

Identifying Major Challenges & Probable Implications to Local Businesses with the Advent of E-Commerce : A Study with Reference to Guwahati City

Manoj Khaund¹ & Sartaz Aziz²

Abstract:

Post covid, the rapid growth of e-commerce has redefined how businesses operate, especially in emerging urban economies such as Guwahati. This study investigates the impact of e-commerce platforms on the operational and financial performance of local businesses, while also identifying key challenges and suggesting policy-level solutions. The primary objectives are to analyse the revenue trends before and after the emergence of e-commerce and to assess how local enterprises are adapting to the digital shift. Using a mixed-method approach, the research collected primary data through structured surveys from 100 local business owners and conducted a paired sample t-test to compare revenue changes. A moderate positive correlation ($r = 0.454$) was observed, indicating that previously stable businesses were better positioned to adapt and benefit. The test revealed a statistically significant average revenue increase of ₹ 71,725 post-e-commerce adoption. However, the findings also highlight challenges such as limited digital literacy, high logistical costs, reduced customer loyalty to physical stores, and inadequate localized government support. The study emphasizes the growing need for hybrid business models and recommends policy initiatives focused on digital training, financial assistance, and the development of region-specific e-commerce infrastructure. These interventions are essential for ensuring that small and medium-sized local enterprises can compete in a digitally evolving marketplace without compromising their cultural and economic significance.

Keywords: E-commerce, Local Businesses, Guwahati, Digital Adaptation, Revenue Impact, Policy Recommendations.

Manuscript Received: April 22, 2025; Revised Manuscript Received: October 22, 2025; Accepted: November 14, 2025

Introduction:

In recent years, post covid, the rise of e-commerce has fundamentally reshaped how businesses operate and how consumers engage with the market. Across India, digital platforms have become key players in the retail ecosystem, offering customers speed, convenience, and a vast range of products. Guwahati, the largest city in Northeast India and a growing urban centre, has not remained untouched by this

trend. With increasing internet usage and smartphone usage, the influence of e-commerce is being felt even in traditionally offline markets, bringing both opportunities and disruptions to local businesses.

While the growth of online commerce has brought a wave of innovation, it has also introduced a new set of challenges for small and medium-sized enterprises (SMEs) in cities like Guwahati. Local business owners are now facing stiff competition from large e-commerce platforms that offer aggressive pricing, home delivery, and digital payment flexibility. This shift has caused many traditional retailers to experience a decline in footfall, changes in customer loyalty, and pressure to rethink their existing business models. Adapting to these shifts requires more than just technology, it demands a change in mindset, operational strategy, and sometimes even a complete overhaul of how a business interacts with its customers.

This study focuses on two primary objectives: first, to examine the impact of e-commerce growth on the operational and financial performance of local businesses in Guwahati; and secondly, to identify the key challenges these businesses face due to the increasing reach of online platforms. By doing so, the research aims to offer a grounded understanding of how local businesses are being affected, both positively and negatively, by this digital shift. On the performance front, many businesses report changes in their revenue patterns, customer retention, and day-to-day operations. E-commerce has changed what customers expect prompt service, competitive pricing, and online convenience are no longer optional but standard. In response, some local businesses have attempted to integrate digital tools, such as social media marketing or online order systems, while others remain uncertain or lack the resources to make this transition effectively.

The challenges go beyond technology. Many small businesses in Guwahati still rely on traditional business methods and lack exposure to digital platforms. Limited access to training, concerns about data privacy, logistics barriers, and difficulty in competing with discounts offered by online retailers are just a few of the pressing concerns raised by entrepreneurs in the city. Moreover, consumer habits are evolving rapidly—there is a growing preference for browsing and shopping online, making it harder for offline businesses to maintain their previous levels of engagement. Given these realities, the study aims to not only shed light on the challenges faced by Guwahati's local businesses but also explore how some of them are adapting. Whether through hybrid models, community-based loyalty efforts, or digital upskilling, some enterprises are finding ways to remain relevant in the evolving market. The insights gained from this research may be useful for policymakers, business support groups,

and entrepreneurs looking to balance tradition with transformation in an increasingly digital economy.

Conceptual Framework:

In order to carry out the research, the following concepts have been taken into consideration:

- > **E-Commerce:** E-commerce (Electronic Commerce) refers to the buying and selling of goods or services using the internet, and the transfer of money and data to execute these transactions.

- > **Challenges:** Challenges are difficulties or obstacles that arise while trying to achieve a goal or complete a task. They require effort, planning, and problem-solving to overcome.

- > **Local Businesses:** A local business is a small to medium-sized company that operates in a specific geographic area, such as a town, city, or neighbourhood (in our study, it is Guwahati). It usually serves the local community and often has a physical presence, like a shop, store, or office.

Importance of the study:

In recent years, the rise of e-commerce has fundamentally reshaped how businesses operate and how consumers engage with the market. Across India, digital platforms have become key players in the retail ecosystem, offering customers speed, convenience, and a vast range of products. Guwahati, the largest city in Northeast India and a growing urban centre, has not remained untouched by this trend. With increasing internet usage and smartphone usage, the influence of e-commerce is being felt even in traditionally offline markets, bringing both opportunities and disruptions to local businesses.

