Digital Marketing for Industrial Products in Rural Markets: Evidence from Bihar and Uttar Pradesh, India

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ABSTRACT

This study aims to investigate the dynamics of digital technology adoption in rural India by examining how digital marketing shapes the purchase intentions for industrial products such as submersible pumps, agricultural machinery, urea fertilisers, and wire or solar cables in the rural markets of Bihar and Uttar Pradesh. These regions collectively represent over a quarter of the nation's rural population and act as key pillars of India's agricultural sector. Despite improvements in digital connectivity, persistent barriers related to trust, the relevance of digital content, and transparency in after-sales services continue to limit the uptake of high-involvement industrial goods. Employing a cross-sectional, descriptive, and analytical research design, this study draws on quantitative data from 120 rural respondents, equally divided between Bihar and Uttar Pradesh, and is supported by qualitative insights from interviews with retailers and installers. Comprehensive statistical analyses, including reliability tests, factor analysis, ANOVA, independent t-tests, and multiple linear regression, were conducted to evaluate the effects of five digital marketing constructs: Digital Awareness, Access Affordability, Digital Trust, Content Usefulness, and Service Visibility, on rural purchase intention. The findings indicate that all five constructs exert a significant positive impact on purchase intentions, with Digital Trust and Service Visibility playing the most pivotal roles; submersible pumps and solar cables emerged as the most responsive product categories, and Uttar Pradesh displayed stronger digital engagement, underpinned by better infrastructure and digital literacy efforts.

The research utilises Exploratory Factor Analysis (EFA) for the validation of the measurement model (KMO = 0.861; Bartlett's $p < 0.001$), while at the same time, it employs Cronbach's Alpha to verify the reliability of the measurements (α ranging from 0.76 to 0.84). However, the differences in purchase intention among product categories are proven by the results of ANOVA ($F = 4.12$, $p = 0.008$), in which the high-involvement items, such as submersible pumps and solar cables, are indicated to be more digital marketing-sensitive than the low-involvement goods like urea. The independent-samples t-tests ($t = 2.06$, $p = 0.041$) reveal that Uttar Pradesh has a greater average of purchase intention ($M = 3.74$) in contrast to Bihar ($M = 3.56$), indicating that the better infrastructure and the policy-driven digital engagement in UP are contributors to the higher adoption. The multiple regression analysis ($R^2 = 0.482$, $F = 21.22$, $p < 0.001$) indicates that DT ($\beta = 0.291$, $p < 0.001$), SV ($\beta = 0.258$, $p = 0.001$), and CU ($\beta = 0.221$, $p = 0.004$) are the most powerful purchase intention predictors, whereas AA is just barely significant ($p = 0.053$).

The research aims to expand the Technology Acceptance Model (TAM) and Theory of Planned Behaviour (TBP) by including service visibility and trust as factors in the digital marketing mix. Manufacturers, policy makers and marketers are given practical insights as to how to create adoption by using the hybrid go-to-market (GTM) strategies which link digital discovery with local service assurance. Thus, this research brings both theoretical understanding and practical application of digital marketing in the case of emerging rural economies.

Keywords - Digital marketing, rural markets, industrial products, purchase intention, SPSS, ANOVA, Bihar, Uttar Pradesh, digital trust, service visibility

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INTRODUCTION

A. Background and Rationale

The rural markets where submersible pumps, agricultural machines, urea fertilisers, and electrical wiring or solar cables are widely utilised serve as the crucial link between India's industrial supply chain and its agricultural backbone. According to the Internet and Mobile Association of India (IAMAI) and Kantar (2024), rural India had more active internet users than urban India, accounting for 55% of the total 886 million users. Mobile-based internet access and the widespread adoption of the Unified Payments Interface (UPI) have, to some extent, opened opportunities in e-commerce and business communication for micro-enterprises and farmers.

Industrial product manufacturers, who previously depended only on traditional distributors, are now progressively taking to digital marketing tools - like search engines, social media, local language videos, and WhatsApp commerce - for the purpose of building brand awareness, generating leads, and enhancing service visibility (Panwar, 2025). But, the problems related to rural digital trust, content usefulness, and after-sales support visibility are still not fully explored, particularly for high-involvement products like submersible pumps and solar energy systems (IMARC Group, 2025; TechSci Research, 2025).

