and platform type, while infrastructure conditions limit involvement. This integrated perspective suggests that no single factor sufficiently explains adoption; rather, adoption emerges from the alignment of behavioral readiness and systemic support.

3.2.2. Firm-Level Adoption Drivers and Enablers

At the firm level, three common patterns emerge in the literature. These include: (1) strategic and managerial determinants such as performance benefits, managerial commitment, and competitive forces; (2) organizational and resource limitations such as ICT costs, skills deficiencies, and financial constraints; and (3) environmental and institutional facilitators such as government programs, infrastructure provision, and sectorial factors. A consistent pattern in adoption literature shows that firms adopt ICT incrementally and through different phases, with few SMEs moving directly from informational to transactional use of ICTs.

Adoption of e-commerce among Ghanaian SMEs is not an abrupt process but a slow and patchy one depending on factors like technology exposure, capacity, and the environment. It is evident from various empirical researches that these SMEs interact with various types of e-commerce, namely mobile commerce, e-tailers, transaction brokers, and services, with mobile commerce emerging as the most prevalent channel. However, adoption remains geographically concentrated, particularly in urban and southern regions[4]. This concentration is not merely a choice but reflects deeper structural reasons; evidence from the Northern and Upper East Region shows that, despite having basic ICT tools, transactional e-commerce has failed to develop[67,78], which is supported by the findings by Kwadwo et al. on Northern SMEs[78] that showed 0% of enterprises having an online payment transaction mechanism despite having 44.3% website users. It is seen even within the concentrated regions that, SMEs operate at progressional levels such as typically combining participation in online trading platforms such as

Jumia and Tonaton with the use of POS terminals, which function as an intermediate step towards full online payment integration. Hu et al.[79] formalised this progression through a four-level B2B adoption model which points out that most firms remain at the lowest stage. Evidence by Owusu and Abrokwa[80] corroborate this low entry to adoption lack of organizational resource limitations. This pattern suggests that adoption by SMEs is not only gradual but that a substantial proportion of firms remain stuck at the pre-adoption or minimal-adoption stage, unable to progress despite awareness of potential benefits. The question now becomes: what enables some firms to progress while others remain stagnant?

The drivers of adoption for firm level that vary across sectors but display recurring patterns are management support, government initiatives, and facilitative environment. Awiagah et al.[61], by integrating the TPB-TOE model, identified government support, enabling conditions, and managerial support as the strongest direct predictors of SMEs' intentions to adopt e-commerce, while subjective norm and attitude, driven by perceived benefits and perceived credibility, emerged as critical firm-level antecedents for adoption. Complementary evidence by Sarfo and Song's TAM (Technology Acceptance Model)-TOE (Technology-Organization-Environment) study[3] found that perceived usefulness and ease of use, together with government-mediated initiatives, positively influence SMEs' adoption intentions, while practical factors like internet penetration, logistics, and payment mechanisms play a necessary role. More recent work by Mantey et al.[81], focusing on a smaller cohort of SME adopters, confirmed that e-commerce is primarily valued as a marketing and market-access tool, with perceived usefulness, perceived ease of use, and social factors such as prestige and high profile driving adoption decisions, while cost and perceived safety and security remain salient concerns. The comparison of these studies indicates that despite their theoretical lenses used, managerial commitment and institutional support consistently emerge as necessary conditions for firm-level adoption, whereas perceived benefits are insufficient without leadership commitment and institutional backing. However, in some peculiar cases, even managerial commitments may not be the strongest predictor. Otoo et al.[82] found that HR IT competence was a stronger predictor of adoption compared to top management support. Indicating that there is a possibility for other drivers aside the recurring drivers at the firm level, which may facilitate adoption. Altogether, the findings suggest that firm-level adoption is more complex and multi-layered than consumer-level adoption.

Sector/geographic-specific firm-level analysis illustrated similar patterns with contextual nuances: In the manufacturing sector, Ocloo et al.[83] demonstrated that perceived relative advantage and the intensity of competition significantly influence different levels of B2B adoption, yet SMEs perceive government support as inadequate, especially for more sophisticated, interactive uses. Interestingly, while Sarfo and Song[3] and Awiagah et al.[61] identify government support as a key enabler, SMEs at higher levels of adoption perceive government support as insufficient for their needs. Suggesting that existing government support may facilitate adoption at the lower initial adoption stages but may fail to support as progression advances. Complementing these studies, Agboh's[84] survey of Accra-based SMEs shows that to enhance customer service, responsiveness, competitiveness, and communication, firms seek to adopt digital technology tools, including email, websites, and rudimentary e-commerce; however, they were constrained by high ICT costs, skills gaps, poor infrastructure, and limited information. At a broader technological frontier, Quaye et al.[85] and Naatu et al.[86] show that adoption of emerging technologies such as Artificial Intelligence (AI), Internet of Things (IoT), e-commerce, mobile banking, and social media improves SMEs' access to new domestic and export markets and strengthens competitiveness. This shows that movement from basic to more advanced levels of B2B e-commerce among SMEs exhibits differentiated variables at different adoption stages. However, there is still a gap between the documented benefits and the actual reality of the adoption of most SMEs.

In summary, the adoption of e-commerce among firms in Ghana can be regarded as a phased and contextualized phenomenon resulting from the interplay between strategic considerations, organizational readiness, infrastructure factors, and environmental pressures. From the findings, it can be said that although the benefits of e-commerce are now being recognized by SMEs, their ability to fully integrate digital technologies depends on overcoming persistent structural and institutional constraints. Further pointing to the need for more targeted, multi-level interventions rather than a generic one.

3.3. Barriers and Constraints

The barriers to e-commerce and social commerce adoption in Ghana are not only interrelated but are spread across various fields such as finance, organization, technology, logistics, legal issues, and sociocultural factors. Across the evidence presented, we observed that financing and organizational challenges rank highest among these obstacles to e-commerce adoption, especially in SMEs[78]. This finding is reinforced by studies highlighting limited access to finance, weak organisational readiness, and lack of managerial support as key inhibitors of adoption[61]. Although SMEs are aware of the strategic advantages of digital solutions, they find themselves unable to harness the necessary financial and manpower resources required for proper utilisation. It can be seen that financial barriers have more than just a standalone effect; they are associated with organisational factors.

The above-mentioned financial and organisational constraints have been further exacerbated by infrastructural and logistical constraints, which limit the viability of conducting business via e-commerce. From across research, electricity unavailability, inadequate broadband infrastructure, expensive internet facilities, and poor telecommunications infrastructure emerge consistently as key limiting factors[4]. Simultaneously, logistical constraints such as ineffective addressing systems, limited home delivery systems, and poorly developed road networks limit the delivery process itself[87]. In the literature, these two categories of barriers function at different stages. Infrastructural constraints are discussed as constraints that primarily affect entry by preventing firms or consumers from initiating digital commerce activities, while logistical constraints are presented as systematic constraints such as reliable delivery fulfilment that prevent organizations that have adopted basic e-commerce from progressing to actually engaging in e-commerce activities. This integrated perspective reveals how the two forms of barriers reinforce each other, leading to a structural bottleneck limiting both firms and consumers.