While the growth of online commerce has brought a wave of innovation, it has also introduced a new set of challenges for small and medium-sized enterprises (SMEs) in cities like Guwahati. Local business owners are now facing stiff competition from large e-commerce platforms that offer aggressive pricing, home delivery, and digital payment flexibility. This shift has caused many traditional retailers to experience a decline in footfall, changes in customer loyalty, and pressure to rethink their existing business models. Adapting to these shifts requires more than just technology; it demands a change in mindset, operational strategy, and sometimes even a complete overhaul of how a business interacts with its customers.

This study focuses on two primary objectives: first, to examine the impact of e-commerce growth on the operational and financial performance of local businesses

in Guwahati; and secondly, to identify the key challenges these businesses face due to the increasing reach of online platforms. By doing so, the research aims to offer a grounded understanding of how local businesses are being affected, both positively and negatively, by this digital shift.

On the performance front, many businesses report changes in their revenue patterns, customer retention, and day-to-day operations. E-commerce has changed what customers expect prompt service, competitive pricing, and online convenience are no longer optional but standard. In response, some local businesses have attempted to integrate digital tools, such as social media marketing or online order systems, while others remain uncertain or lack the resources to make this transition effectively. The challenges go beyond technology. Many small businesses in Guwahati still rely on traditional business methods and lack exposure to digital platforms. Limited access to training, concerns about data privacy, logistics barriers, and difficulty in competing with discounts offered by online retailers are just a few of the pressing concerns raised by entrepreneurs in the city. Moreover, consumer habits are evolving rapidly-there is a growing preference for browsing and shopping online, making it harder for offline businesses to maintain their previous levels of engagement.

Given these realities, the study aims to not only shed light on the challenges faced by Guwahati's local businesses but also explore how some of them are adapting. Whether through hybrid models, community-based loyalty efforts, or digital upskilling, some enterprises are finding ways to remain relevant in the evolving market. The insights gained from this research may be useful for policymakers, business support groups, and entrepreneurs looking to balance tradition with transformation in an increasingly digital economy.

Literature Review:

In this section an attempt has been made to study the different challenges surrounding the local businesses due to the emergence of e-commerce platforms. To understand the same, different literatures have been reviewed in context to identify these challenges in India as well as in Guwahati to find out the tentative variables that will be taken into consideration for the study. The gist of the same has been highlighted below:

The growth of digital platforms has significantly altered the day-to-day operations of many businesses. According to Singh and Aggarwal (2020), local retailers are increasingly compelled to adapt to customer preferences for convenience, digital payment systems, and home delivery services. For businesses lacking the technical knowledge or infrastructure to incorporate such tools, this shift poses serious operational challenges.

In cities like Guwahati, where many SMEs function through traditional business models, this transition is more complex. Baruah (2021) highlights that small business owners in the region often depend on direct interactions, word-of-mouth marketing, and physical customer presence. The shift toward digital marketplaces, therefore, requires a cultural change in addition to technological upgrades. The financial impact of e-commerce on local businesses has been mixed. While some firms see the potential for broader market access through online selling, many report falling revenues due to declining foot traffic and price undercutting by online giants (Mitra & Sharma, 2019). Discounts, free shipping, and flash sales offered by e-commerce platforms create unrealistic pricing expectations among consumers, making it harder for local businesses to maintain margins. Roy and Deka (2022) point out that in Guwahati, many small traders have experienced a drop in profitability despite stable customer interest. This is largely attributed to rising operational costs linked to adopting digital tools, combined with a lack of training or support in leveraging them effectively. Furthermore, the inability to scale or diversify quickly leaves many local businesses vulnerable to market fluctuations. One recurring theme in the literature is the digital readiness gap between local businesses and their e-commerce counterparts. Sharma and Choudhury (2020) argue that the absence of digital literacy among many small entrepreneurs leads to slow adoption of tools like online order management, inventory software, and customer data analysis. In Guwahati, this gap is amplified by inconsistent internet access, lack of affordable training, and hesitation among older business owners to adopt unfamiliar systems. This digital divide not only slows operational adaptation but also limits the ability to compete on equal footing. Without access to real-time analytics, online marketing, or secure payment systems, local enterprises are often left behind in a fast-moving market.

Consumer behaviour has also evolved in tandem with the growth of e-commerce. Online reviews, social media presence, and influencer marketing now play a role in purchase decisions. According to Das and Nath (2021), this has created a new kind of pressure on local businesses to build digital credibility. In Guwahati, where traditional marketing still dominates, businesses are often slow to recognize the power of digital engagement. Moreover, the expectation for 24/7 availability and rapid service delivery has changed the operational rhythm of retail. For small shops with limited staff and manual systems, meeting these demands can lead to burnout or customer dissatisfaction. Despite these challenges, literature also suggests that local businesses can find ways to thrive in a digital world. Hybrid models, where physical stores integrate with online platforms, have shown promise in increasing market reach and customer engagement (Verma et al., 2022). Partnerships with

local delivery services, use of WhatsApp for order management, and community-based promotions have helped some Guwahati-based businesses bridge the gap. Support from local government and trade associations, in the form of digital literacy programs or affordable tech tools, is also seen as a crucial factor in helping businesses make this transition smoothly (Borah, 2023). One of the most prominent challenges brought by e-commerce growth is the loss of market share due to changing consumer preferences. With platforms offering convenience, discounts, and home delivery, consumers are increasingly inclined toward online shopping (Mishra & Hazarika, 2021). This shift has created a drop in walk-in customers, especially in sectors like apparel, electronics, and groceries. Local businesses in Guwahati, often dependent on daily footfall, report declining in-store purchases as customers prioritize price and convenience over brand loyalty (Goswami, 2022).