B. Bihar and Uttar Pradesh Context

With a combined share of more than 26% of India's rural population, the two states of Bihar and Uttar Pradesh are also the major contributors to the agricultural output of the country (Government of India, 2024). The two states have similar high electrification and irrigation intensity: Bihar reports 99% village electrification, while Uttar Pradesh had the highest agricultural power consumption in India in 2024 (Central Electricity Authority, 2025). These factors contribute to making them perfect areas for studying how digital marketing affects the acceptance of industrial agricultural products.

C. Research Gap

Earlier studies of rural marketing primarily examined consumer goods and neglected industrial products that require higher investments and post-sale support (Kumar & Rani, 2024; Joshi, 2021). There is limited empirical research connecting digital marketing components such as trust, awareness, and visibility with purchase intention in rural India. This paper addresses that gap through SPSS-based quantitative analysis with 120 respondents.

D. Objectives

1. Determine how far and to what extent digital marketing platforms are used in purchasing industrial goods in roughed out Bihar and UP.

2. Analyse the impact of Digital Awareness (DA), Access & Affordability (AA), Digital Trust (DT), Content Usefulness (CU) and Service Visibility (SV) on Purchase Intention (PI).

3. To contrast the Purchase intention among different product categories (submersible pumps, wires/solar cables, urea, and agricultural equipment).

4. To find out the differences in the level of digitisation between Bihar and UP.

5. To outline a rural digital marketing model for industrial suppliers.

E. Research Hypotheses

- **H1:** Purchase Intention (PI) differs significantly across product categories.

- **H2:** Purchase Intention (PI) differs significantly between Bihar and Uttar Pradesh.

- **H3:** Digital Awareness (DA), Access & Affordability (AA), Digital Trust (DT), Content Usefulness (CU) and Service Visibility (SV) positively influence Purchase Intention (PI).
- **H4:** Digital Trust (DT) and Service Visibility (SV) exert stronger effects on Purchase Intention (PI) than Digital Awareness (DA).

LITERATURE REVIEW

A. Rural Digital Penetration and Internet Behaviour

The report from IAMAI and Kantar (2024) claims that rural internet adoption is increasing at the rate of 20% per year, a figure that is already greater than the count of urban users. The Financial Express (2025) states that 47% of rural customers participate in hybrid information sharing, that is, through the use of online videos and word-of-mouth simultaneously. According to TRAI (2024), rural areas have a tele density of 59.8%, which is a factor that positively influences mobile commerce. Gupta et al. (2023) reported that rural users mostly depending upon YouTube, WhatsApp, and Facebook for entertainment as well as for product search. The efforts in developing digital literacy through initiatives like Digital India and PM Kisan Samriddhi Yojana have managed to win the trust of the online users (Ministry of Electronics & IT, 2024). The study conducted by Patel and Raj (2023) indicates that 64% of rural households are using mobile apps to access digital news. The research conducted by Sharma (2022) has shown that the provision of services in local languages can lead to an increase in digital retention of 28%. The work of Jain and Verma (2021) pointed out that social media usage by rural consumers has changed the nature of their awareness and loyalty towards brands.

B. Rural Buyer Behaviour

Trust, transparent pricing and reliable service are the key factors for rural consumers, according to Sambrani (2018). As per The Conceptual Study of Rural Marketing in India (2023), dealers and Common Service Centres are the intermediaries that are perceived as trust facilitators. According to Singh and Mishra (2022), local influencers are the source of advice for 62% of rural buyers. Bharadwaj and Taneja (2022) revealed that women farmers of UP are more open to social campaigns than men. Deshmukh (2021) found that personalised after-sales service increases the chances of the customer coming back to buy again. Kaur and Singh (2023) argued that emotional stories in ads are a way to get the lowest literate consumers engaged more strongly.

C. Digitalisation of Industrial and Agri Inputs

The Department of Fertilizers (2024) attributed the highest-ever urea production (314 LMT), as well as the processing of subsidy at the digital forefront, to its record. Motilal Oswal (2024) estimated an annual growth rate of 10% in cables and wires resulting from the electrification process. IMARC (2025) and TechSci (2025) foretold a sustained rise in solar and submersible pump segments. The Fertilizer Association of India (2025) and Times of India (2024) drew attention to the digital stock management system, which ensures transparency in the states of UP and Bihar. Kumar and Gupta (2023) pointed out the importance of e-marketplaces, like Agri-Bazaar and eNAM, in input supplier connectivity. Mehta (2024) reported that predictive analytics were applied to enhance fertilizer logistics. Chawla and Arora (2022) pointed out that the digital transformation of the agro-dealer sector resulted in better accountability.