Legal and regulatory barriers are yet another important but neglected obstacle. From the available literature, it can be concluded that there are many loopholes within the regulatory framework concerning e-commerce in Ghana, since its relevant provisions are found scattered in various legal documents, and not organized in one comprehensive system[53,55]. Despite the fact that the current legislation sufficiently supports electronic payment methods and transactions, it still lacks provisions regarding platform liability, consumer protection, and dispute resolution mechanisms. Such a gap is reinforced by poor enforcement ability and inadequate collaboration between institutions, thereby resulting in inefficiency of existing regulatory measures.

Trust, security, and cyber risk also emerge as pervasive constraints that cut across both consumer and firm perspectives. While mobile money adoption is increasingly widespread, literature suggests that financial technologies still fail to address issues of transaction safety and reliable operation of the system. Literature reveals that cybercrime, particularly mobile money scams and credit card fraud, has severely undermined public trust in digital systems[62]. This conclusion is reinforced by empirical findings in cybersecurity, pointing out institutional weaknesses, lack of ICT knowledge, and ineffective law enforcement practices as ongoing problems[86]. These findings suggest that trust issues are not merely just a matter of perception but are rooted in systemic vulnerabilities within the digital ecosystem. As a result, security concerns continue to limit adoption even in the presence of technological advancements.

More still, social and cultural elements interplay with the above structural barriers to determine adoption trends. Research shows that high cost of devices, low digital literacy, and inadequate access to internet facilities tend to affect certain socio-cultural demographics, restricting their involvement in e-commerce activities[63]. Importantly, user experience and prior exposure to digital technologies moderate these effects, suggesting that barriers are not uniform but vary across populations. This brings out the importance of examining adoption barriers from an equitable perspective, taking into account the interplay of structural and socio-cultural elements in shaping adoption processes.

In summary, it is clear that the obstacles faced by e-commerce usage in Ghana are interrelated rather than existing in isolation from one another. The barriers identified in this review can be broadly understood as operating at two levels: those that prevent entry into digital commerce and those that prevent actual engagement. Obstacles like finance, infrastructure, regulation, and trust are all interdependent in such a way that they create a challenging landscape that hinders not only consumers' engagement but also small and medium-sized enterprises' involvement. Overcoming these

challenges would therefore require coordinated interventions that simultaneously target resources, infrastructure, regulation, and building trust mechanisms.

3.4. Identified Research Gaps

The scoping review and Ghana-specific research notes highlight several gaps. In terms of methodology, we found that the literature tends to be predominantly based on cross-sectional surveys. Qualitative methods such as ethnography and longitudinal design are underrepresented in the literature. Cross-sectional surveys may offer some interesting insights into adoption drivers at one point in time, but they fail to consider the changing landscape of e-commerce adoption processes. They miss out on capturing the dynamism involved in adopting e-commerce and the changes associated with it.

We also identified gaps geographically, in which most empirical evidence is concentrated in Accra, Kumasi, and a few other urban centers, with insufficient research on the northern regions, rural areas, and smaller towns where conditions differ markedly. The disparity in geographical evidence is important since infrastructural development, financial standing, and computer literacy differ greatly among the different geographical regions, hence the inability to generalize the results from urban settings.

Sectoral studies gaps are also observable. Current literature is mainly centered on the sectors of retailing, hospitality, and fashion industries, whereas other sectors such as agriculture, health, education, and public sectors are largely understudied. This is crucial given the rise in the level of digitization within such sectors, and the importance that the sectors have in inclusive development. We also observe that social commerce activities, although widely practiced, especially by young people and women, are largely understudied in Ghana.

Furthermore, there is a lack of sufficient studies on the interactions among various digital platforms and applications. The relationships among e-commerce, ride-sharing services, food delivery, and digital payments form an ecosystem that has significant ramifications on employment and livelihood issues; yet remain under-researched.

Finally, there is also limited research on regulation and policies. While there have been studies that have highlighted weaknesses in legal frameworks, there is insufficient empirical work on the impact of specific policies, such as the electronic transaction levy (e-levy), on e-commerce adoption, financial inclusion, and socio-economic outcomes. Broader questions related to taxation, regulation, and governance of the digital economy also remain underexplored.

Taken together, these gaps imply that in future studies, there is a need for diversity in methodological approaches, geographical and industrial scope, and an emphasis on digital ecosystem developments and policy influences. This will ensure that there is a better understanding of the issues surrounding the use of e-commerce within Ghana.

4. Discussion

4.1. Synthesis of Key Findings

Altogether, the findings depict Ghana's digital commerce ecosystem as transitional, can precisely be described as a hybrid, and unevenly integrated system, influenced by factors such as technological expansion and structural limitation. E-commerce has progressed from sporadic experimentation to a broader though uneven adoption among firms and consumers, with mobile money and social media playing catalytic roles. However, rather than a linear shift to fully digital transactions, most businesses and consumers operate in mixed modes, combining online discovery, communication, and sometimes ordering with offline payment and fulfilment, or using social media as a "front end" and conventional markets and cash for transaction completion. This implies that Ghana's digital commerce is not simply expanding, but rather reconfiguring existing market practices by gradually embedding digital tools within established informal and formal systems. **Figure 5** depicts the proposed conceptual framework of E-Commerce and Social Commerce Adoption in Ghana. The proposed framework highlights the interrelations between the digital environments and digital commerce outcomes in Ghana. This interrelation is influenced by contextual and mediating factors that are inherent to consumers and firms. These interactions ultimately inform the hybrid digital commerce systems in Ghana.

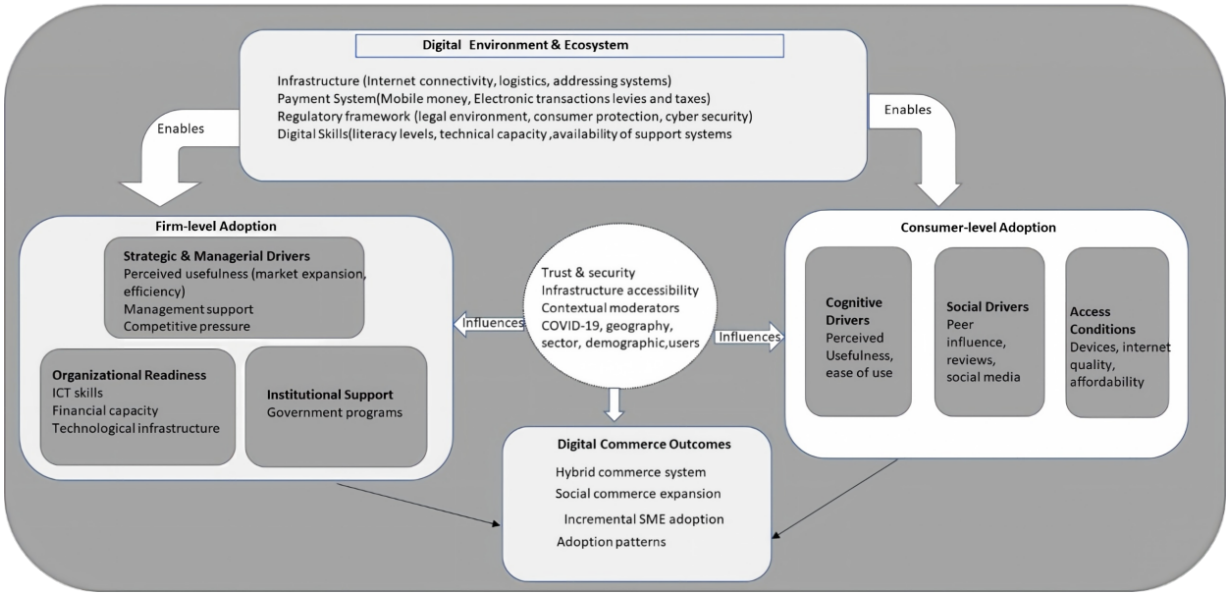


Figure 5. Conceptual framework of e-commerce and social commerce adoption in Ghana.