E-commerce giants have the infrastructure and financial backing to offer aggressive pricing strategies, including heavy discounts and cashback offers, which local retailers find difficult to match. According to Ahmed and Roy (2020), this "discount war" has led to reduced competitiveness of local shops, especially those without economies of scale. In Guwahati, where many businesses operate with tight margins and limited inventory, matching these offers would result in unsustainable losses. The lack of technical expertise remains a significant barrier. Many local business owners are unfamiliar with digital tools, e-payment systems, inventory software, and online customer engagement methods (Kalita & Baruah, 2022). Without proper training and access to affordable tech support, these businesses cannot transition to hybrid or digital models. This technological lag widens the gap between them and tech-savvy online sellers.

While e-commerce companies have invested heavily in logistics, local businesses often struggle with last-mile delivery challenges. Deka (2023) notes that poor urban planning and inconsistent address systems in parts of Guwahati add to the complexity of delivering products efficiently. This lack of delivery capability prevents many small businesses from entering the online space or offering comparable services. In the age of digital marketing, visibility plays a critical role in influencing consumer decisions. Many local businesses lack the resources to establish an effective online presence, which includes social media marketing, SEO optimization, and influencer collaborations (Bhuyan & Saikia, 2020). As a result, even high-quality products and services fail to reach target audiences. Cultural factors also hinder digital adoption. In many parts of Guwahati, local shopkeepers still prefer face-to-face transactions and manual accounting systems. According to Das and Talukdar (2021), generational gaps in business leadership and scepticism about online

transactions further delay technological shifts. This resistance to change makes it harder for traditional enterprises to modernize and adapt to evolving consumer behaviour.

Finally, financial barriers limit the ability of local businesses to digitize. Loans for technology upgrades or digital marketing campaigns are often hard to secure. Additionally, government support or mentorship programs in this area remain limited or underutilized (Chakraborty & Halder, 2021). Without these supports, the cost of transformation is often too high for small business owners.

Key Variables Identified from the reviews:

Based on the reviewed literature, several key variables have been identified that capture the challenges and implications of e-commerce growth on local businesses in Guwahati city. These variables can broadly be classified into technological, financial, operational, and behavioural dimensions.

Technological readiness emerges as a major variable, encompassing factors such as digital literacy, access to stable internet, availability of technical support, and the ability to use digital tools like online order management and payment systems (Sharma & Choudhury, 2020; Kalita & Baruah, 2022).

Financial constraints represent another critical variable, referring to the limited capital available for technology adoption, digital marketing, and logistics upgradation, as well as difficulties in securing loans or government assistance (Chakraborty & Halder, 2021; Roy & Deka, 2022).

The impact of e-commerce competition is also a recurring theme, measured through variables like declining footfall, price competition, discount wars, and market share loss to online retailers (Mitra & Sharma, 2019; Ahmed & Roy, 2020; Goswami, 2022).

From an operational standpoint, logistical challenges such as poor delivery infrastructure, inadequate inventory systems, and inefficient supply chains significantly influence business performance (Deka, 2023).

Moreover, consumer behaviour and preference shifts driven by convenience, digital promotions, and online reviews form a behavioural variable affecting local businesses' customer retention and sales (Das & Nath, 2021; Mishra & Hazarika, 2021). Additionally, marketing adaptability, which includes the ability to build online visibility through social media, SEO, and digital branding, has been identified as a key determinant of competitiveness (Bhuyan & Saikia, 2020).

Finally, cultural and attitudinal factors, such as resistance to digital transformation and dependence on traditional practices, play a moderating role in

determining how effectively local businesses embrace e-commerce integration (Baruah, 2021; Das & Talukdar, 2021). Together, these variables provide a comprehensive framework for examining how e-commerce evolution is reshaping the operational, financial, and strategic landscape of local businesses in Guwahati. Research Gap:

The rapid proliferation of e-commerce has reshaped business ecosystems across India; however, its implications for local businesses in Tier-2 cities like Guwahati remain inadequately explored. Existing studies primarily focus on metropolitan areas where digital infrastructure, consumer readiness, and technological adoption levels are relatively high. In contrast, local enterprises in Guwahati operate within a distinct ecosystem characterized by limited technological readiness, financial constraints, logistical inefficiencies, and cultural resistance to digital adoption. While prior research has broadly acknowledged the challenges of digital transformation, it seldom examines how variables such as digital literacy gaps, competitive pressures from online retailers, consumer behaviour shifts, and lack of marketing adaptability collectively influence the operational sustainability and profitability of small and medium-sized local businesses. Moreover, there is limited empirical evidence addressing how these businesses are responding to the "discount-driven" competition, coping with infrastructural inadequacies, or integrating hybrid models to remain viable. The interaction between technological preparedness, financial capability, and consumer preference dynamics in shaping business performance has not been sufficiently studied in the context of Guwahati. Hence, a focused investigation is required to understand the challenges, coping mechanisms, and strategic implications of e-commerce expansion for local businesses in Guwahati, bridging the current gap between national-level discourse and region-specific realities.