D. Digital Marketing and Agricultural Commerce

Panwar (2025) proved that the marketing activities on WhatsApp had an overwhelming impact on the farmers' decision-making regarding purchasing. Gu et al. (2025) confirmed the use of the Technology Acceptance Model (TAM) in the sale of agricultural live-stream, revealing that both perceived usefulness and trust work as buying intent boosters. Kumar and Rani (2024) reported 38% higher retention of the message in the case of vernacular content compared to others. Raj (2023) pointed out that search ads and YouTube tutorials are the main factors leading to the initial trust formation. Sinha (2024) stated that the purchase confidence is boosted by social

engagement through farmer testimonials. Mishra and Dey (2022) proved that WhatsApp-based video campaigns produce a 22% conversion lift.

E. Emerging themes across recent studies

A broad corpus converges on three recurrent levers of rural digital adoption: localised/vernacular content, mobile-first design under bandwidth constraints, and peer endorsement/social proof. Together, these mechanisms mediate the pathway from initial awareness to purchase intention in high-involvement categories (Aggarwal et al., 2024; Bhattacharya & Roy, 2024; Dutta, 2023; Ghosh, 2024; Kadam & Patil, 2023; Lal, 2024; Mahato et al., 2023; Mohan & Iyer, 2025; Nayak, 2024; Patra & Sethi, 2024; Prakash et al., 2024; Raghavan, 2023; Saxena, 2024; Shah et al., 2023; Subramanian, 2024; Tripathi & Yadav, 2024; Verma, 2023; Yadav & Kumari, 2024).

F. Localised content and vernacular engagement

Across multiple studies, vernacular video, captions, and region-specific narratives consistently improve comprehension and reduce perceived complexity for technical products such as pumps and solar controllers (Ghosh, 2024; Kaur & Singh, 2023). Local language explainers and simple visuals function as cognitive scaffolds that translate specifications into use-cases (Aggarwal et al., 2024; Kumar & Rani, 2024). Subtitles and voiceovers will incredibly help the low-literacy segments, which will be one of the methods to retain the message and the audience's perception of the message being useful. These two are the key TAM antecedents of adoption (Rani, 2024; Gu et al., 2025).

G. Mobile-first design and bandwidth constraints

Mobile phones are the primary means of communication in rural areas, and the quality of the network is often poor. One solution is to use data-light web pages, videos with lower resolution, and assets that can be accessed offline (Mahato et al., 2023; Kadam & Patil, 2023). The user interface (font size, icons, and the number of clicks) can also help to keep users in low-signal areas (Lal, 2024; Saxena, 2024). These design decisions help to make the Access & Affordability (AA) effects stronger as they reduce the effective cost of trial and search (TRAI, 2024; Ministry of Electronics and Information Technology, 2024).

H. Peer endorsement and micro-influencers

Research suggests that among all types of communications, installers, electricians, and progressive farmers would be the ones trusted most by consumers, as their messages are more convincing than celebrity endorsements even in industrial categories not related to their work (Nayak, 2024; Patra & Sethi, 2024). Alongside, WhatsApp groups and local YouTube channels are placed as community censors where testimonials and demo videos give social proof and allow one to make decisions with help (Mishra & Dey, 2022; Verma, 2023). Thus, endorsements contribute to the increase of Digital Trust (DT) and the reduction of the time from consideration to purchase (Singh & Mishra, 2022).

I. Trust signals, compliance, and risk reduction

The customers from the countryside look for evidence that can be verified before buying expensive products, such as e-invoices with the GST information provided, warranty QR codes, labels of authorised service, and centres with geo-tags (Bhattacharya & Roy, 2024; Tripathi & Yadav, 2024). These objects function as assurance systems according to the SERVQUAL model, thus reducing the risk involved and at the same time, allowing for the trade-off of price against quality (Sambrani, 2018; Shah et al., 2023). Other research has pointed out that UPI receipts also act as the most reliable proof in the case of warranty claims, thereby enhancing post-purchase trust (Yadav & Kumari, 2024).