Adoption is higher among urban, educated, and relatively better-resourced firms and consumers, particularly in the south and in sectors such as fashion, hospitality, and logistics; while it remains lower among rural and northern populations, less-resourced SMEs and certain informal-sector groups. Such uneven adoption can be attributed not only to disparities in availability, but also to the fact that adoption of digital technology depends upon alignment between infrastructure, capability, and perceived relevance in particular settings.

At the firm level, perceived performance gains (market reach, efficiency, competitive advantage), management support, organizational readiness, and external pressures (competition, buyers/suppliers, government programmes) consistently drive adoption. In this case, the adoption by organizations is not just due to the existence of technology, but also their capacity to translate those opportunities into operational change under contextual constraints. We identify that the UTAUT constructs such as perceived usefulness and ease of use, management commitment, government support, and enabling infrastructure, particularly reliable internet, payments, and logistics, consistently underpin SMEs' adoption decisions. The competitive pressure and expectations of expanded market access may motivate engagement, yet their effects are mediated by sectoral characteristics and by access to finance, skills, and partnerships. While more advanced integration processes are connected with cost efficiencies, improved customer service, and, in some cases, enhanced performance, many of these firms still limit their activities to promotional functions or partial adoption of technology. Further asserting that adoption at the firm level is better understood as incremental and layered, not wholly transformative.

On the consumer side, studies grounded in TAM, UTAUT, and related models converge on the importance of factors such as cognitive evaluations, social influence, and contextual conditions. Trust emerges as a central mediating factor that mediates the relationship between perceived usefulness and ease of use on adoption intentions. For younger and mobile-first users, platform quality, system reliability, and seamless payment experiences often outweigh abstract performance expectations. Indicating an orientation toward actual experience over the evaluation of intention when dealing with digital systems.

In the context of social commerce, social presence, peer recommendations, and enjoyment have become crucial elements of trade. Positioning social-media-based trade as a relatively low-capital entry point into entrepreneurship. Altogether, we observe that digital commerce expansion is occurring not only through formal platforms, but also through informal channels such as socially embedded channels as well.

We see that across both levels, trust and cybersecurity mediate the relationship between generic technology accep-

tance constructs and actual adoption. Concerns about fraud, privacy, and the adequacy of legal and enforcement frameworks significantly dampen e-commerce usage, even though the potential advantages are significant. This shows that trust is not just perceptual but also structurally grounded in the reliability of institutions and systems. From the findings, we observe that adoption remains constrained by a dense set of interlocking barriers. Financial and organizational limitations such as high ICT costs, limited access to credit, skills shortages, and weak managerial support continue to restrict SMEs' capacity to move beyond basic tools. Fragmented legal and regulatory frameworks, limited enforcement capacity, and persistent security and privacy concerns compound these challenges by eroding trust among firms and consumers. In addition, many consumers still prefer to combine online and offline practices, by merely using digital channels for search and comparison while preferring cash-on-delivery or face-to-face transactions, hindering full adoption.

While these patterns are consistent with broader findings on ICT adoption and e-commerce in developing countries, the Ghanaian literature reveals an important limitation of applying TAM and UTAUT. These theories have been developed and validated within a context of more stable infrastructure, functional institutional trust, and a more homogenous user population. In Ghana, on the other hand, the factors that influence trust are not just confined within interpersonal relations and previous experiences, but they are also related to the structural conditions surrounding the effectiveness of regulatory frameworks related to consumer protection, cybersecurity, and payments systems. Furthermore, there is a widespread use of informal methods for conducting online business in applications like WhatsApp and Instagram, and the persistence of hybrid transaction models combining online ordering with cash-on-delivery. These established modes of market participation demonstrate that the existing theoretical models cannot accurately reflect the reality on the ground within the Ghanaian setting.

Finally, the results collectively provide an answer to the research questions posed for this study. First, the review reveals that the use of digital commerce adoption in Ghana is uneven and incorporates a hybrid approach involving both online and offline transaction systems. Second, the use of digital commerce is influenced by a confluence of factors, including perceived advantages, organizational readiness, and social and contextual factors. Third, the use of digital commerce faces numerous challenges due to interrelated barriers such as infrastructural, financial, and trust-related issues. Fourth, the analysis reveals significant gaps in the literature, particularly the lack of integrated, Ghana-specific synthesis and limited attention to emerging areas such as social commerce and hybrid transaction systems.

4.2. Implications for Policy and Practice

The findings demonstrate the need for policy and practice interventions to move from a generic promotion of ICT towards more systematic and ecosystem-level interventions that are attuned to the contextual nature of infrastructure, regulation, finance, and human capital. Given that the process of adoption involves the interaction between infrastructure, regulations, capability building, and trust, isolated interventions will likely fail to produce sustainable results. In other words, a systemic approach involving both technology and policies concerning regulation, finance, and capability building is needed.

First, issues with infrastructure should be given priority. This includes making broadband internet more accessible to more people and ensuring that there are solid internet connections and a reliable energy supply, strengthening the national digital addressing system, and professionalizing domestic logistics and courier services to overcome logistics constraints that currently keep many firms at an informational rather than transactional level of engagement. For companies and digital platforms, it implies that it is necessary to make investments or enter into partnerships with logistics service providers and be more particular about finding innovative ways to improve the logistics system, especially in underserved regions, as compared to relying on the existing logistics infrastructure when expanding the market reach. In fact, the analysis showed that there were significant differences between different geographic locations, which favored the southern areas over rural and northern areas in the adoption rate. This issue stems from the limited availability of services and higher expenses related to adopting e-commerce solutions among SMEs located in rural areas. Managers working within or focusing on rural markets should take into account the gaps in infrastructure when considering market entry strategy and consider adopting phased rollout models or hybrid offline-online service delivery as transitional approaches. Solving

these problems would help more businesses move towards e-commerce.

Secondly, the promotion of policies concerning trust building and regulation is yet another intervention that should be considered. This is because, according to the study results, there are several issues that limit the adoption process despite the high potential benefits resulting from the use of both e-commerce and social commerce. For example, the lack of consumer protection policies is a major obstacle. Targeted legal reform is needed to consolidate fragmented rules in the Electronic Transactions Act, Payment Systems and Services Act, data protection laws, and sectoral regulations into a coherent consumer-protection framework that explicitly covers online transactions, platform liability, unfair terms, and redress, backed by stronger enforcement capacity and specialized dispute-resolution mechanisms. Additionally, cybersecurity is weak, which contributes to mistrust in online transactions and interactions. Policy should also prioritize robust cybersecurity governance, minimum security and privacy standards for platforms and payment providers, and mass digital-safety education to address pervasive fears of fraud and data.

