

Navigating the Digital Retail Wave: Developing a Retailer Resilience Model for Brick-and-Mortar Businesses in the E-Commerce Era – Evidence from Wardha District, India

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Abstract:

The present study aims to examine the strategies adopted by the conventional brick and mortar stores of Wardha District to deal with the high competition from e-commerce stores. Based on Dynamic Capabilities Theory, we develop and test a holistic Retailer Resilience Model, which assesses the relationships between E-Commerce Disruption (ECD), Digital Retail Transformation Capability (DTC), Retailer Resilience Capability (RC) and Sustainable Retail Performance (SP). The data collected from the primary sources of 300 MSME retailers were analyzed using the partial least squares structural equation modeling (PLS-SEM). The results are empirical, as they show that the disruption of e-commerce is a real pressure for retailers and it pushes them to use digital tools ($\beta = 0.384$, $p < 0.001$). Resilience is a key structural factor which directly contributes to long-term survival and sustainable retail performance ($\beta = 0.512$, $p < 0.001$) and is the most critical ($\beta = 0.441$, $p < 0.001$). There are substantial mediation channels in both digital transformation and resilience. The study offers a framework and set of principles that can be applied to brick-and-mortar storefronts to navigate digital age market transitions.

Keywords:

E-Commerce Disruption; Digital Retail Transformation; Retailer Resilience; Sustainable Retail Performance; Brick-and-Mortar Retailers; Dynamic Capabilities Theory; MSMEs.

1. Introduction :

The world of retailing is undergoing a significant transformation, the consequences of which are being felt with digital technology, fast logistics growth and changing customer purchasing habits. The e-commerce platforms have become the alternative shopping space, and now, they are the strong players, and are redefining value creation and value distribution. This digital

transformation has enhanced supply chains and reduced the barriers for a digital-first business, but has also created a new survival dilemma for the traditional brick-and-mortar stores, especially in semi-urban and developing geographic corridors like the Wardha District in Maharashtra, India.

Traditional retail chains are important economic engines in developing countries, generating jobs, enhancing local self-sufficiency, and providing much needed community infrastructure. While brick-and-mortar retail outlets may have an advantage in some areas, including the ability to have more working capital, they often face systemic challenges including limited digital infrastructure integration and lack of data analytics or multi-channel customer engagement formal training. The traditional retailers are swiftly being replaced by larger multinational e-commerce retailers who may offer competitive prices, wider product selection and cutting-edge digital logistics. Therefore, this study focuses on the question of how traditional physical retailers can cope and prosper in the face of adversity. This study examines how the concepts of e-commerce disruption, digital transformation, organizational resilience and sustainable performance are interconnected and offers an empirical framework that can be used to move traditional retail businesses through digital age transitions.

1.1.Need and Importance of Study:

Existing literature on E -Commerce disruption has been centered on the macro level, that is, trends in the industry or large company transformation. Empirical studies on the reaction of SMEs in the brick and mortar sector to sudden shifts in the digital retail sector of semi urban geographic corridors are still largely missing.

This study is important because of three factors:

- 1. Economic Vulnerability:** MSME retail sectors support livelihoods and stability of local communities; addressing economic security of these regions directly requires understanding of their structural survival mechanisms.
- 2. Methodological Rigor:** This research has tested a multi-stage structural model with a sample of 300 active retailers and thus serves as a validated empirical proof of the different paths digital tools follow to become resilience and sustainable performance.
- 3. Strategic Roadmap:** The findings offer a course of action for local chambers of commerce, micro-entrepreneurs, and regional policymakers to help traditional trade through targeted development programs using digital technologies.

2. Literature Review:

Theoretical Framework: Dynamic Capabilities Theory (DCT) : The study is based on Dynamic Capabilities Theory (DCT) which suggests that firms can successfully do the following: sense the threats in the market; seize the opportunities; and reconfigure the resources within the firm in volatile environments to create their long-term competitive advantage. Dynamic capabilities are critical routines for traditional brick and mortar MSMEs impacted by e-commerce that require them to adjust their physical business models, leverage digital tools, and continue to thrive in the long run.

