

Analysis on Security Concerns, Customer Spending and the Societal Impact of E Commerce in Rural Telangana

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Abstract—This study explores the evolving dynamics of e-commerce adoption among rural consumers in Telangana, focusing on key aspects such as demographic profiles, security concerns, online spending behavior, and societal impact. With the increasing penetration of smartphones and internet access in rural India, understanding consumer behavior outside urban centers has become critical. The study will be based on the sample of 150 respondents gathering information using an elaborate questionnaire, and it may show trends in online consumption and attitudes to online shopping. Findings indicate a relatively young and educated rural population actively engaging in e-commerce, though significant concerns remain around payment safety and fraud. Although many users have average confidence on digital transaction, about one out of three users undermine using it as they fear being scammed or misusing their data. The key drivers to the purchase behavior online have been price sensitivity, convenience and scant supply of local products. Interestingly, the study reveals a statistically significant relationship between security concerns and e-commerce usage, but no strong correlation between online spending and perceived societal benefits. Overall, the research highlights the growing influence of e-commerce in rural Telangana, supported by mobile connectivity and changing consumer attitudes. But issues like security (trust), digital literacy, and awareness are the ones that should be dealt with to enable further adoption. Policymakers and digital commerce platforms must prioritize user education and fraud prevention strategies to build sustainable e-commerce ecosystems in rural India.

Keywords: Rural E-commerce, Telangana, Consumer Behavior, Security Concerns, Online Spending, Societal Impact, Chi-Square Test, Digital Trust, Internet Penetration, Mobile Commerce.

I. INTRODUCTION

The rapid growth of digital infrastructure in India has significantly transformed how goods and services are consumed, even in rural regions.

Telangana, like many other states, has witnessed a noticeable shift in consumer behavior as rural populations increasingly engage with e-commerce platforms for everyday needs. Factors such as the proliferation of smartphones, improved internet connectivity, and doorstep delivery have reduced the digital divide and enabled rural consumers to access products and services beyond their local markets.

The new challenges however come with this move. Despite the increasing popularity of online shopping, rural consumers often face issues related to payment security, trust in sellers, and logistical constraints. Concerns over online fraud, identity theft, and the delivery of counterfeit or damaged goods continue to affect purchasing confidence. These apprehensions can hinder the broader acceptance and integration of e-commerce into rural lifestyles.

Moreover, understanding how online spending correlates with broader societal effects—such as improved convenience, saved time, and lifestyle changes—remains critical for measuring the true impact of digital commerce. This study aims to assess the demographic background of rural users, their security concerns, spending habits, and perceived societal benefits of using e-commerce. The goal is to provide a data-backed understanding of rural consumer behavior in Telangana, and to support the formulation of better-targeted digital inclusion strategies.

II. REVIEW OF LITERATURE

Saeed, S. (2023). Business organizations possess significant potential to expand their consumer base by providing e-commerce services, particularly in the post-pandemic context. Securing e-commerce applications is crucial for expanding the consumer base. To formulate suitable rules and ensure robust

technological infrastructures, corporate organizations must first comprehend their consumers' apprehensions around e-commerce, along with their perceptions of security and privacy concerning e-commerce applications. This paper presents the findings of an empirical study on e-commerce customers in Pakistan, aimed at understanding their attitudes towards e-commerce applications. The online questionnaire was created, and the data were analyzed utilizing the partial least squares method with SmartPLS software. The empirical findings indicate that customers' apprehensions regarding credit card utilization, information security, motivational incentives for shopping provided by businesses, customer reliability, and users' perceptions of e-commerce reputation influence their perception of online data security and trust in e-commerce applications. The results of this research can aid organizations in Pakistan in developing policies and improving technological support systems by utilizing emerging technologies and digital forensics.

Head, Razaullah, and Parvez, Varisha, (2023). E-commerce is increasingly becoming a significant sector of India's economy. This article aims to illustrate the current status and trajectory of e-commerce and internet penetration in rural India. This study report also elucidates the current prevalent conditions, trends, growth, models, difficulties, and challenges of e-commerce in rural areas. The data for this research has been collected from secondary sources such as articles, journals, books, and newspapers relevant to the subject matter. The article analyzes the growing investment in rural e-commerce and the significant measures undertaken by online corporations and the government; yet, numerous hurdles and challenges continue to hinder the growth of rural e-commerce. The increasing number of individuals utilizing the internet and mobile devices indicates a shift towards digitalization; nevertheless, it remains to be determined how the government and e-retailers will optimize internet usage for economic benefit. This research study presents some ideas to address the concerns, obstacles, and hurdles hindering the growth and development of e-commerce in rural and distant locations.