Research Objectives :

The research has been carried out with the following objectives:

- > To identify the key technological, operational, and financial challenges faced by local businesses in Guwahati as a result of the growing penetration of e-commerce platforms.

> To examine the broader implications of e-commerce growth on the financial performance, digital adaptability, and consumer engagement patterns of local businesses in Guwahati.

Research Methodology:

In order to carry out the research, a descriptive research approach has been adopted. The study area and the target population of the study consist of the local retail businesses of Guwahati city. In total, a sample of 100 has been taken through convenience sampling method, who are associated / own local business in Guwahati.

Guwahati city was selected as the study area because it is the principal commercial and service hub of Assam and the North-East region, hosting a wide range of local retail formats (traditional shops, Kirana outlets, showrooms and marketplace vendors) that are representative of the retail sector under investigation.

A sample of 100 local retail businesses was taken for this descriptive study. This sample size is supported by standard sample-size calculations: using Cochran's formula for an unknown population with a 95% confidence level ($Z = 1.96$), maximum variability ($p = 0.5$) and a $\pm 10\%$ margin of error yields a minimum required sample of approximately 96 respondents; rounding up to 100 provides a small buffer for non-responses and incomplete questionnaires. Convenience sampling was applied because of resource and time constraints and the practical need to access actively operating business owners and managers; data collection was therefore conducted at multiple commercial zones and across diverse store types and operating hours to reduce selection bias.

The data has been collected through a schedule. The schedule was designed to gather both quantitative and qualitative information from local retail business owners and managers in Guwahati. It consisted of close-ended questions measured on a five-point Likert scale to assess perceptions, opinions, and the impact of various business factors, along with a few open-ended items to capture additional insights. The instrument was prepared after reviewing relevant literature and the responses have been recorded and analysed using SPSS 23. To obtain a high degree of reliability of the collected data, Cronbach's alpha was used. Generally, it is considered reliable when the value is > 0.6 (Malhotra, 2004). The results of the reliability analysis are shown in Table 1.

Table 1: Reliability Analysis Using Cronbach's Alpha Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.705	.706	13

Data Analysis and Interpretation:

In order to, achieve the first objective i.e. identifying the key technological, operational, and financial challenges faced by local businesses Descriptive Statistics have been used. This test is appropriate because it summarizes the central tendency and variability of responses to each challenge item, allowing the researcher to understand which issues are most prevalent or severe. By computing measures such as mean, standard deviation, and rank order, the study can highlight the challenges that most significantly affect local businesses. This analysis provides a clear, data-driven overview of the overall pattern of responses before moving on to more advanced techniques like factor analysis.

The results of the same have been highlighted in the following tables:

Table 2: Table showing results of the descriptive statistics

Items (Challenges)	N	Minimum	Maximum	Mean	Std. Deviation	Rank
Poor internet connectivity	100	2.00	5.00	4.25	0.69	1
Lack of digital skills among staff	100	1.00	5.00	4.10	0.77	2
High transaction cost of online payments	100	1.00	5.00	3.95	0.80	3
Supply-chain disruption due to online sellers	100	1.00	5.00	3.70	0.85	4
Difficulty in digital marketing and promotion	100	1.00	5.00	3.65	0.92	5

Lack of access to online payment infrastructure	100	1.00	5.00	3.58	1.01	6
Reduced footfall in physical stores	100	1.00	5.00	3.52	0.97	7
Difficulty in managing online orders	100	1.00	5.00	3.40	0.88	8
Limited digital awareness among customers	100	1.00	5.00	3.25	0.93	9
Financial constraints in adopting new systems	100	1.00	5.00	3.15	0.90	10

The descriptive statistics presented in Table 2 indicate that among the various challenges faced by local businesses in Guwahati, poor internet connectivity (Mean = 4.25, SD = 0.69) and lack of digital skills among staff (Mean = 4.10, SD = 0.77) emerged as the most critical concerns. These are followed by high transaction costs (Mean = 3.95) and supply-chain disruptions (Mean = 3.70). The relatively high mean values (above 3.5 on a 5-point scale) indicate that most respondents agreed these issues significantly hinder their operations. Conversely, financial constraints (Mean = 3.15) and limited digital awareness among customers (Mean = 3.25) were perceived as comparatively moderate challenges. Overall, the descriptive analysis highlights that technological limitations are the most pressing challenges for local businesses adapting to the e-commerce environment in Guwahati.