J. Service visibility and the after-sales continuum

Service visibility (SV) easily identifiable locations, spares catalogues, and response times predicts conversion and retention for pumps, wires/cables, and agri-equipment (Prakash et al., 2024; Tripathi & Yadav, 2024). Geo-tagged service maps and WhatsApp ticketing chatbots lower uncertainty, thus meeting rural demands for quick and dependable service (Chatterjee et al., 2025; IJSDR, 2023). Empirical studies indicate that SV is a more potent tool than generic awareness when the risk is highlighted (Panwar, 2025).

K. Seasonality, timing, and campaign orchestration

Research highlights the Kharif/Rabi-aligned messaging calendars where pre-season explainer content, in-season demos, and post-season maintenance tips lead to overlapping impact on consumer engagement and repeat purchases (Gulati & Verma, 2023). Synchronising inventory visibility with campaign highs diminishes the perception of running out of stock and sets the customers' expectations (Mehta, 2024; Fertilizer Association of India, 2025).

L. Platform mechanics: WhatsApp commerce, short video, and live streams

In rural areas, consumers don't follow a single path to make their final decision; instead they blend different channels such as search, short videos, peer chats, and assisted dealer checkout often (Kadam & Patil, 2023; Dutta, 2023). Through the WhatsApp catalogue, consumers can get help and also have a chat history that can be considered a “service log,” while short-form videos are the fastest way to learn about the features (Verma, 2023; Ghosh, 2024). On its part, live-stream demos combine perceived usefulness with real-time Q&A and thus, through the Technology Acceptance Model (TAM), increase consumers' intention to purchase (Gu et al., 2025; Mohan & Iyer, 2025).

M. Policy and infrastructure as force multipliers

Infrastructure initiatives such as BharatNet and digital-literacy campaigns are extending the potential customer base and increasing the upper limit of AA and DA impacts (Raghavan, 2023; Ministry of Electronics and Information Technology, 2024). In Uttar Pradesh, public announcements regarding the availability and transparent distribution of services are accompanying an increase in perceived reliability in relation to Bihar, suggesting that signals from government governance at the state level shape public perception of reliability (Economic Times, 2025; Times of India, 2025a, 2025b, 2025c; Bihar Department of Finance, 2025).

N. Segmentation lenses: Gender, youth, and education

The evidence that is becoming available points out that different subgroups have different effects. Community-oriented campaigns have a very good impact on female farmers, while the youth categories in the households work as digital “translators” (Bharadwaj & Taneja, 2022; Saxena, 2024). ITI/ school-based digital curriculum experience is an indicator of multi-app-skilled usage, and the transition from being merely aware of the app to evaluating it is easier (Saxena, 2024; Patel & Raj, 2023).

O. Measurement, analytics, and operationalisation

Supply-chain analytics, like lead-time forecasting and spares planning, not only improve the perception of services but also lessen the delay in the delivery of services (Prakash et al., 2024; Mehta, 2024). Researchers suggest using metrics related to the different stages of the customer journey, such as content understanding, recognition of trust cues, and service visibility, rather than vanity metrics, to establish a connection between campaigns and PI (Aggarwal et al., 2024; Lal, 2024).

P. Boundary conditions and contradictions

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Although there were widespread improvements, a few researchers have pointed out that the fluctuations in bandwidth and differing levels of dealer preparedness could counteract the effects (Mahato et al., 2023; Lal, 2024). The heavy dependence on famous personalities' endorsements all over the world might push the local products to the sidelines, thus making the desktop for industrial categories weaker (Nayak, 2024). To conclude, marketers who are unclear of their service and, at the same time, do not provide good content, run the risk of having their customers deceived in terms of service and subsequently turning against them (Tripathi & Yadav, 2024).

Q. Theoretical Framework

This study integrates:

- **Technology Acceptance Model (TAM)** - explaining DA (Digital Awareness) and CU (Content Usefulness);
- **Theory of Planned Behaviour (TPB)** -for intention formation; and
- **SERVQUAL extensions**- measuring perceived SV and DT.

The aforementioned frameworks together forecast the manner in which rural clients will convert their interaction with digital channels into readiness to buy industrial products.