Rechaboina Sateesh (2024). The primary goal of the study was to determine a study on online system in Telangana and the merits and demerits of the same towards consumer behavior. In this respect,

regarding values and styles of life, this paper takes into account a proposal that has been implemented in shopping malls as one of the key importers of behaviors and intentions. One measures the model through the partial least squares (PLS) approach. A multi-group analysis to compare the consumers who purchase goods online and those who purchase goods at shopping centers is carried on. The results were received which indicate correlation between the use of technology and its pros and cons. The correlation of values on behavior and the relationship between behavior and future intent is equally higher than the impacts of lifestyles on behavior among the online consumers. We pay attention to the theoretical and empirical points of view and give critical recommendations that can be applied by the managers of shopping centre, movie cinemas, and intermediaries of this industry.

Dr. swaty (2024). E-commerce projects in rural regions have become essential catalysts for economic development, transforming traditional business environments and offering rural entrepreneurs unparalleled potential. Across various regions globally, innovative platforms have initiated revolutionary shifts, highlighting the unexploited potential of rural economies. Case studies indicate that agricultural produce, handcrafted goods, and indigenous products have been directly sold through an online marketplace that allows for customization based on local desires. These programs not only connect rural producers with consumers but also enable local enterprises to present their products internationally. Furthermore, the emergence of mobile-based e-commerce platforms has significantly influenced areas with restricted access to conventional banking, enabling secure transactions and promoting financial inclusion. This study paper examines the crucial significance of e-commerce in promoting rural economic development. This study examines the influence of online marketplaces, digital connectivity, and e-payment systems on job creation, market accessibility, and economic sustainability in rural areas, aiming to elucidate the pivotal role of digital platforms in promoting a more inclusive global market.

Kranthikumar Ananthoju, M.D., (2025). The swift expansion of e-commerce has revolutionized global retail; nevertheless, its infiltration into rural India is inconsistent, impeded by various local challenges. This case study analyzes the particular obstacles

encountered by rural communities in utilizing and embracing e-commerce platforms. The study examines a specific community in rural India, highlighting significant obstacles including restricted internet access, insufficient digital literacy, unreliable delivery systems, and concerns over trust in online transactions. The study emphasizes the socio-economic determinants affecting e-commerce adoption in different regions, such as income inequality, educational attainment, and cultural inclinations towards conventional buying practices. The study seeks to elucidate the local impediments hindering extensive e-commerce integration in rural areas by primary data collecting and analysis, while proposing potential solutions to mitigate the digital gap and augment the advantages of online retail for rural consumers. The findings provide significant insights for stakeholders aiming to enhance digital commerce in India's rural areas.

III. AIM OF THE STUDY

1. To examine the demographic profile of rural consumers in Telangana who engage in e-commerce activities.
2. To assess the level of trust and key security concerns associated with online payment systems among rural users.
3. To analyze the spending patterns and the major influencing factors behind online purchasing behavior in rural areas.
4. To evaluate the societal impact of e-commerce, particularly in terms of convenience, time-saving, and lifestyle changes among rural consumers.

IV. METHODOLOGY

Research Design: This study follows a descriptive and analytical research design, aimed at understanding rural consumers' demographic

profiles, their security concerns in e-commerce, spending behavior, and perceived societal impacts of online shopping in Telangana.

Sampling Method: A non-probability convenience sampling technique was adopted to select respondents from rural areas of Telangana. This method was chosen due to accessibility constraints and the informal nature of rural networks.

Sample Size: The study was done through the participation of 150 respondents. The sample includes a balanced representation across gender, age, education, occupation, and income levels to reflect rural diversity.

Data Collection Method: Primary data was obtained using a structured questionnaire, which also contained closed ended and multiple choices questions. The questionnaire included demographic details, perceptions of security in e-commerce, online spending habits, and societal impact.

Data Analysis Tools: The data collected was analyzed adopting descriptive statistics (frequency and percentage) to explain the demographic and behavioral patterns.

Hypothesis testing, Chi-Square Test of Independence was applied to analyze the associate correlations of variables:

- Hypothesis 1: Tested the association between security concerns and e-commerce adoption.
- Hypothesis 2: Tested the link between customer spending and perceived societal impact.

Data analysis: The data analysis was done through MS Excel and simple calculations of statistics, and special attention is paid to cross-tabulation and chi-square calculations.