Third, promoting capabilities within the SME sector and lowering entry barriers may result in greater uptake and integration. As pointed out earlier, there are a considerable number of SMEs that have not yet been able to incorporate digital technology into their operations for diverse reasons ranging from insufficient finances and technological expertise to inadequate organizational resources. Therefore, providing targeted support in the form of affordable financing for investments in digital technologies, technical assistance programs, and sharing digital infrastructure is vital to facilitating the process of adoption. Special emphasis must be placed on those organizations that do not have sufficient resources, such as youth-run, women-led, and rural enterprises that rely heavily on social commerce.

Fourth, the issue of digital payments and mobile money is critical, considering that it presents avenues for adoption. However, mobile money may lead to problems related to cost, taxation, and consumer protection. Charging for the use of mobile money, for example through levies, exposes users to costs and potential risks. Given the central but contested role of mobile money and digital payments, regulators must safeguard affordability, interoperability, and user protection while systematically assessing the distributional impacts of measures such as the electronic transaction levy on digital financial inclusion and e-commerce uptake.

This finding also has direct implications for the strategies of managers and digital platforms. Concerning the issues of trust and regulation, rather than waiting for regulatory consolidation, digital platforms need to take proactive measures and implement transparent return policies, trust signals, and access to dispute resolution as part of the design of their platform and their consumer experience strategy. Similarly, instead of considering security and data protection as only a legal requirement, security and data privacy could also become key competitive advantages that positively affect consumer trust and loyalty. About market growth opportunities, there is an evident opportunity for digital platforms focused on SME merchants to create barriers to entry by providing the right onboarding process, pricing, and supportive services because SME merchant acquisition and retention are among the key growth opportunities in Ghana.

Early investments by firms in creating capability among under-served populations, such as youth-managed, female-led businesses, and rural enterprises, will put them at an advantage in the Ghanaian market, where relationships influence loyalty to products or prices equally. In terms of payment systems, management needs to view the approach as a strategic choice and track its impact on conversion rates due to changes in payment policy costs, ensure ease through payment option diversification, and monitor payment trends within the payment ecosystem. Lastly, the lack of available data within the Ghanaian digital commerce environment is highly relevant to firms' and managers' strategy formulation process. Decisions made within this context are more fraught with uncertainties than in other environments, and hence there is a need to develop internal intelligence capacities, conduct customer data capture, and use industry alliances and involvement in academic research projects as strategies for developing insights.

4.3. Limitations of This Study

The study has a few limitations that should be acknowledged. First, it is restricted to publications from 2010 to 2025 as well as Ghana-specific studies, which means earlier work and relevant studies published in a broader African context may have been missed.

Second, consistent with scoping-review methodology, the study did not undertake a formal critical appraisal of study quality; even though this approach is appropriate for mapping broad evidence landscapes, it limits the extent to which individual findings can be weighted by methodological robustness or risk of bias. Thus, these findings must be interpreted in a context of being indicative of broader patterns and not providing conclusive evidence. Future systematic reviews building on this study should include a formal quality assessment process for more precise and generalisable conclusions.

Furthermore, the search for literature was limited to a few databases, which leaves room for more Ghanaian-focused studies that are yet to be explored. Finally, the available evidence base is itself heavily skewed toward cross-sectional, urban-based surveys of relatively connected participants. As a result, the synthesis may overrepresent the experiences and perspectives of more formalized or digitally connected participants and may not fully capture the realities of rural, informal, or less-connected segments of the Ghanaian economy.

5. Conclusion

In conclusion, Ghana's digital commerce ecosystem is neither nascent nor fully mature, but rather in a state of transitional, hybrid development. This scoping review demonstrates that while digital experimentation via social media and mobile money is pervasive, the sector remains stratified by persistent structural, regulatory, and socio-cultural constraints. The reliance on mixed online-offline practices among informal sectors and micro-enterprises highlights that current digital adoption is an act of continual improvisation rather than a linear migration to formal e-commerce.

This study makes three specific contributions to the body of existing literature. First, it provides the first Ghana-specific scoping review that integrates evidence on e-commerce, mobile commerce, and social commerce across firm-level, consumer-level, and policy dimensions simultaneously. This contribution is important because all the previous reviews on digital commerce have attempted to either combine several developing countries within one geographical location or have focused solely on a single level of analysis. Secondly, it expands the theoretical understanding by demonstrating that digital commerce adoption in Ghana is hybrid and uneven, that is, it is not a transition from traditional to digital systems, but rather an integration of both. Therefore, it requires contextualization of the existing models of adoption (such as TAM and UTAUT). Third, it research provides a structured map of research gaps, including the underrepresentation of rural and northern populations, the limited empirical documentation of social commerce, and the absence of longitudinal and qualitative designs in the existing literature.

For policymakers, the significance of these findings points to the need for policy to move beyond generic ICT promotion toward ecosystem-level interventions. This requires prioritizing areas include consolidating fragmented consumer protection legislation into a coherent framework covering online transactions and platform liability, investing in broadband infrastructure and digital addressing systems in underserved regions, and designing mobile money regulations that safeguard affordability and interoperability while protecting users from fraud. At the firm level, the findings highlight the importance of phased adoption strategies that begin with accessible social commerce channels and progressively integrate transactional capabilities as infrastructure and trust conditions improve. Sector-specific support such as youth-specific, women-specific, and rural trade is essential to ensure that the benefits of digital commerce are distributed equitably.

Future research must move beyond cross-sectional surveys of relatively connected, urban populations to employ longitudinal and qualitative designs that capture the long-term impact of digital commerce on livelihoods, gender dynamics, and marginalized groups. Research is particularly needed on the informal social commerce ecosystem, the distributional effects of fiscal policies such as the electronic transaction levy, and the governance of emerging digital infrastructure including drone delivery and AI-enabled platforms. Comparative studies situating Ghana within the broader West African and African context would also strengthen the evidence base for regional policy coordination.

Ultimately, Ghana stands at a critical juncture. The building blocks for a vibrant digital economy are in place; however, whether this momentum leads to inclusive development depends on effectively addressing the deep-seated

structural barriers identified here. By doing so, scholars and policymakers can ensure that the promise of digital commerce benefits all Ghanaians, not only those already positioned within the formal economy.

Author Contributions

Conceptualization, V.E.A.; methodology, V.E.A.; software, V.E.A.; validation, V.E.A.; formal analysis, V.E.A. and N.A.A.; investigation, V.A.O.; resources, V.E.A.; data curation, V.A.O.; writing—original draft preparation, V.E.A.; writing—review and editing, V.E.A. and N.A.S.; visualization, N.A.A. All authors have read and agreed to the published version of the manuscript.

Funding

This work received no external funding.

Institutional Review Board Statement

Not applicable.

Informed Consent Statement

Not applicable.

Data Availability Statement

Data will be available upon request.

Conflicts of Interest

All authors declare no conflict of interest.