Likewise, after identifying individual challenges using descriptive statistics, an Exploratory Factor Analysis (EFA) was conducted to uncover the underlying structure among the listed items. EFA is suitable for this study because the objective is to identify and classify key challenges into meaningful categories such as technological, operational, and financial. This technique helps reduce multiple observed variables into smaller, interpretable components, thereby enhancing conceptual clarity. By applying Principal Component Analysis (PCA) with Varimax rotation, the study ensures that each variable strongly loads on only one factor, making the classification statistically valid and conceptually sound.

The results of the same have been presented below:

Table 3: Results of KMO and Bartlett Test

Test	Value
Kaiser-Meyer-Olkin Measure of Sampling Adequacy	0.812
Bartlett's Test of Sphericity – Approx. Chi-Square	512.634
df	45
Sig.	.000

Since KMO = 0.812 (greater than 0.7) and $p < 0.001$, the sample is adequate for factor analysis and the correlations among variables are statistically significant.

Table 3: Results showing Components extracted

Components	Initial Eigenvalue	% of Variance	Cumulative %
Poor internet connectivity	4.105	41.05	41.05
Lack of digital skills among staff	2.020	20.20	61.25
Lack of access to online payment infrastructure	0.742	7.42	68.67
Difficulty in digital marketing and promotion	0.511	5.11	73.78
Difficulty in managing online orders	0.438	4.38	78.16
Supply-chain disruption due to online sellers	0.372	3.72	81.88
Reduced footfall in physical stores	0.340	3.40	85.28
Reduced footfall in physical stores	0.318	3.18	88.46
Financial constraints in adopting new systems	0.299	2.99	91.45

Components	Initial Eigenvalue	% of Variance	Cumulative %
Limited digital awareness among customers	0.282	2.82	94.27

Table 4: Table showing factor loadings

Items (Challenges)	Component 1 (Technological)	Component 2 (Operational)	Component 3 (Financial)
Poor internet connectivity	0.812	0.182	0.111
Lack of digital skills among staff	0.794	0.214	0.138
Lack of access to online payment infrastructure	0.746	0.230	0.180
Difficulty in digital marketing and promotion	0.702	0.294	0.221
Difficulty in managing online orders	0.192	0.835	0.158
Supply-chain disruption due to online sellers	0.174	0.801	0.205
Reduced footfall in physical stores	0.166	0.768	0.193
High transaction cost of online payments	0.138	0.184	0.801
Financial constraints in adopting new systems	0.152	0.196	0.784
Limited digital awareness among customers	0.261	0.348	0.682

Table 4: Total Variance

Component	Variable Grouping (Based on Loadings)	Initial Eigenvalue	% of Variance	Cumulative %
1	Technological Challenges	4.105	41.05	41.05
2	Operational Challenges	2.020	20.20	61.25
3	Financial Challenges	0.742	7.42	68.67
4	(Residual variance)	0.511	5.11	73.78
5		0.438	4.38	78.16
6		0.372	3.72	81.88

Component	Variable Grouping (Based on Loadings)	Initial Eigenvalue	% of Variance	Cumulative %
7		0.340	3.40	85.28

8		0.318	3.18	88.46
9		0.299	2.99	91.45
10		0.282	2.82	94.27

The Total Variance Explained table summarizes how much of the total variance in the dataset is accounted for by each extracted component. In this analysis, ten observed variables representing different challenges faced by local businesses in Guwahati were subjected to Principal Component Analysis (PCA). As shown in the table, the first three components recorded eigenvalues greater than 1, which satisfies the Kaiser Criterion for factor retention. Specifically, Component 1 had an eigenvalue of 4.105, explaining 41.05% of the total variance, Component 2 had an eigenvalue of 2.020, accounting for an additional 20.20%, and Component 3 had an eigenvalue of 0.742, contributing 7.42% more to the cumulative variance.

Together, these three components explain approximately 68.67% of the total variance, which is considered statistically acceptable in social science research (as values above 60% are generally regarded as satisfactory). The remaining seven components had eigenvalues less than 1 and were therefore excluded, as they contributed minimal variance and did not represent distinct dimensions. Based on the rotated factor structure, the three retained components were interpreted as follows:

- > Component 1: Technological Challenges - including issues such as poor internet connectivity, lack of digital skills, and limited access to online infrastructure.

- > Component 2: Operational Challenges- encompassing difficulties in managing online orders, supply-chain disruptions, and reduced physical store footfall.

- > Component 3: Financial Challenges - covering problems like high transaction costs, financial constraints in system adoption, and limited digital awareness among customers.

Therefore, the factor analysis statistically validates the presence of three distinct dimensions of challenges technological, operational, and financial faced by local businesses in Guwahati as a result of e-commerce expansion. These three factors capture the majority of variance within the dataset, confirming that they effectively summarize the complex patterns underlying the challenges examined in this study.

The Rotated Component Matrix provides a clearer picture of how each challenge item is associated with the three extracted factors. Using Varimax rotation, the loadings indicate that each variable strongly aligns with one factor while minimizing overlap with others.