R. Synthesis of Literature Gaps

Author & Year	Focus	Gap Identified
Sambrani (2018)	Rural marketing channels	No digital emphasis
Singh & Mishra (2022)	Tech adoption in villages	Excluded industrial goods
IAMAI (2024)	Internet access data	Lacked behavioral segmentation
Panwar (2025)	Digital buying among farmers	Omitted high-involvement products
Gu et al. (2025)	Live-stream marketing	Non-Indian sample
Motilal Oswal (2024)	Wires & Cables	No consumer-side study
TechSci (2025)	Submersible pumps	Distribution focus only
GoI (2024)	Fertilizer policy	Non-marketing data
Rani (2024)	Vernacular content	Lacked quantitative validation
Kumar (2023)	Digital trust	Focused on fintech, not industry
Jain (2022)	Hybrid commerce	Limited to FMCG
Gupta (2023)	Social media	No rural segmentation
Joshi (2021)	Rural MSMEs	No ANOVA-based testing
TRAI (2024)	Infrastructure	No behavioral metrics
Dutta (2023)	Agri-digital outreach	No industrial comparison

Bhattacharya & Roy (2024)	Trust frameworks	Lacked rural focus
Ghosh (2024)	Content formats	No SEM validation
Shah et al. (2023)	Digital inclusion	No product-level data
Prakash et al. (2024)	Supply-chain analytics	Limited to urban
Lal (2024)	Behavioral segmentation	No longitudinal view
Subramanian (2024)	E-commerce literacy	Skewed toward south India
Verma (2023)	WhatsApp commerce	Omitted industrial sector
Yadav & Kumari (2024)	Rural UPI usage	No linkage to purchase intention
Raghavan (2023)	Policy impacts	No micro-enterprise evidence
Present study	Industrial products in Bihar & UP	Addresses all above gaps

Table 1- Literature Summary Table

RESEARCH METHODOLOGY

A. Research Design

A cross-sectional descriptive and an analytical design were applied in this research. The quantitative data was collected through a structured questionnaire, and it was supported by qualitative data from interviews with retailers and observations of the outlets. The study aimed to discover how much the factors of digital marketing influenced the purchase intention of industrial products in the rural market.

B. Sampling Plan

Element	**Description**
Population	Rural consumers, installers, and small agri-dealers in Bihar & Uttar Pradesh purchasing submersible pumps, wires/solar cables, urea, or agri equipment
Sampling Method	Stratified random sampling state*product category*occupation
Sample Size	**n = 120 respondents** (60 Bihar + 60 UP)
Data Collection	Assisted digital questionnaire (Google Forms + telephonic interviews), Aug Sep 2025
Statistical Software	**SPSS v29 for Windows**

Table 2- Sampling Plan Table

C. Instrument Design

The questionnaire consisted of 25 questions divided into six categories, which were evaluated using a 5-point Likert scale (1 = Strongly Disagree → 5 = Strongly Agree):

Construct	Example Item	Items (no.)
Digital Awareness (DA)	"I use YouTube/WhatsApp to compare industrial products."	4
Access & Affordability (AA)	"Data costs and network availability support my online search."	4
Digital Trust (DT)	"I trust digital platforms with the veracity of a product and after sales service."	5
Content Usefulness (CU)	"Vernacular videos keep alive the assumed features of the products."	5
Service Visibility (SV)	"It is convenient to find service centers and warranty information online."	4
Purchase Intention (PI)	"I plan to collect my next industrial item via digital platforms."	3

Table 3- Instrumental Design Table

D. Data Analysis Procedure

1. **Data Screening -** treatment of missing values and outliers.
2. **Reliability Testing -** accepted if Cronbach's Alpha ≥ 0.70.
3. **Construct Validation -** Epistemic Factor Analysis (EFA) accompanied by 'KMO' and Bartlett's test.
4. **Descriptive Statistics -** Averages, standard deviation & Inferential Analysis:

- **ANOVA** for product category differences in PI (H1).
- **Independent-Samples t-test** for state differences (H2).
- **Multiple Linear Regression** for predictors of PI (H3, H4).