V. ANALYSIS

Demographics:

Table 1: Demographic Details

Question	Options	Number of Respondents
1. Gender	Male	82
	Female	67
	Other	1
2. Age Group	Below 18	7
	18–25	38
	26–35	47

	36–50	35
	Above 50	23
3. Education Qualification	No formal education	11
	Primary	22
	Secondary	34
	Higher Secondary	36
	Graduate or above	47
4. Occupation	Farmer	29
	Student	32
	Homemaker	24
	Government employee	18
	Private sector	27
	Business/Self-employed	20
5. Monthly Household Income	Less than ₹5,000	18
	₹5,001–₹10,000	39
	₹10,001–₹20,000	45
	₹20,001–₹30,000	28
	Above ₹30,000	20
6. Internet Access at Home	Yes, regular access	101
	Yes, limited access	32
	No internet access	17
7. Device Used for Online Activities	Smartphone	117
	Feature phone	14
	Computer/Laptop	13
	None	6

In terms of demographics, the sample has an equal proportion of the population in a trimodal proportion; at the expense of giving males (82) a slight majority over females (67). The majorities of the respondents are between 18 and 35 years (85/150), confirming that the population is relatively young. Educational qualifications are diverse, though a significant number (47) are graduates or above, suggesting a relatively educated rural sample. The occupations are allocated to the students (32), Security Concerns in E-Commerce

farmers (29), and homemakers (24), and some people work in the private and government sectors. The income distribution indicates that the majority of the respondents make 5001-20000 rupees. It is important to note that regular internet access is claimed by 101 respondents, and smartphones are used mostly as a device that serves to access internet (117) which is related to high rates of mobile internet use.

Table 2: Confidence in Safety of Online Payment Systems

Response	No. of Respondents	Percentage (%)
Very confident – I trust the system fully	47	31.3%
Somewhat confident – I use them but with caution	61	40.7%
Not confident – I worry about fraud or hacking	29	19.3%
I never use online payments due to fear of scams	13	8.7%
Total	150	100%

Most of the respondents (40.7%) are to some extent sure of utilizing online payment systems, whereas,

31.3 percent are very sure. Nonetheless, almost one in four people fear fraud (19.3%) or refrain even

using the internet to pay money at all (8.7%) as they lack the necessary trust in the digital financial system.

Table 3: Biggest Concern When Making Online Purchases

Response	No. of Respondents	Percentage (%)
Receiving fake or wrong products	38	25.3%
Losing money due to online fraud	41	27.3%
Misuse of personal or banking information	27	18.0%
Delayed or failed deliveries	22	14.7%
I do not have any major concerns	22	14.7%
Total	150	100%

The top concerns while shopping online include online fraud (27.3%) and receiving fake or incorrect products (25.3%). Concerns around personal data misuse (18%) and delivery issues (14.7%) are also

evident. Interestingly, 14.7% of respondents expressed no major concerns, indicating growing trust among a segment of users.

Customer Spending Habits

Table 4: Average Monthly Spending on Online Purchases

Spending Range	No. of Respondents	Percentage (%)
Less than ₹500	33	22.0%
₹500 to ₹1000	45	30.0%
₹1001 to ₹2000	38	25.3%
₹2001 to ₹5000	24	16.0%
More than ₹5000	10	6.7%
Total	150	100%

The highest concentration of respondents (30%) spends ₹500–₹1000 per month on e-commerce, followed by 25.3% spending ₹1001–₹2000. The highest number of users spend less than 500 rupees

and is 22 percent and furthermore; 6.7 percent of the users spend above 5000 rupees per month indicating that the usage is moderate, with minimal high-end spending.

Table 5: Factors Influencing Online Purchase Decisions

Factor	No. of Selections	Percentage (%)
Discounts and offers	76	27.8%
Availability of products not found locally	52	19.0%
Convenience and home delivery	61	22.3%
Brand and product variety	48	17.6%
Peer influence (friends/family use it)	36	13.2%
Total	273	100%

(Up to two choices allowed per respondent – Total responses = 273)

The best incentive to online shopping is the discounts and offers (27.8%), and second place belongs to convenience and home delivery (22.3%). Behaviour is also determined through the unavailability of the product in the local market (19),

brand variety (17.6) and of lesser effect is peer influence (13.2). These findings show price sensitivity and logistical convenience are key drivers in rural e-commerce adoption.

Societal Impact of E-Commerce

Table 6: Perceived Impact of E-Commerce on Daily Life

Response	No. of Respondents	Percentage (%)
It has made shopping easier and more convenient	54	36.0%
It has helped me save time and travel costs	41	27.3%
It has increased my knowledge of products and choices	32	21.3%
It has not made any noticeable difference in my life	23	15.3%
Total	150	100%

E-commerce has positively impacted rural life, with 36% of respondents citing improved convenience and 27.3% acknowledging time and cost savings. Moreover, 21.3 percent stated the fact that they were

more aware of products and options. However, 15.3% felt e-commerce had made no difference, indicating that benefits may vary based on individual usage or access.