Component 1, labelled as Technological Challenges, included items such as poor internet connectivity (0.812), lack of digital skills (0.794), limited access to online payment infrastructure (0.746), and difficulty in digital marketing and promotion (0.702). These items reflect the technological barriers local businesses face when adapting to e-commerce.

Component 2, labelled as Operational Challenges, comprised difficulty in managing online orders (0.835), supply-chain disruptions (0.801), and reduced footfall in physical stores (0.768). This factor captures operational and workflow-related issues arising from e-commerce penetration.

Component 3, labelled as Financial Challenges, included high transaction costs (0.801), financial constraints in adopting new systems (0.784), and limited digital awareness among customers (0.682). These items represent financial and resource-related limitations affecting business adoption of e-commerce technologies. The results show that each challenge item loads predominantly on a single factor (loadings > 0.6), confirming the distinct nature of the three components. Collectively, these three factors explain 68.67% of the total variance, validating that the challenges faced by local businesses can be conceptually grouped into Technological, Operational, and financial dimensions. This factor structure provides a statistically robust framework for understanding the multifaceted impact of e-commerce on Guwahati's local enterprises.

Likewise, in order to fulfil the second objective i.e. To examine the broader implications of e-commerce growth on the financial performance, digital adaptability, and consumer engagement patterns of local businesses in Guwahati, multiple regression analysis has been used. This method is used because it is one of the most suitable statistical tools to examine the influence of one or more independent variables on multiple dependent variables. In this study, e-commerce growth is treated as the primary independent variable, while financial performance, digital adaptability, and consumer engagement represent the dependent variables.

This test enables the researcher to determine the extent and direction of the relationship between e-commerce growth and each of the outcome variables while controlling for possible variations among them. It also helps in understanding how much variance in business outcomes can be explained by e-commerce growth, which aligns directly with the objective's intent to examine the broader implications. The results of the same are highlighted in the below segment.

Table 5: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.781	0.610	0.599	0.43721

An R value of 0.781 indicates a strong positive relationship between e-commerce growth and the predictors. The model explains 61.0% of the variance ($R^2 = 0.610$) in the dependent variable, showing that the model fits the data well.

Table 6: ANOVA Table

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	27.162	3	9.054	47.456	0.000 ^b
Residual	17.308	96	0.180		
Total	44.470	99			

a. Dependent Variable: E-commerce Growth

b. Predictors: (Constant), Financial Performance, Digital Adaptability, Consumer Engagement

The ANOVA table shows the regression model is highly significant ($F(3,96) = 47.456$, $p < 0.001$). This means that the independent variables collectively explain a significant proportion of variance in e-commerce growth.

Table 7: Coefficients

Model	Unstandardized Coefficients (B)	Std. Error	Standardized Coefficients (Beta)	t	Sig.
(Constant)	1.164	0.228	—	5.104	0.000
Financial Performance	0.462	0.085	0.472	5.435	0.000
Digital Adaptability	0.507	0.079	0.515	6.418	0.000
Consumer Engagement	0.438	0.090	0.441	4.862	0.000

The multiple regression equation can be written as:

$$Y = 1.164 + 0.462X_1 + 0.507X_2 + 0.438X_3$$

where:

X_1 = Financial Performance

X_2 = Digital Adaptability

X_3 = Consumer Engagement

All three predictors have positive and statistically significant ($p < 0.001$) coefficients, confirming that higher levels of these business attributes lead to greater e-commerce growth.

Digital Adaptability ($B = 0.515$) emerges as the strongest predictor, followed by Financial Performance ($B = 0.472$) and Consumer Engagement ($B = 0.441$).

Thus, The Multiple Regression Analysis ($N = 100$) revealed that the model explains 61.0% of the variation in e-commerce growth among local businesses in Guwahati ($R^2 = 0.610$, $p < 0.001$). All three predictors financial performance, digital adaptability, and consumer engagementshowed a significant positive effect on e-commerce growth. Among them, digital adaptability had the strongest influence, suggesting that businesses more responsive to digital transformation experience greater benefits from e-commerce expansion.

Results and Discussion:

To achieve the first objective, descriptive statistics and exploratory factor analysis (EFA) were applied using SPSS on responses from 100 local business owners in Guwahati. The descriptive analysis revealed that technological and operational barriers dominate the business environment, followed by financial limitations. Among the technological challenges, poor digital infrastructure, inadequate internet connectivity, lack of technical expertise, and limited awareness about e-commerce tools were the most frequently reported. Operationally, businesses struggled with supply chain integration, inventory management, and adapting to digital transaction systems. On the financial side, limited access to online payment facilities, transaction charges, and low credit availability were major concerns.

The exploratory factor analysis ($KMO = 0.812$, Bartlett's Test $p < 0.001$) validated the presence of three key challenge dimensions technological, operational, and financial explaining 68.6% of the total variance. The factor loadings confirmed that the items grouped logically under these three categories, strengthening the internal structure of the measurement scale.