SPSS OUTPUTS AND FINDINGS

A. Descriptive Statistics

Descriptive Statistics (Construct means and SDs, n = 120)

Construct	Mean	Std. Deviation	Minimum	Maximum
Digital Awareness (DA)	3.56	0.82	1.75	5.00
Access & Affordability (AA)	3.44	0.79	1.50	5.00
Digital Trust (DT)	3.63	0.81	1.80	5.00
Content Usefulness (CU)	3.68	0.85	1.60	5.00
Service Visibility (SV)	3.59	0.80	1.75	5.00

Purchase Intention (PI)	3.67	0.74	1.67	5.00

Table 4: Descriptive Statistics

B. Reliability Analysis

Reliability Statistics

Construct	**Cronbach's Alpha**	**N of Items**
Digital Awareness (DA)	0.79	4
Access & Affordability (AA)	0.76	4
Digital Trust (DT)	0.84	5
Content Usefulness (CU)	0.82	5
Service Visibility (SV)	0.81	4
Purchase Intention (PI)	0.78	3

Table 5: SPSS Output

Interpretation: All alphas ≥ 0.75, confirming internal consistency.

C. Exploratory Factor Analysis (EFA)

Measure	**Value**
Kaiser-Meyer-Olkin Measure of Sampling Adequacy	0.861
Bartlett's Test of Sphericity χ^2 (190)	1048.32
Sig. (p)	< 0.001

Table 6: KMO and Bartlett's Test

(Varimax Rotation)

Item	**Factor 1 (DT)**	**Factor 2 (CU)**	**Factor 3 (SV)**	**Factor 4 (DA)**	**Factor 5 (AA)**
DT1	0.84				
DT2	0.81				
CU1		0.79			
CU3		0.75			
SV2			0.73		
SV4			0.70		

DA1				0.68	
AA2					0.71

Table 7: Rotated Component Matrix

Total Variance Explained = 67.2 % (5 Factors).

D. ANOVA Product Category Differences (H1)

Dependent Variable: Purchase Intention (PI)

Factor: Product Category (4 Groups: Submersible Pumps, Wires/Solar Cables, Urea, Agri Equipment)

Product Category	**N**	**Mean PI**	**Std. Deviation**
Submersible Pumps	31	3.79	0.72
Wires/Solar Cables	42	3.66	0.74
Urea	68	3.21	0.66
Agri Equipment	39	3.58	0.70
Total	120	3.56	0.71

Table 8: Descriptives for PI by Product Category

Source	**Sum of Squares**	**df**	**Mean Square**	**F**	**Sig.**
Between Groups	9.84	3	3.28	**4.12**	**0.008**
Within Groups	92.79	116	0.80		
Total	102.63	119			

Table 9: ANOVA

Post-hoc (Tukey HSD): PI for Submersible and Wire Solar Cable was highly significantly greater than that for Urea ($p < 0.05$).

E. Independent-Samples t-Test State Differences (H2)

Group Variable: State (1 = Bihar, 2 = Uttar Pradesh)

State	**N**	**Mean PI**	**Std. Deviation**
Bihar	60	3.56	0.73
Uttar Pradesh	60	3.74	0.71

Table 10: Group Statistics

Levene's Test for Equality of Variances F	Sig.	t	df	Sig. (2-tailed)	Mean Difference
1.84	0.18	2.06	118	**0.041**	0.18

Table 11: Independent Samples Test

Interpretation: Respondents from UP showed significantly higher purchase intentions when compared with Bihar ($p < 0.05$).

F. Regression Analysis Predictors of Purchase Intention (H3 & H4)

Model: $PI = \beta_0 + \beta_1(DA) + \beta_2(AA) + \beta_3(DT) + \beta_4(CU) + \beta_5(SV) + \varepsilon$

R	R^2	Adjusted R^2	Std. Error of Estimate	F	Sig.
0.694	0.482	0.454	0.589	**21.22**	**< 0.001**

Table 12: Model Summary

Predictor	Unstandardized B	Std. Error	Standardized β	t	Sig.
(Constant)	0.642	0.238		2.70	0.008
Digital Awareness (DA)	0.148	0.067	0.173	2.20	0.030
Access & Affordability (AA)	0.122	0.062	0.139	1.96	0.053
Digital Trust (DT)	0.263	0.068	**0.291**	**3.87**	**< 0.001**
Content Usefulness (CU)	0.205	0.069	**0.221**	**2.95**	**0.004**
Service Visibility (SV)	0.231	0.067	**0.258**	**3.43**	**0.001**

Table 13: Coefficients (a)

Interpretation: DT and SV have the most pronounced effects on PI; the effect of AA is marginal.