E-Commerce Disruption and Digital Transformation

- **Li et al. (2022):** Identified that surprise digital disruption and channel switching impact consumer demand and puts retailers in a strong position to survive at the store level. The situation, however, is very demanding from the outside and has become a structural catalyst for the brick-and-mortar shoppers to actively seek out digital solutions rather than follow a reactive approach.
- **Wongwas (2024):** Examined the transition of retail in Asian developing commercial corridors, and found that old-fashioned trade models become uncompetitive in the absence of digital trade. Hybrid models boost the capabilities of local merchants and modernize customer engagement.

Digital Transformation and Retailer Resilience :

- **Tobing (2024):** Used PLS-SEM to study the resilience of MSMEs in the face of economic shocks and classified it into two dimensions: planned and adaptive. The empirical findings clearly demonstrate the positive effect of digital maturity on a firm's adaptive resilience and its ability to resist competitive threats, especially among small businesses.
- **Weber (2026):** Proposed a dynamic capabilities framework for integrating Omnichannel retail. The author states that optimizing the way back-end configurations are reconfigured around digital touch points and acquiring an understanding of market changes in order to sense them actively and adjust the setup accordingly provides a protective capabilities shield that ensures strong flexibility during high market changes.

Retailer Resilience and Sustainable Performance:

- Rao (2019) defined retail resilience as the structural capacity of a physical retail business that can withstand external commercial pressures without compromising its economic and social functions. An adaptive and resilient posture is essential to maintaining customer equity and for long-term viability.
- **Alquraish (2025):** pointed out that digital transformations build a sustainable performance next to the traditional firms through shifting them to predictive real-time ecosystems but digital tools will not automatically ensure long-term sustainable performance. But it is only when channeled through the firm's overall resilience capacity that their positive impacts are fully realized.
- **Giannopoulos (2026):** Examined retail operations in environments that are subject to shocks and found that on-the-ground retailers have tight constraints on capacity and inventory locally when they try to keep up with internet trends. The resilience of hybrid setups is crucial to ensure stable financial performance and ward off customer churn.

2.1. Hypotheses of the Study:

The present study involved the following hypotheses:

The following structural hypotheses were set up for empirical testing, based on the conceptual framework:

- H1: The impact of e-commerce disruption on digital retail transformation capability is significant.
- H2: Digital retail transformation capability has a positive significant effect on the retailer's capability to be a resilient retailer.
- H3: The concept of retail performance is related to sustainable performance and has a significant positive contribution.
- H4: Disruption in ecommerce has an impact on the ability of the retailer to be resilient.
- H5: The effect of ecommerce disruption on retailer resilience capability is mediated in a significant way by digital retail transformation capability.
- H6: Digital retail transformation capability has a significant impact on the relationship between retailer's resilience capability and sustainable retail performance.

3. Research Design and Methodology:

The research design approach in this research is quantitative, survey approach. Primary data was collected directly from the retail business owners by employing a structured closed ended questionnaire to capture the operating behaviours of the retail businesses in real time in the context of e-commerce disruption. A stratified random sampling method was adopted in the study for collecting the data from 300 brick and mortar retail outlets of Wardha District which were chosen on the basis of product line and business size for representation.

Data Analysis and Results:

Demographics and Respondent Profile Analysis:

The baseline data of 300 retail businesses surveyed was assessed on a series of four variables:

Demographic Indicator	Category Variable	Frequency (n)	Percentage (%)
Business Type	Apparel/Fashion	60	20.00%
	Electronics	51	17.00%
	Household Products	49	16.30%
	Pharmacy	48	16.00%
	Grocery/FMCG	47	15.70%
	Other Specialty Retail	45	15.00%
Years of Operation	Less than 5 years	66	22.00%
	5–10 years	94	31.30%
	11–20 years	67	22.30%
	More than 20 years	73	24.30%
Store Size (Employees)	Self-operated (Owner only)	73	24.30%
	1–5 Employees	80	26.70%
	6–10 Employees	71	23.70%
	Above 10 Employees	76	25.30%
Digital Adoption Level	Only cash transactions	26	8.70%
	Digital payments only (UPI/Wallets)	136	45.30%
	Digital payments + digital promotion	105	35.00%
	Online presence / Hybrid retail	33	11.00%

type of business sector, years in the market, size of employees and current level of digital infrastructure adoption.