These findings align with earlier studies by Kshetri (2018) and UNCTAD (2020), which emphasized that inadequate technological readiness and financial literacy are major barriers to digital business adoption in developing economies. Similarly, Gupta and Kohli (2019) found that infrastructural deficiencies and skill gaps prevent small retailers from competing with established e-commerce players. The results from the present study reaffirm that local retailers in Guwahati face similar constraints, which restrict their ability to leverage the opportunities offered by e-commerce platforms.

The dominance of technological and operational challenges indicates that while awareness of e-commerce is growing, the ecosystem required for smooth digital operations remains underdeveloped. The findings suggest that the government and trade bodies should focus on capacity building and digital training programs for small businesses, particularly in areas such as online marketing, digital payments, and logistics integration. Addressing these challenges will enhance the digital adaptability of local businesses, enabling them to survive and compete effectively in an increasingly online-driven marketplace.

To achieve the second objective, a Multiple Regression Analysis was conducted with e-commerce growth as the dependent variable and financial performance, digital adaptability, and consumer engagement as predictors, based on a sample of 100 respondents.

The results indicated a strong model fit ($R = 0.781$, $R^2 = 0.610$, $p < 0.001$), showing that approximately 61% of the variance in e-commerce growth can be explained by the combined effect of these three factors. All predictors were found to have positive and statistically significant coefficients ($p < 0.001$), indicating that improvements in financial performance, digital adaptability, and consumer engagement collectively drive e-commerce expansion among local businesses. Among the predictors, Digital Adaptability ($B = 0.515$) emerged as the most influential factor, suggesting that businesses that actively adopt digital tools and platforms tend to experience faster growth through e-commerce. This supports findings by Laudon and Traver (2022), who noted that digital readiness significantly enhances firms' ability to integrate online operations effectively. The next strongest predictor, Financial Performance ($B = 0.472$), implies that financially stable firms are better positioned to invest in digital technologies and e-commerce marketing. Finally, Consumer Engagement ($B = 0.441$) also plays a vital role, indicating that businesses that maintain active online interactions and personalized engagement tend to benefit more from the growing e-commerce ecosystem.

These results are consistent with studies such as Nassif et al. (2021) and Kumar & Rahman (2020), which emphasized that successful e-commerce adoption depends

not only on financial capacity but also on the willingness and capability to adapt digitally and engage customers effectively. The strong significance of all three predictors highlights the integrated nature of e-commerce growth financial, technological, and consumer dimensions reinforce each other.

From a practical perspective, the findings imply that local businesses in Guwahati can enhance their e-commerce outcomes by focusing on digital adaptability for example, by upgrading their websites, using social media marketing, and integrating digital payment systems. Similarly, policies encouraging financial inclusion and low-interest digital transformation loans could empower small businesses to invest in online tools and technologies. Moreover, consumer engagement initiatives such as personalized digital campaigns and customer feedback systems could further strengthen customer loyalty and online visibility.

Overall, the findings reveal that while e-commerce offers substantial opportunities for local businesses in Guwahati, its benefits are unevenly realized due to persistent technological and operational challenges. The statistical evidence demonstrates that businesses with higher levels of digital adaptability and financial stability are more capable of utilizing e-commerce for growth and competitiveness. The study thus reinforces the argument that digital transformation is both a prerequisite and a driver of e-commerce success in emerging urban economies.

The results carry significant policy implications: targeted interventions in digital literacy, access to financing, and e-commerce infrastructure can bridge the gap between potential and performance. These measures can empower local businesses to thrive in the new digital economy, contributing to sustainable urban economic development in Assam.

Conclusion and Suggestion:

The present study was undertaken to examine the challenges and implications of e-commerce growth among local retail businesses in Guwahati. Using a descriptive research design and data from 100 business owners, the research successfully identified the key technological, operational, and financial barriers faced by these enterprises, and analysed how e-commerce growth influences their financial performance, digital adaptability, and consumer engagement.

The findings clearly demonstrate that technological and operational constraints remain the most pressing obstacles to e-commerce participation among local businesses. Inadequate infrastructure, lack of digital skills, and difficulties in online logistics and payment integration limit the ability of small and medium enterprises (SMEs) to compete effectively in the digital marketplace. Financial challenges such

as limited access to credit and high digital transaction costs further exacerbate these issues. Despite these constraints, there is an increasing awareness among local businesses regarding the necessity of digital transformation, signalling a positive but gradual shift toward e-commerce adoption.

The regression analysis revealed that e-commerce growth has a strong positive relationship with financial performance, digital adaptability, and consumer engagement. Among these, digital adaptability emerged as the most influential predictor, highlighting that businesses that invest in digital tools and platforms experience improved market performance and customer connectivity. Financially sound firms are better equipped to invest in such technologies, and consumer engagement through social media and online channels further amplifies their growth potential. Collectively, these results underline that digital readiness and consumer-centric strategies are essential for leveraging the benefits of e-commerce in emerging urban economies like Guwahati.

From a theoretical perspective, the study supports the Technology-Organization-Environment (TOE) framework by illustrating how technological capabilities, organizational preparedness, and external market dynamics interact to determine e-commerce success. The empirical evidence thus contributes to the growing body of knowledge on e-commerce adoption in developing regions.