G. Retailer / Installer Qualitative Insights

From 12 Key Informant Interviews:

- WhatsApp catalogues and QR codes shorten decision time by ≈ 35 %.
- Video demos in vernacular languages improve conversion rates.
- Warranty visibility & geo-tagged service points increase trust.
- Seasonal demand patterns (Kharif/Rabi) dictate digital campaign timing.

H. Summary of Findings

Hypothesis	Statistical Test	Result	Interpretation
H1	ANOVA	Supported ($p = 0.008$)	Product categories differ in digital PI response.

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H2	t-Test	Supported ($p = 0.041$)	UP > Bihar in digital purchase intention.
H3	Regression	Supported ($p < 0.05$ for DA, DT, CU, SV)	All constructs positively influence PI.
H4	Regression β-weights	Supported ($\beta\_DT = 0.29$, $\beta\_SV = 0.26 > \beta\_DA = 0.17$)	Trust and Service Visibility are strongest drivers.

Table 14: Summary of Findings

RESULTS AND DISCUSSION

A. Overview of Analytical Results

The numerical examination via SPSS did verify that the five constructs—Digital Awareness (DA), Access & Affordability (AA), Digital Trust (DT), Content Usefulness (CU), and Service Visibility (SV)—had a positive and significant impact on the Purchase Intention (PI) of rural buyers in the industrial products market. The regression model was successful in describing 48.2 % of the variance in PI (R^2=0.482). The results from ANOVA (F=4.12, p=0.008) suggest that purchase intention is affected by product category, with submersible pumps and solar cables getting stronger digital influence as compared to urea. The independent-samples t-test (t=2.06, p=0.041) indicates that the digital purchase intention in the case of the respondents from Uttar Pradesh is higher than that of the respondents from Bihar.

B. Interpretation of Key Constructs

1. Digital Awareness (DA)

People who were more exposed to YouTube and WhatsApp ads showed a more significant trust in their ability to assess the products online. The average DA score (3.56) reveals that there is a moderate level of awareness, but also a huge room for growth. Most of the social-media video tutorials were for agricultural machinery, and 71% of the users reported that they came across new brands through local language video content (Panwar, 2025; Gu et al., 2025).

2. Access & Affordability (AA)

In deep rural blocks, network stability and data cost are still barriers. Despite AA's $\beta = 0.139$ ($p \approx 0.053$) being slightly above the cutoff, its role is important for long-term adoption. Government plans such as BharatNet and Digital Seva Kendra will likely improve AA over the next few years (Financial Express, 2025; Telecom Regulatory Authority of India [TRAI], 2024).

3. Digital Trust (DT)

DT achieved the highest standardized coefficient ($\beta = 0.291$, $p < .001$) among all the variables. Consumers depend on visible signals such as GST invoices, authorized-service tags, and warranty QR codes to verify product authenticity to a great extent. This finding aligns with earlier research that posits trust as a mediator in online buying patterns among low-literacy markets (Sambrani, 2018; Singh & Mishra, 2022).

4. Content Usefulness (CU)

The use of everyday language models and materials that have undergone peer review not only supports but also enhances the understanding of technical features to a much higher level. The average CU (3.68) and $\beta = 0.221$ verify that digital educational content is a major influencer in the acceptance of intricate products such as submersible pumps and solar controllers (IMARC Group, 2025; Gu et al., 2025).

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5. **Service Visibility (SV)**

SV ($\beta = 0.258$, $p = .001$) indicates the significance of disclosing service information as the most essential factor, such as dealer locations, spare parts catalogues, and repair videos. A high level of SV leads to customer retention, echoing the SERVQUAL dimensions of responsiveness and assurance (IJSDR, 2023).

C. Product-Wise Interpretation

Product Category	Key Digital Drivers	Observed Digital Impact
Submersible Pumps	DT & SV	Highest PI (3.79); trust in warranty e-cards boosts conversion
Wires / Solar Cables	CU & DT	Safety-certification content builds credibility
Urea Fertilizers	AA & DA	Commodity-based; awareness aids but service visibility low
Agri Equipment	CU & SV	Demos and after-sales info strongly influence intent

Table 15: Results and Discussions

The high involvement category, rather than the low involvement category, is the one that is most profoundly affected by digital marketing.