AI Use Statement

The authors used AI language assistance software during the preparation of this manuscript. Grammarly AI language software in particular was used for grammar and sentence-level edits in certain sections of the manuscript. All intellectual content, such as the design of the study, literature search process, selection of studies, data extraction, thematic analysis, and interpretation of results, was done solely by the authors. The authors are fully responsible for the accuracy and originality of all intellectual content in this manuscript. No AI tool was used for data generation, citation creation, or analysis.

References

[1] World Trade Organization (WTO), 2017. Electronic commerce. Available from: https://www.wto.org/english/thewto_e/minist_e/mc11_e/briefing_notes_e/bfecom_e.htm (cited 14 March 2026).

[2] Antwi, S., 2021. "I just like this e-retailer": Understanding online consumers' repurchase intention from a relationship quality perspective. Journal of Retailing and Consumer Services. 61, 102568. DOI: https://doi.org/10.1016/j.jretconser.2021.102568

[3] Sarfo, C.A., Song, H., 2021. E-commerce adoption within SMEs in Ghana: A tool for growth? International Journal of Electronic Business. 16(1), 32–51. DOI: https://doi.org/10.1504/IJEB.2021.112764

[4] Mensah, M.C., 2023. E-Commerce in the Digital Age: Challenges and Opportunities in Ghana. Available from: https://www.academia.edu/download/106129006/Ecommerce_in_the_digital_Age_.pdf (cited 14 March 2026).

[5] Andoh, C.B., Ebenezer, E.S., Afriyie, A.A., 2011. E-commerce in Ghana. Pentvars Business Journal. 5(3), 15–29. Available from: https://journals.pentvars.edu.gh/index.php/pbj/article/view/81

[6] Keenan, M., 2025. Global Ecommerce Statistics and Trends (2026). Available from: https://www.shopify.com/enterprise/blog/global-ecommerce-statistics (cited 14 March 2026).

[7] Minister of Trade, Agribusiness and Industry, 2024. Draft: E-Commerce National Strategy of Ghana 2025–2029. Minister of Trade, Agribusiness and Industry: Accra, Ghana. Available from: https://www.brr.gov.gh/acc/consultation/docs/DRAFT%20Ghana%20ECS%2020241020.UNCTAD.pdf

[8] African Union, n.d. The African Continental Free Trade Area. Available from: https://au.int/en/african-continental-free-trade-area (cited 29 March 2026).

[9] Boateng, R., Hinson, R., Heeks, R., et al., 2008. E-commerce in least developing countries: Summary evidence and implications. Journal of African Business. 9(2), 257–285. DOI: https://doi.org/10.1080/15228910802479919

[10] Munn, Z., Pollock, D., Khalil, H., et al., 2022. What are scoping reviews? Providing a formal definition of scoping reviews as a type of evidence synthesis. JBI Evidence Synthesis. 20(4), 950–952. DOI: https://doi.org/10.11124/JBIES-21-00483

[11] Acheampong, P., Zhiwen, L., Antwi, H.A., et al., 2017. Hybridizing an extended technology readiness index

with the technology acceptance model (TAM) to predict e-payment adoption in Ghana. American Journal of Multidisciplinary Research. 5(2), 172–184. Available from: https://scispace.com/pdf/hybridizing-an-extended-technology-readiness-index-with-wjt6tf1340.pdf

[12] Fosu, A., Giba-Fosu, N., Odoi, E., 2024. Assessing e-commerce readiness and e-skills of developing nations' SMMEs in the era of global digital economic evolution: A case study of the Bono Region, Ghana. African Journal of Development Studies. 14(1), 59–71. DOI: https://doi.org/10.31920/2634-3649/2024/v14n1a3

[13] Ofori, D., Appiah-Nimo, C., 2019. Determinants of online shopping among tertiary students in Ghana: An extended technology acceptance model. Cogent Business & Management. 6(1), 1644715. DOI: https://doi.org/10.1080/23311975.2019.1644715

[14] Anabila, P., Kumi, D.K., Ameyibor, L.E.K., et al., 2024. E-commerce adoption among entrepreneurial firms in Sub-Saharan Africa. Journal of Small Business and Enterprise Development. 31(7), 1400–1423. DOI: https://doi.org/10.1108/JSBED-08-2023-0358

[15] Newman, F., 2022. The impact of strategic behaviour of SMEs on e-commerce adoption and customer responsiveness [Master's Thesis]. University of Ghana: Accra, Ghana. Available from: https://ugspace.ug.edu.gh/bitstreams/eb63c5fe-2b76-4fc2-882f-edc3b28774cb/download

[16] Ocloo, C.E., Xuhua, H., Akaba, S., et al., 2018. B2B e-commerce adoption amongst manufacturing SMEs: Evidence from Ghana. Australian Journal of Economics and Management Science. 8(1), 126–146. Available from: https://scispace.com/pdf/b2b-e-commerce-adoption-amongst-manufacturing-smes-an-3y3f6jj3jn.pdf

[17] Taylor, T., Owusu, E.D.E., 2012. Factors affecting internet and e-commerce adoption among small and medium-sized enterprise non-traditional exporters: Case studies of Ghanaian handicraft exporters. European Journal of Business and Management. 4(13), 25–37.

[18] Mensah, J.K., Xu, Y., 2025. Adoption of e-commerce technologies among SMEs in Ghana under the influence of integrated UTAUT and TOE frameworks. Information Development. DOI: https://doi.org/10.1177/02666669251325479

[19] Owusu, P.R., Asiedu, E.P., Ji, J., et al., 2022. Innovation and evaluation of the technology acceptance model (TAM) in s-commerce: A case of social media platforms in Ghana. Journal of Computer and Communications. 10(3), 100–124. DOI: https://doi.org/10.4236/jcc.2022.103007

[20] Shi, J., Nyedu, D.S.K., Huang, L., et al., 2024. Graduates' entrepreneurial intention in a developing country: The influence of social media and e-commerce adoption (SMEA) and its antecedents. Information Development. 40(1), 20–35. DOI: https://doi.org/10.1177/02666669211073457

[21] Nutsugah, N., Kuupuolo, E., Peculiar, T., 2024. A systematic review of social media research in Ghana: Gaps and future research avenues. Annals of the International Communication Association. 48(2), 167–181. DOI: https://doi.org/10.1080/23808985.2024.2323739

[22] Adadevoh, C.K.M.H., 2018. Factors that influence the adoption of e-commerce in the Ghanaian banking industry. International Journal of Innovative Research & Development. 7(2), 23–27. Available from: https://scispace.com/pdf/factors-that-influences-the-adoption-of-e-commerce-in-the-1tko65k4xf.pdf

[23] Jibril, A.B., Kwarteng, M.A., Chovancová, M., et al., 2020. Do socio-economic factors impede engagement in online banking transactions? Evidence from Ghana. Banks and Bank Systems. 15(4), 1–14. DOI: https://doi.org/10.21511/bbs.15(4).2020.01

[24] Owusu, G.M.Y., Bekoe, R.A., Addo-Yobo, A.A., et al., 2021. Mobile banking adoption among Ghanaian youth. Journal of African Business. 22(3), 339–360. DOI: https://doi.org/10.1080/15228916.2020.1753003

[25] Baah-Acquah, P., Freeman, E., 2016. An assessment of e-commerce adoption in the banking industry of Ghana. The International Journal of Business & Management. 4(10), 346–353. Available from: https://www.researchgate.net/publication/309735419_An_Assessment_of_E-commerce_Adoption_in_the_Banking_Industry_of_Ghana

[26] Adzroe, E.K., Ingirige, B., 2013. Exploring e-business technology to support improvement in the infrastructure procurement process in the Ghanaian construction industry. Available from: https://salford-repository.worktribe.com/OutputFile/1497276 (cited 29 March 2026).