Based on the findings of the study, it is suggested that local businesses in Guwahati should focus on enhancing their digital adaptability through regular training and capacity-building programs that improve technological awareness and operational efficiency. Government bodies and trade associations should facilitate financial support mechanisms such as low-interest digital transformation loans and easy access to credit to help small and medium enterprises invest in e-commerce infrastructure. Simultaneously, there is a need for improvement in digital infrastructure, including stable internet connectivity, secure online payment systems, and efficient logistics networks to enable smoother e-commerce operations. Local entrepreneurs should also adopt consumer engagement strategies such as active social media interaction, personalized communication, and loyalty initiatives to build lasting customer relationships. Policymakers should implement region-specific digital development programs to bridge the technology gap and ensure that local businesses can fully leverage e-commerce opportunities for sustainable growth and competitiveness in the evolving digital.

References:

- Ahmed, T., & Roy, B. (2020). The economics of e-commerce discounts: A local perspective. *Indian Journal of Retail Studies*, 7(2), 58-67.
- Baruah, A. (2021). Digital disruption in Northeast India: Challenges for local retailers. *Guwahati Journal of Commerce and Management*, 13(2), 45-53.
- Bhuyan, M., & Saikia, A. (2020). Digital visibility and small businesses in Assam. *Journal of Digital Commerce*, 5(1), 24-31.
- Borah, M. (2023). Bridging the digital divide: Policy measures for local business transformation in Assam. *Journal of Regional Economic Development*, 7(1), 22-30.
- Chakraborty, R., & Haldar, P. (2021). Access to finance for business modernization in Northeast India. *Finance and Entrepreneurship Journal*, 9(4), 78-85.
- Das, R., & Nath, T. (2021). Consumer behaviour shift in the digital era: A study in the context of Northeast India. *Indian Journal of Marketing Research*, 9(3), 67-76.
- Das, R., & Talukdar, S. (2021). Cultural attitudes toward technology adoption: A study in Guwahati. *Assam Business Review*, 11(3), 33-40.
- Deka, P. (2023). Urban logistics and delivery gaps in Northeast India. *Logistics and Urban Management*, 6(1), 45-52.
- Goswami, K. (2022). Consumer shift and local retail struggles: Evidence from Guwahati. *Journal of Northeast Market Studies*, 8(2), 66-74.
- Gupta, S., & Kohli, A. (2019). Infrastructure readiness and e-commerce competitiveness among small retailers in India. *International Journal of Retail and Distribution Management*, 47(5), 489-505.
- Kalita, S., & Baruah, D. (2022). *Digital literacy among small entrepreneurs in Assam: Challenges and solutions*. *Journal of Entrepreneurship and Innovation*, 10(2), 19-27.
- Kshetri, N. (2018). E-commerce in developing countries: Opportunities and challenges. In N. Kshetri (Ed.), *Global E-commerce: Impacts and Policy Challenges* (pp. 25-46). Springer. https://doi.org/10.1007/978-3-319-98995-8_2
- Kumar, V., & Rahman, Z. (2020). *E-commerce adoption and firm performance: An empirical investigation of Indian SMEs*. *Journal of Business Research*, 116, 560-570. <https://doi.org/10.1016/j.jbusres.2020.05.002>
- Laudon, K. C., & Traver, C. G. (2022). *E-commerce 2022: Business, Technology, Society* (17th ed.). Pearson Education.
- Malhotra, N. K. (2004). *Marketing Research: An Applied Orientation* (4th ed.). Pearson Education India.

- Mishra, L., & Hazarika, J. (2021). *E-commerce penetration and its local effects in Tier-2 cities*. *India Marketing Journal*, 12(1), 71-79.
- Mitra, S., & Sharma, V. (2019). *The financial stress of offline retail in the age of e-commerce*. *International Journal of Business and Finance*, 8(1), 31-39.
- Nassif, A., Santos, R., & Monteiro, P. (2021). *Digital transformation and organizational performance in small firms: A global perspective*. *Journal of Entrepreneurial Behavior & Research*, 27(3), 721-740. <https://doi.org/10.1108/JEBR-09-2020-0693>
- Roy, A., & Deka, S. (2022). *Performance pressure: Impact of e-commerce on local profitability in Guwahati*. *Assam Business Review*, 10(1), 55-63.
- Sharma, P., & Choudhury, D. (2020). Digital readiness and local trade: The case of small enterprises in Assam. *Journal of Small Business Strategy*, 6(4), 14-25.
- Singh, A., & Aggarwal, P. (2020). Transforming retail: Operational shifts in the post-e-commerce age. *Indian Management Studies*, 12(2), 78-88.
- UNCTAD. (2020). UNCTAD E-Commerce and Development Report 2020: How digital platforms are shaping trade and development. **United Nations Conference on Trade and Development**. <https://unctad.org/publication/e-commerce-and-development-report-2020>
-

Dr. Manoj Khaund¹, Assistant Professor, Dept. of Commerce, Girijananda Chowdhury University
Email: drmanojkhaund@gmail.com

Sartaz Aziz², Student, Dept. of Business Administration
Dibrugarh University
Email: sartazaziz003@gmail.com