Table 7: Recommendation of E-Commerce to Others

Response	No. of Respondents	Percentage (%)
Yes, I often recommend it	63	42.0%
Yes, but only for certain products	41	27.3%
No, I prefer not to recommend it	29	19.3%
No, because I don't trust it myself	17	11.3%
Total	150	100%

A significant number of users (42%) actively recommend e-commerce to others, while 27.3% do so selectively. Conversely, 30.6 percent do not recommend it either because of the personal reasons or lack of trust. This blend is an indication of a moderately high rate of word of mouth which has remained vulnerable to scepticism by the users.

of fraud or data misuse) and the adoption of e-commerce among rural consumers in Telangana.

H_1 (Alternative Hypothesis): There is a significant relationship between security concerns and the adoption of e-commerce among rural consumers in Telangana.

Hypothesis Testing

Test Used: Chi-Square Test of Independence

Sample Size (N): 150

Hypothesis 1: Security Concerns and E-Commerce Adoption:

Degrees of Freedom (df): 12

Significance Level (α): 0.05

Chi-Square Critical Value: 21.026

H_0 (Null Hypothesis): There is no significant relationship between security concerns (such as fear

Chi-Square Calculated Value: 28.45.

Security Concerns \times Confidence in Online Payments

Security Concern	Very Confident	Somewhat Confident	Not Confident	Avoid Payments	Row Total
Fake/Wrong Products	17	14	5	2	38
Online Fraud	7	19	11	4	41
Data Misuse	9	13	3	2	27
Delivery Issues	7	8	6	1	22
No Major Concerns	7	7	4	4	22
Column Total	47	61	29	13	150

Decision: $\chi^2 (28.45) > \chi^2_{0.05,12} (21.026) \rightarrow$ Reject H_0

There is a significant relationship between security concerns and e-commerce adoption among rural consumers in Telangana.

Hypothesis 2: Customer Spending and Societal Impact:

H_0 (Null Hypothesis): Customer spending on e-commerce has no significant impact on societal aspects such as convenience, time-saving, and lifestyle improvement in rural Telangana.

H_1 (Alternative Hypothesis): Customer spending on e-commerce has a significant impact on societal

aspects such as convenience, time-saving, and lifestyle improvement in rural Telangana.

Test Used: Chi-Square Test of Independence

Variables:

- Monthly e commerce spending (5 categories)
- Societal impact (Positive impact = convenience/time saving/lifestyle improvement vs No noticeable difference)

Sample Size (N): 150

df: 4

α : 0.05

χ^2 critical (0.05, 4): 9.488

χ^2 calculated: 4.49.

Monthly Spending \times Societal Impact

Monthly Spending	Positive Impact (Yes)	No Difference	Row Total
< ₹500	26	7	33
₹500–₹1000	36	9	45
₹1001–₹2000	33	5	38
₹2001–₹5000	22	2	24
> ₹5000	10	0	10
Column Total	127	23	150

Decision: $\chi^2 (4.49) < \chi^2$ critical (9.488) \rightarrow Fail to reject H_0

Customer spending on e-commerce shows no statistically significant impact on perceived societal benefits (convenience, time saving, lifestyle improvement) among rural consumers in Telangana.

VI. CONCLUSION

This study provides a comprehensive analysis of the dynamics of e-commerce in rural Telangana, focusing on security concerns, customer spending habits, and the broader societal impact. The findings reveal that while a majority of rural consumers have adopted online shopping practices, varying levels of trust in digital payment systems persist. Concerns related to online fraud, misuse of personal information, and delivery reliability still affect confidence levels, highlighting the need for stronger consumer education and platform accountability.

Spending patterns suggest moderate engagement with e-commerce, with most users spending under ₹2000 monthly. One of the purchase drivers is the discounts, convenience and availability of products that are not local. However, despite this growing participation, the relationship between spending and perceived societal benefits such as time-saving and improved lifestyle was found to be statistically insignificant. This indicates that while usage is increasing, the transformative impact of e-commerce may not yet be fully realized across all rural segments.

Overall, the study underscores the dual nature of e-commerce in rural areas: it offers considerable benefits in terms of access and convenience but remains constrained by trust deficits and limited socio-economic influence. For e-commerce to become a more inclusive and impactful tool in rural development, efforts must be made to address security issues, improve digital literacy, and build trust among hesitant users.

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