[27] Asare, S.D., Gopolang, B., Mogotlhwane, O., 2012. Challenges facing SMEs in the adoption of ICT in B2B and B2C e-commerce: A comparative case study of Botswana and Ghana. International Journal of Commerce and Management. 22(4), 272–285. DOI: https://doi.org/10.1108/10569211211284485

[28] Kumaning, R.G., Godfred, A., 2019. Challenges of e-commerce adoption in the Ghanaian hotel industry. European Journal of Business and Management. 11(27), 126–134. Available from: https://iiste.org/Journals/index.php/EJBM/article/view/49698/51344

[29] Ocloo, C.E., Xuhua, H., Worwui-Brown, D.K., et al., 2018. Electronic commerce adoption barriers of Ghanaian manufacturing SMEs: An artificial neural network analysis. American Journal of Multidisciplinary Research. 7(1), 281–295. Available from: https://www.researchgate.net/profile/Elikem-Ocloo/publication/332726590_Electronic_Commerce_Adoption_Barriers_of_Ghanaian_Manufacturing_SMEs_An_Artificial_Neural_Network_Analysis/links/5cc680de299bf12097874e56/Electronic-Commerce-Ado

ption-Barriers-of-Ghanaian-Manufacturing-SMEs-An-Artificial-Neural-Network-Analysis.pdf

[30] Otoo, A.A.A., Zhiwen, L., Otoo, C.O.A., 2018. An empirical analysis of the e-commerce adoption constraints in international trade among SMEs in Ghana. European Journal of Contemporary Research. 7(1), 204–211. Available from: https://scispace.com/pdf/an-empirical-analysis-of-the-e-commerce-adoption-constraints-2f2yk5pz6i.pdf

[31] Owusu-Adjei, M., 2019. Digital Addressing System, Opportunity for Business—Consumer E-commerce Integration in Ghana. Available from: https://www.academia.edu/38771505/Digital_Addressing_System_Opportunity_for_Business_Consumer_E_commerce_Integration_in_Ghana (cited 29 March 2026).

[32] Attakora-Amaniampong, E., Miller, A.W., Aziabah, S.A., 2021. Determinants of investor satisfaction with e-commerce platforms and traded products in student housing development in Ghana. The Electronic Journal of Information Systems in Developing Countries. 87(3), e12162. DOI: https://doi.org/10.1002/isd2.12162

[33] Mills, E.F.E.A., Baafi, M.A., 2021. How and where do we dispose of hardware enablers of e-commerce? A case study of Accra, Ghana. In Proceedings of the 2021 12th International Conference on E-business, Management and Economics, Beijing, China, 17–19 July 2021; pp. 841–846. DOI: https://doi.org/10.1145/3481127.3481230

[34] Frimpong, A.N.K., Li, P., Gyamfi, S.A., et al., 2018. Online shopping in Sub-Saharan Africa: Evidence from Ghana. In Proceedings of the 1st International Conference on Information Management and Management Science, Chengdu, China, 25–27 August 2018; pp. 58–66. DOI: https://doi.org/10.1145/3277139.3277151

[35] Sampene, E.A., 2015. ICTs, e-commerce, and CCT in Ghana: The case of urban consumers in a developing country [Master's Thesis]. Copenhagen Business School: Frederiksberg, Denmark. Available from: https://research.cbs.dk/files/58467785/eunice_ackom_sampene.pdf

[36] Abubakari, H.A., 2025. The role of e-commerce in facilitating international trade in Africa: A case study of individual businesses in Ghana. Texila International Journal of Academic Research. 12(2). Available from: https://www.texilajournal.com/v2/academic-research/article/3085-the-role-of

[37] Tamakloe, R., Zhang, K., Atandzi, J., et al., 2024. Examining urban delivery service user profiles and determinants of drone delivery adoption in Ghana considering usage before and after the COVID-19 pandemic. Transport Policy. 146, 279–294. DOI: https://doi.org/10.1016/j.tranpol.2023.12.004

[38] Bemile, R.K., Adjene, B.O., Owusu, R., et al., 2014. E-commerce platform for Ghanaian artisan products. International Journal of Research in Information Technology. 2(8), 250–270. Available from: http://researchgate.net/publication/274079323_E-Commerce_Platform_for_Ghanaian_Artisan_Products

[39] Frimpong, A.N.K., Gyamfi, S.A., 2016. "Drive-in" as an e-commerce strategy in Ghana. In Proceedings of the Management, Knowledge and Learning Joint International Conference 2016, Timisoara, Romania, 25–27 May 2016; pp. 461–473. Available from: https://toknowpress.net/ISBN/978-961-6914-16-1/papers/ML16-094.pdf

[40] Kabo-Bah, J.B.W., Bannor, R.K., 2025. E-commerce among grain traders and its impact on marketing. Sustainable Technology and Entrepreneurship. 4(1), 100090. DOI: https://doi.org/10.1016/j.stae.2024.100090

[41] Mannah-Blankson, T., Asiseh, F., Boateng, S.S., et al., 2025. Adoption patterns and impact of digital technologies among Ghanaian market women. In: Amaechi Ejiribe, E.C., Sodzi-Tettey, S., Ofori-Dankwa, J. (Eds.). African Women Entrepreneurs in the Informal Economy. Springer: Cham, Switzerland. pp. 283–317. DOI: https://doi.org/10.1007/978-3-031-70468-0_17

[42] Kumar, A.D., Boakye, M.M., Celestin, M., 2024. The impact of big data and business mathematics on digital marketing strategies in Ghana. International Journal of Current Research and Modern Education. 9(1), 32–38. Available from: https://ijcrme.crystalpen.in/uploads/67c3f5519f39e_534.pdf

[43] Asante, I.O., Fang, J., Darko, D.F., 2020. Consequences of consumer engagement on the performance of e-commerce firms in Ghana: Moderating effects of consumer-owned resources. Journal of Psychology in Africa. 30(5), 403–407. DOI: https://doi.org/10.1080/14330237.2020.1821305

[44] Danquah, B.A., Dong, C.L., 2018. Empirical evidence on sources of consumer trust in e-commerce in Ghana. In Proceedings of the 3rd International Conference on Economic and Business Management (FEBM 2018), Hohhot, China, 20–22 October 2018; pp. 175–178. DOI: https://doi.org/10.2991/febm-18.2018.41

[45] Fan, M.Y., Nunyuie, O., 2019. Investigating the effects of cyber fraud on customer trust for online shopping: The Ghanaian setting. European Journal of Business and Management. 11(36), 86–96. DOI: https://doi.org/10.7176/ejbm/11-36-10

[46] Mintah, S.C., 2018. Consumer perceived risk and online shopping in Ghana: The moderating role of electronic word of mouth [Master's Thesis]. University of Ghana: Accra, Ghana. Available from: https://ugspace.ug.edu.gh/server/api/core/bitstreams/c9c24fb7-6ca1-4bb8-a41d-852a459343ef/content

[47] Antwi, S., Gbolonyo, P.K., Jiang, C., 2022. Do e-service quality and customer satisfaction affect loyalty in e-retailing? Evidence from Ghanaian online consumers. The International Journal of Applied Business.