Table 1: Respondent Demographic Profile Baseline (N=300)

Source: The figures have been obtained through Primary Data.

When it comes to resilience, does business longevity matter?

A test of whether the distribution of aggregated Retailer Resilience Capability (RC) scores differs from the distribution based on a business's Years of Operation was performed using an Analysis of Variance (ANOVA) test, comparing aggregated Retailer Resilience Capability (RC) scores to Years of Operation.

- F-Statistic: 0.5086
- p-value: 0.6767 (Statistically non-significant, as $p > 0.05$)

Interpretation of the results: The p value is much larger than the 0.05 value, so the null hypothesis is not rejected. This is evidence that the active life of a store is not a determining factor for resilience. Retailers with more than 20 years in operation are just as adaptive as retail stores opened within the last five years (Mean RC = 2.98). Resilience is not about the age of a business, it's a decision that they make with their feet on the ground.

Measurement Model Assessment (Construct Validity & Reliability) :

To make sure that the scales of the questionnaire were reliable prior to parsing the structural equations, a detailed Measurement Model Assessment was carried out to examine internal consistency, indicator reliability and convergent validity.

Table 2: Construct Reliability and Convergent Validity Metrics

Core Construct	Latent Indicator Items	Factor Loadings Range	Cronbach's Alpha (α)	Composite Reliability	Average Variance Extracted
E-Commerce Disruption	ECD1 – ECD5	0.741 – 0.825	0.812	0.869	0.572
Digital Transformation	DTC1 – DTC5	0.710 – 0.844	0.777	0.848	0.531

Retailer Resilience	RC1 – RC6	0.702 – 0.811	0.843	0.884	0.56
Sustainable Performance	SP1 – SP5	0.733 – 0.850	0.829	0.88	0.596

Source: The figures have been obtained through Primary Data Analysis .

Validation Benchmarks Met:

Internal Consistency: All four constructs have satisfactory values of internal consistency (Cronbach's Alpha and Composite Reliability, or CR) that exceed the criterion of 0.70, indicating instrument reliability.

Convergent Validity: The indicators for all the constructs have an Average Variance Extracted (AVE) exceeding the minimum threshold criteria of 0.50, which indicates that the indicators are valid in capturing the concepts of the constructs.

Table 3: Discriminant Validity – Fornell-Larcker Criterion

The square root of each construct's AVE (shown in bold on the diagonal) should be greater than the highest correlation with any other construct to ensure the sections of the

Latent Factor	E-Commerce Disruption	Digital Transformation	Retailer Resilience	Sustainable Performance
E-Commerce Disruption (ECD)	0.756			
Digital Transformation (DTC)	0.384	0.729		
Retailer Resilience (RC)	0.38	0.522	0.748	
Sustainable Performance (SP)	0.311	0.465	0.512	0.772

questionnaire are conceptually separate and do not overlap.

Source: The figures have been obtained through Primary Data Analysis .

Validation Bench Mark Met: Diagonal values are higher than all the off-diagonal correlations, indicating good discriminant validity and thus a proper representation of each construct as an operational element of the model.

Descriptive Statistics and Item-Level Analysis :

The tables below present the descriptive item analysis from the 300 participant responses across the 5-point Likert scale.

Item Code	Survey Question Description	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Average Score
ECD 1	Platforms have increased market competition.	0 (0.0%)	0 (0.0%)	58 (19.3%)	152 (50.7%)	90 (30.0%)	4.11
ECD 2	Customers check and compare prices online.	0 (0.0%)	0 (0.0%)	49 (16.3%)	170 (56.7%)	81 (27.0%)	4.11
ECD 3	Online discounts impact buying decisions.	0 (0.0%)	0 (0.0%)	50 (16.7%)	172 (57.3%)	78 (26.0%)	4.09
ECD 4	Customers expect faster delivery/convenience.	0 (0.0%)	0 (0.0%)	49 (16.3%)	169 (56.3%)	82 (27.3%)	4.11
ECD 5	Online methods changed how clients search items.	0 (0.0%)	0 (0.0%)	42 (14.0%)	168 (56.0%)	90 (30.0%)	4.16

Table 4: E-Commerce Era Challenges (ECD)

Source: The figures have been obtained through Primary Data.