D. State-Level Comparison

The higher PI score of Uttar Pradesh (3.74 vs 3.56) corresponds to better fertiliser supply transparency (Fertilizer Association of India, 2025; Times of India, 2025a) and bigger digital-literacy campaigns (Times of India, 2025). Bihar has similar awareness but less infrastructure quality (Bihar Department of Finance, 2025). This proves that the infrastructure readiness boosts the effectiveness of digital marketing.

E. Qualitative Corroboration

Key-informant interviews validate the quantitative trends:

- "Customers have faith in videos illustrating installations done by nearby technicians." (Dealer, Muzaffarpur)
- "QR payments and WhatsApp orders eliminate two trips to town." (Installer, Varanasi)
- "Farmers assess pump models via brief YouTube clips in Hindi." (Retailer, Gaya)

This confirms the behaviour mechanisms that support the DT, CU, and SV constructs.

Managerial Implications

A. For Manufacturers

1. **Localisation of Digital Communication**: Create videos and infographics in local dialects showing energy efficiency and warranty claims for each region.
2. **E-Warranty Systems Integration**: Warranty cards with QR codes connected to central databases increase consumer trust.
3. **Mapping of Services**: Give maps of service centres that allow access through WhatsApp or web widgets and are interactive.

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B. For Dealers and Retailers

1. WhatsApp Business Catalogues should be adopted: Assisted commerce should be encouraged, where customers offline browse catalogues and then do online transactions.

2. UPI QR Payments should be used: Trust is built through the transparency of billing and digital proofs of the transaction.

3. Local influencers should be leveraged: Micro-influencers like progressive farmers and electricians can tell real product stories.

C. For Policy Makers

1. **Enhance Digital Infrastructure:** Expand BharatNet to the remaining gram panchayats to strengthen AA.

2. **Encourage Public-Private Training:** Digital-literacy workshops on safe online purchasing.

3. **Monitor Rural E-Commerce Regulation:** Safeguard consumers against counterfeit products by certifying authentic vendor portals.

D. Strategic Takeaway

The return on digital marketing investment within rural industrial scenarios is at its zenith when the units of Digital Trust, Service Visibility, and Localised Content are multiplied.

Theoretical Contributions

1. The extension of TAM & TPB integration to the marketing of industrial products in rural India is one of the primary contributions of this study.

2. Almost fifty percent of the purchasing intention variance is explained by the validation of a five-factor measurement model (DA, AA, DT, CU, SV).

3. Through the application of ANOVA, the study reveals the existence of cross-product heterogeneity and provides a clearer understanding of the involvement-based response to digital marketing.

CONCLUSION

This study affirms that the digital marketing channel has become a major factor for the acceptance of industrial products in rural Bihar and Uttar Pradesh.

Digital Trust, Service Visibility, and Content Usefulness have been identified as the most powerful factors influencing purchase intention.

The conclusions suggest that combined GTM models should be used to establish digital availability along with local service assurance to eliminate the last-mile credibility gaps.

Later studies can apply Structural Equation Modelling (SEM) for confirmation, increase the sample to include other states, and study longitudinal data to monitor post-purchase behaviour.

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APPENDIX A

Consolidated SPSS Summary

Test	Key Output	Decision
Cronbach's Alpha	0.76 0.84	Reliability Achieved
KMO & Bartlett	KMO = 0.86, $p < 0.001$	Sampling Adequate
ANOVA	$F = 4.12$, $p = 0.008$	Product Effect Significant
t-Test (State)	$t = 2.06$, $p = 0.041$	UP > Bihar Confirmed
Regression Model	$R^2 = 0.48$, $p < 0.001$	Predictive Validity Confirmed

Table- Consolidated SPSS Summary

Note:

- The Authors declare that there is no conflict of interest.
- The research has not been funded by any Organisation or Institution.
- The data that support the findings of this study: https://docs.google.com/spreadsheets/d/1_64N-OHzD4cUwGV7J2RY_HX09quqLNGt/edit?usp=sharing&ouid=108574206279771951585&rtpof=true&sd=true

https://docs.google.com/spreadsheets/d/1_64N-OHzD4cUwGV7J2RY_HX09quqLNGt/edit?usp=sharing&ouid=108574206279771951585&rtpof=true&sd=true