6(1), 17–34. DOI: https://doi.org/10.20473/tijab.v6.I1.2022.32706

[48] Apau, R., Koranteng, F.N., 2020. Impact of cybercrime and trust on the use of e-commerce technologies: An application of the theory of planned behavior. International Journal of Cyber Criminology. 13(2), 228–254. DOI: https://doi.org/10.5281/ZENODO.3697886

[49] Ofori, M., 2024. Effect of fashion e-commerce user experience on customer retention in Ghana. International Journal of Fashion and Design. 3(1), 1–13. Available from: https://pdfs.semanticscholar.org/6aa6/8624e0593f087bffff9aa67d41848954978c.pdf

[50] El Koufi, N., Missah, Y.M., Belangour, A., 2024. A hybrid CNN-LSTM-based natural language processing model for sentiment analysis of customer product reviews: A case study from Ghana. Journal of Hunan University Natural Sciences. 51(8). DOI: https://doi.org/10.55463/issn.1674-2974.51.8.5

[51] Agyemang, G.Y., Amekuadzi, B., Ansong, E., 2024. Customers' perception of e-commerce usage during the COVID-19 pandemic: Evidence from selected online firms in Ghana. Wisconsin Journal of Arts and Sciences. 6(1), 57–69. Available from: https://wiuc-ghana.edu.gh/wp-content/uploads/2024/01/Article-4_WJAS-Volume-6-issue-1.pdf

[52] Acheampong, P., Zhiwen, L., Yeboah-Boateng, E.O., et al., 2017. Consumer rights protection in electronic commerce in Ghana: Lessons from British commercial jurisprudence. Canadian Journal of Applied Science and Technology. 5(2), 241–250. Available from: https://www.researchgate.net/profile/Patrick-Acheampong/publication/325270346_Consumer_Rights_Protection_in_Electronic-Commerce_in_Ghana_Lessons_from_British_Commercial_Jurisprudence/links/5b28f4dd4585150c63dca8e3/Consumer-Rights-Protection-in-Electronic-Commerce-in-Ghana-Lessons-from-British-Commercial-Jurisprudence.pdf

[53] Dowuona-Hammond, C., Kyeremateng, R.A., Hammond, A.F., 2024. Product liability and e-commerce in Ghana: Focusing Ghana's regulatory framework on consumer protection. Business Law Review. 45(6), 154–167. DOI: https://doi.org/10.54648/BULA2024020

[54] Faith, N.L., Naatu, F., Nassè, T.B., 2025. Investigating consumer protection in e-commerce transactions: A focus on the Sale of Goods Act of Ghana. Advances in Consumer Research. 2(3), 19–26. Available from: https://www.researchgate.net/profile/Theophile-Nasse/publication/391451343_Investigating_Consumer_Protection_in_E-Commerce_Transactions_A_Focus_on_Sale_of_Goods_Act_of_Ghana/links/6818a8faded43315574257be/Investigating-Consumer-Protection-in-E-Commerce-Transactions-A-Focus-on-Sale-of-Goods-Act-of-Ghana.pdf

[55] Manteaw, S.O., 2024. Electronic commerce and consumer protection in Ghana. International Journal of Research. 9(11), 485–495. Available from: https://www.researchgate.net/publication/390696155_ELECTRONIC_COMMERCE_AND_CONSUMER_PROTECTION_IN_GHANA

[56] Abubakari, H.A., 2025. The impact of electronic transaction tax on developing countries: A case of Ghana. Texila International Journal of Management. 11(2), 18. Available from: https://www.academia.edu/143725012/The_Impact_of_Electronic_Transaction_Tax_on_Developing_Countries_A_Case_of_Ghana

[57] Adu, K.K., Adjei, E., 2018. The phenomenon of data loss and cybersecurity issues in Ghana. Foresight. 20(2), 150–161. DOI: https://doi.org/10.1108/FS-08-2017-0043

[58] Mensah, I.K., Mwakapesa, D.S., Mensah, P.A., et al., 2022. The impact of government electronic transaction levy on the continuous adoption of mobile money transactions in Ghana. In Proceedings of the 4th Africa-Asia Dialogue Network (AADN) International Conference on Advances in Business Management and Electronic Commerce Research, Ganzhou, China, 25–27 November 2022; pp. 17–23. DOI: https://doi.org/10.1145/3572996.3573001

[59] Mensah, R.O., Mensah, P., Opoku, D., 2023. Experiences and perceptions of cybercrime victims in Ghana: The perspective of digital consumers of agricultural produce. Cogent Education. 10(2), 2285623. DOI: https://doi.org/10.1080/2331186X.2023.2285623

[60] Gbeve, E., 2019. Impacts of e-commerce on socio-economic conditions in Ghana [Master's Thesis]. Ghana Institute of Public Management and Administration: Accra, Ghana. Available from: https://www.academia.edu/download/59168190/E-commerce_and_its_socio-economic_impact_in_Ghana_FINAL120190508-65767-87b4v0.pdf

[61] Awiagah, R., Kang, J., Lim, J.I., 2016. Factors affecting e-commerce adoption among SMEs in Ghana. Information Development. 32(4), 815–836. DOI: https://doi.org/10.1177/0266666915571427

[62] Baako, I., Umar, S., Gidisu, P., 2019. Privacy and security concerns in electronic commerce websites in Ghana: A survey study. International Journal of Computer Network and Information Security. 11(10), 19–25. DOI: https://doi.org/10.5815/ijcnis.2019.10.03

[63] Jibril, A.B., Kwarteng, M.A., Pilik, M., et al., 2020. Towards understanding the initial adoption of online retail stores in a low-internet-penetration context: An exploratory work in Ghana. Sustainability. 12(3), 854. DOI: https://doi.org/10.3390/su12030854

[64] Wiafe, S., 2012. Examining internet and e-commerce adoption in the music records business in Ghana [Master's Thesis]. Blekinge Institute of Technology: Karlskrona, Sweden. Available from: https://www.diva-portal.org/smash/record.jsf?pid=diva2:829569

[65] Adamu, M.M., 2023. Electronic Commerce Adoption and Performance of Small Fashion Design Enterprises in Kumasi Metropolis, Ghana [Master's Thesis]. University of Cape Coast: Cape Coast, Ghana.