Interpretation: This table shows that retailers feel high external pressure from e-commerce, with all items scoring a very high average of 4.09 to 4.16. A vast majority of respondents

(ranging from 77.7% to 86.7%) "Agree" or "Strongly Agree" that online platforms have intensified competition, shifted consumer search habits, and heightened expectations for discounts and fast delivery.

Table 5: Digital Retail Transformation Capability (DTC)

Item Code	Survey Question Description	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Average Score
DTC1	Business uses digital payment systems.	2 (0.7%)	52 (17.3%)	116 (38.7%)	100 (33.3%)	30 (10.0%)	3.35
DTC2	Uses WhatsApp/Social Media to talk to clients.	5 (1.7%)	46 (15.3%)	120 (40.0%)	101 (33.7%)	28 (9.3%)	3.34
DTC3	Uses online spaces to promote products.	9 (3.0%)	46 (15.3%)	107 (35.7%)	104 (34.7%)	34 (11.3%)	3.36
DTC4	Willing to try new management technologies.	7 (2.3%)	55 (18.3%)	105 (35.0%)	103 (34.3%)	30 (10.0%)	3.31
DTC5	Digital features improve standard client experience.	2 (0.7%)	63 (21.0%)	112 (37.3%)	84 (28.0%)	39 (13.0%)	3.32

Source: The figures have been obtained through Primary Data.

Interpretation: The data reveals a moderate and uniform level of digital adoption among the surveyed MSMEs, with average item scores clustering tightly between 3.31 and 3.36. While direct disagreement is very low, the largest segment of retailers (35% to 40%) remains "Neutral" regarding their current use of digital payments, social media communication, and online promotion.

Table 6: Retailer Resilience Capability (RC)

Item Code	Survey Question Description	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Average Score
RC1	Adapts rapidly to custom preference updates.	0 (0.0%)	75 (25.0%)	140 (46.7%)	85 (28.3%)	0 (0.0%)	3.03
RC2	Shifts strategies based on general market terms.	0 (0.0%)	66 (22.0%)	154 (51.3%)	80 (26.7%)	0 (0.0%)	3.05
RC3	Uses personal care to compete with web options.	0 (0.0%)	85 (28.3%)	142 (47.3%)	73 (24.3%)	0 (0.0%)	2.96
RC4	Constantly seeks new methods to hold clients.	0 (0.0%)	60 (20.0%)	159 (53.0%)	81 (27.0%)	0 (0.0%)	3.07
RC5	Is fully capable of handling e-commerce growth.	0 (0.0%)	74 (24.7%)	160 (53.3%)	66 (22.0%)	0 (0.0%)	2.97
RC6	Invests time to build upcoming technical skills.	0 (0.0%)	74 (24.7%)	160 (53.3%)	66 (22.0%)	0 (0.0%)	2.97

Source: The figures have been obtained through Primary Data.

Interpretation: Retailers exhibit a baseline, adaptive resilience, with item averages hovering closely around the neutral mark of 3.00. The vast majority of respondents (46.7% to 53.3%) chose a "Neutral" stance across all capability metrics , indicating that while they do not

actively reject strategic shifts or skills development, they are still in a cautious, transitional phase when responding to e-commerce growth.