[66] Amanor, W., Lyu, H.-f., 2020. The impact of e-commerce on the performance of logistic service providers in Ghana. Journal of Economics and Sustainable Development. 11(10), 29–35. Available from: https://www.iiste.org/Journals/index.php/JEDS/article/view/52776/54531

[67] Laar, D.S., Kolog, P.N., Agbedemnab, P.A., et al., 2023. Navigating the digital landscape: Challenges and opportunities for online businesses in the Upper East Region of Ghana. Current Journal of Applied Science and Technology. 42(46), 23–33. DOI: https://doi.org/10.9734/cjast/2023/v42i464291

[68] Antwi, S., Ameyaw, M.A., Adamu, M.M., 2020. What drives online shopping among tertiary students in Ghana: The role of attitude and subjective norm. Journal of Applied Management and Advanced Research. 2(2), 94–108. DOI: https://doi.org/10.34047/JAMAR.2020.v02i01.005

[69] Opuni, F.F., 2023. The nexus between e-marketing, e-service quality, e-satisfaction, and e-loyalty: A cross-sectional study within the context of online SMEs in Ghana [PhD Thesis]. University of Bolton: Bolton, UK. Available from: https://www.academia.edu/download/104657710/F_Opuni_PhD_version_for_UBIR.pdf

[70] Bokuma, E., Botchway, E.A., Gyimah, K.A., et al., 2025. Smart infrastructure for a digital Ghana: Leveraging drone technology and e-malls to expand e-commerce. In Proceedings of the E-Learning International Conference, Kumasi, Ghana, 24–25 July 2025; pp. 354–366. Available from: https://www.researchgate.net/profile/Prosper-Setsoafia/publication/394107007_Are_They_AI-Literate_Exploring_The_Impact_Of_Generative_AI_Literacy_On_Academic_Performance_Among_Ghanaian_University_Students/links/688a221df7e6f27ff4763257/Are-They-AI-Literate-Exploring-The-Impact-Of-Generative-AI-Literacy-On-Academic-Performance-Among-Ghanaian-University-Students.pdf#page=360

[71] Amofah, D.O., Chai, J., 2022. Sustaining consumer e-commerce adoption in Sub-Saharan Africa: Do trust and payment method matter? Sustainability. 14(14), 8466. DOI: https://doi.org/10.3390/su14148466

[72] Pobee, F., 2021. Modeling e-commerce adoption factors among Gen-Z in a developing country: The case of Ghana. Marketing & Menedzsment. 55(1), 81–94. DOI: https://doi.org/10.15170/MM.2021.55.01.07

[73] Ofori, K.S., Boakye, K.G., Addae, J.A., et al., 2018. An empirical study on the adoption of consumer-to-consumer e-commerce: Integrating the UTAUT model and the initial trust model. In: Odumuyiwa, V., Adegboyega, O., Uwadia, C. (Eds.). e-Infrastructure and e-Services for Developing Countries. Springer: Cham, Switzerland. pp. 281–292. DOI: https://doi.org/10.1007/978-3-319-98827-6_27

[74] Akanferi, A.A., Asampana, I., Matey, A.H., et al., 2022. Adoption of mobile commerce and mobile payments in Ghana: An examination of factors influencing public servants. Interdisciplinary Journal of Information, Knowledge, and Management. 17, 287–313. DOI: https://doi.org/10.28945/4981

[75] Gyapong, K.L., 2015. Antecedents of building trust in e-commerce websites: Evidence from Ghana [Master's Thesis]. University of Ghana: Accra, Ghana. Available from: https://ugspace.ug.edu.gh/items/5dc15b72-022a-4895-8eab-8f8a547a49f5

[76] Pobee, F., 2021. Preliminary insight into electronic commerce adoption in a developing country: Evidence from Ghana. International Journal of Electronic Business. 16(4), 377–390. DOI: https://doi.org/10.1504/IJEB.2021.118497

[77] Anane, I., Nie, F., 2022. Determinant factors of digital financial services adoption and usage level: Empirical evidence from Ghana. International Journal of Management Technology. 9(1), 26–47. DOI: https://doi.org/10.37745/ijmt.2013/vo9n1pp2647

[78] Kwadwo, M., Martinson, A., Evans, T., et al., 2016. Barriers to e-commerce adoption and implementation strategy: Empirical review of small and medium-sized enterprises in Ghana. Journal of Economics, Management and Trade. 13(1), 1–13. DOI: https://doi.org/10.9734/BJEMT/2016/25177

[79] Hu, H., Ocloo, C.E., Akaba, S., et al., 2019. Effects of business-to-business e-commerce adoption on the competitive advantage of small- and medium-sized manufacturing enterprises. Economics & Sociology. 12(1), 80–99. DOI: https://doi.org/10.14254/2071-789X.2019/12-1/4

[80] Owusu, P.K., Abrokwa, M.K., 2019. The impact of e-commerce on SMEs in Ghana: A case study of SMEs in the Greater Accra Region. In Proceedings of the 2019 International Conference on Communications, Signal Processing and Networks (ICCSPN), Accra, Ghana, 29–31 May 2019; pp. 1–6. DOI: https://doi.org/10.1109/ICCSPN46366.2019.9150193

[81] Mantey, N.O., Nkrumah, R.C., Traore, M., 2024. Factors influencing the adoption of electronic commerce among small- and medium-scale enterprises in Ghana. Wisconsin Journal of Arts and Sciences. 6(1), 25–38. Available from: https://wiuc-ghana.edu.gh/wp-content/uploads/2024/01/Article-2_WJAS-Volume-6-issue-1.pdf

[82] Otoo, A.A.A., Zhiwen, L., Otoo, C.O.A., et al., 2019. Influence of organisational factors on e-business value and e-commerce adoption. International Journal of Scientific Research in Science, Engineering and Technology. 6(5), 264–276. DOI: https://doi.org/10.32628/IJS

RSET1196554

[83] Ocloo, C.E., Xuhua, H., Akaba, S., et al., 2020. The determinant factors of business-to-business (B2B) e-commerce adoption in small- and medium-sized manufacturing enterprises. Journal of Global Information Technology Management. 23(3), 191–216. DOI: https://doi.org/10.1080/1097198X.2020.1792229

[84] Agboh, D.K., 2015. Drivers and challenges of ICT adoption by SMEs in Accra Metropolis, Ghana. Journal of Technology Research. 6, 1–16. Available from: https://www.aabri.com/LV2014Manuscripts/LV14048.pdf

[85] Quaye, W., Akon-Yamga, G., Akuffobea-Essilfie, M., et al., 2024. Technology adoption, competitiveness and new market access among SMEs in Ghana: What are the limiting factors? African Journal of Science, Technology, Innovation and Development. 16(7), 1023–1037. DOI: https://doi.org/10.1080/20421338.2024.2414949

[86] Naatu, F., Naatu, S., Nassè, T.B., 2025. Culture and cybersecurity's role in the continual usage of e-commerce platforms in Sub-Saharan Africa: Perspectives from Ghana. Advances in Consumer Research. 2(1), 1–17. Available from: https://acr-journal.com/article/culture-and-cybersecurity-s-role-in-the-continual-usage-of-e-commerce-platforms-in-sub-saharan-africa-perspectives-from-ghana-873/

[87] Antwi, S., Ameyaw, M.A., 2021. The role of transportation in the sustainability of e-commerce in Africa: Evidence from Ghana. SSRN. DOI: https://doi.org/10.2139/ssrn.4229296