Table 7: Sustainable Retail Performance (SP)

Item Code	Survey Question Description	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Average Score
SP1	Maintained client loyalty through web growth.	0 (0.0%)	0 (0.0%)	97 (32.3%)	203 (67.7%)	0 (0.0%)	3.68
SP2	Digital changes improved local competitiveness.	0 (0.0%)	0 (0.0%)	90 (30.0%)	210 (70.0%)	0 (0.0%)	3.70
SP3	Adopting technologies improved operational efficiency.	0 (0.0%)	0 (0.0%)	106 (35.3%)	194 (64.7%)	0 (0.0%)	3.65
SP4	Good potential for long-term survival in market.	0 (0.0%)	0 (0.0%)	93 (31.0%)	207 (69.0%)	0 (0.0%)	3.69
SP5	Mixing traditional + digital features helps business.	0 (0.0%)	0 (0.0%)	95 (31.7%)	205 (68.3%)	0 (0.0%)	3.68

Source: The figures have been obtained through Primary Data.

Interpretation: The results show strong optimism for future viability, with item averages ranging from 3.65 to 3.70 and zero negative feedback ("Disagree" or "Strongly Disagree"). Approximately 64.7% to 70% of the retailers "Agree" that merging traditional proximity with digital tools enhances customer loyalty, operational efficiency, and long-term market survival.

Structural Model Estimation (Hypothesis Testing) :

The structural paths were assessed with bootstrapping (5 000 times) to test the significance of all six hypotheses, as the measurement instrument had been validated.

Table 8: Comprehensive Structural Path Model Results :

The structural model was evaluated using PLS-SEM with a bootstrapping procedure of 5,000 resamples to test the statistical significance of the hypothesized direct and indirect relationships. As presented in Table 8, all six hypotheses (H1 through H6) are empirical

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Hypothesis	Path Association / Type	Relationship Tested	Impact Strength (β)	Confidence Metric (t-value)	Error Probability (p-value)	Empirical Decision
H1	Direct Structural Path	ECD →DTC	0.384	7.529	< 0.001	Supported

H2	Direct Structural Path	DTC →RC	0.441	9.188	< 0.001	Supported
H3	Direct Structural Path	RC →SP	0.512	11.907	< 0.001	Supported
H4	Direct Structural Path	ECD →RC	0.211	3.907	< 0.001	Supported
H5	Mediation Pathway (Indirect)	ECD→DTC→RC	0.169	6.259	< 0.001	Supported (Partial)
H6	Mediation Pathway (Indirect)	DTC→RC→SP	0.226	7.533	< 0.001	Supported (Partial)

Source: The figures have been obtained through Primary Data Analysis .

Discussion :

The findings on the structure provide valuable insights into retail operations in the context of digital transition. The validation of H1 ($\beta = 0.384$, $p < 0.001$) indicates that disruption of ecommerce is a catalyst for the traditional retailer to adopt digital tools. A positive pressure is not a negative pressure; it does not lead to passive business decline, but rather to business modernization.

Mediation analysis for H5 and H6 help to explain how this transformation takes place. The significant indirect path of H5 ($\beta = 0.169$, $p < 0.001$) indicates that e-commerce disruption builds organizational resilience primarily by driving digital transformations. Most significantly, the H6 validation ($\beta = 0.226$, $p < 0.001$) indicates that the ability to digital transformation is not enough to ensure sustainable performance - it is moderated by the effect of improved retailer resilience. While the digital tools offer the groundwork, the ability of a business to be adaptable and flexible gives it the power to ensure its long-term survival in the market and to achieve sustainable performance in retail.

Conclusion:

The study is a validation of the Retailer Resilience Model in brick and mortar retail sector of Wardha District. The model is based on Dynamic Capabilities Theory, and it illustrates that being long-established does not ensure or restrict a small business; active adaptation is what will make a difference in determining the business' survival. Market challenges can be translated into digital capabilities that enable traditional retailers to perform sustainably and in the process to develop operational resilience.

Strategic Suggestions:

1. Incorporate Basic Hybrid Operations: Put in place basic hybrid service models, where the stores can continue to provide basic services while the customer can order via chat service (e.g., WhatsApp Business), which gives the customer more convenience.
2. Utilize Local Proximity: Traditional retailers could leverage "local proximity" by providing personalized customer service, providing flexibility in return processing and providing instant availability of the product to the customer.
3. Practical Skill Development: Small retail businesses should be empowered with targeted training programs in inventory software and fundamental digital marketing strategies by local trade organizations to assist them in the digital transition.

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