

Understanding Consumer Adoption of ONDC in India through the Technology Acceptance Model

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Abstract

A project created by the Government of India, to create the next generation of users who are keen to use e-commerce, the Open Network for Digital Commerce (ONDC) was formed to provide an accessible, interconnected network of digital businesses in India. We examine the factors that impact consumer acceptance of ONDC in Mangalore City using Technology Acceptance Model (TAM). Our findings reveal that consumers who find ONDC easy to use also perceive it as useful and exhibit positive attitudes towards it. Similarly, if an individual perceives that ONDC provides value then they are likely to consider using the service. Using structural equation modeling, we were able to demonstrate a reasonable fit of our model and that user mindset indirectly influences perceived value through adoption intentions. Finally, we found that the number of previous uses of other digital platforms was strongly related to all constructs of TAM which highlights the importance of familiarity with digital applications in consumer behavior. These results are useful for interaction designers and policy makers seeking to increase the engagement of individuals with ONDC.

Keywords: ONDC adoption; Technology Acceptance Model; User adoption intention; Digital consumer behaviour; Perceived value; Perceived ease of use

1. Conceptual Background

India is moving towards an open digital commerce model with the introduction of the ONDC, which supports a decentralized, interoperable network that allows different applications to support direct transactions between consumers and businesses without being limited by any one app's terms and conditions. These changes will help reduce the concentration of the e-commerce market, foster competition, and encourage growth of SME businesses throughout the country.

ONDC was created to alleviate concerns about monopolistic tendencies, data protection and small merchants being excluded in the Indian e-business sector. The general objectives of ONDC are to democratise the digital commerce landscape in India and allow local businesses to conduct their business in e-commerce without being controlled by so-called dominant platforms. ONDC's potential success is heavily reliant on whether enough consumers adopt it, yet much of the academic literature has not explored consumer adoption in detail. Due to its federated model, ONDC is expected to introduce additional complexities than on centralized platforms; complications such as fragmented user experience and good or poor service delivery will introduce new challenges when consumers are trying to determine if they can trust ONDC enough to continue shopping there. Likewise, technology adoption theories like the TAM may also be useful to understanding how consumers will accept ONDC since they explain that perceived effectiveness and perceived user friendliness drive an individual's decision to adopt a particular technology and do not provide guidance regarding how these two perceptions may develop within an open commerce model like ONDC. The purpose of this study is to identify which factors influence an individual's decision to adopt ONDC using the TAM as a lens through which to evaluate consumer decisions.

2. Theoretical Framework

In 1989, Davis put forward the Technology Acceptance Model (TAM) to clarify why people choose to use certain information systems. According to TAM, an individual's decision to embrace a new technology is

shaped by two main beliefs: how useful they perceive the technology to be and how easy they believe it is to use. Both of these beliefs influence the user's attitude toward using a specific technology, resulting in an individual's actual behaviour using that technology. A large number of researchers have validated TAM across a wide variety of usage contexts and TAM can usually explain between 40% - 50% of the variance in user adoption. Researchers have also expanded TAM by adding additional variables that influence the user's intention to use the new technology, including social influence and self-efficacy, resulting in models such as TAM2 and TAM3, as well as the Unified Theory of Acceptance and Use of Technology (UTAUT).

The ONDC is a revolutionary change from traditional centralized ecommerce platforms. ONDC is not a closed system like Amazon and Flipkart, which are both examples of centralized ecommerce. ONDC uses an open protocol to provide a platform for buyers and sellers to transact with one another across ecosystems of different application systems. ONDC has the potential to democratise digital commerce within India, but there are also barriers to consumer adoption of ONDC. Therefore, it is critical that we understand how consumers perceive the practical value and operational simplicity of ONDC in order to ensure its successful implementation. A recent study of the TAM indicated that it is applicable to emerging digital technologies in India, including in the study of using the digital rupee digital currency. Studies in India on using mobile shopping applications suggest that perceptions of the usefulness and ease of using the applications will be positively correlated with the adoption intentions of consumers. These findings indicate that the TAM is a useful theoretical framework for analysing consumer acceptance of ONDC. TAM has been employed as the theoretical framework to investigate whether perceptions of the utility, the perceived simplicity, and attitudes towards the entrepreneurial process affect a nano enterprise's decision to adopt a digital formalisation platform. Therefore, this study demonstrates that the use of TAM as a framework is also suitable for examining how ONDC will be adopted.

According to the original research conducted by Davis (1989) on consumer adoption, there is an updated version of this theory within Indian digital commerce. The original research found four primary variables that drive consumers' adoption toward using ONDC – PEOU, PU, ATT, and BI. The way consumers perceive the potential benefits of ONDC in enhancing their shopping experience can be understood as the perceived value of ONDC. This encompasses the ability to connect with a broader array of sellers, discover products with greater ease, buy items at more competitive prices, and finalize transactions more swiftly.

The potential benefits of ONDC is related to the promise that the network will provide a more democratized opportunity for consumers to interact with small and/or medium-sized businesses and local businesses. Consumers who believe they will receive a tangible benefit from using ONDC when compared with other current methods of doing so are more likely to adopt and use ONDC.

PEOU stands for experience without effort. Being a network of federated services allows for ONDC to offer complexity such as fragmentation between different platforms and inconsistencies regarding the level of service provided. As many customers have come to expect very easy to use applications from companies like Amazon, delivering ease of use is an important factor for customers accepting any of the ONDC applications. A major obstacle to increasing the perception of ease of use for customers is simplifying both the user interface and onboarding process as well as providing a consistent level of service delivery.

Using ONDC has an impact on consumer evaluation of the platform through their attitudes. Thus, attitudes toward ONDC act as a mediator between the perceptions of the usefulness of ONDC, the ease of using ONDC, and users' behavioural intentions. Users' attitudes toward ONDC will be positive when they perceive ONDC to be of value and are able to use ONDC easily. However, additional factors that mainly relates to trust, such as the security of personal data and the reliability of transactions when making purchases and/or selling products online, may influence the attitudes of consumers using ONDC in the emerging world of decentralized commerce.

The extent to which consumers plan to use the ONDC platform will be influenced by how consumers view digital commerce on this platform and how valuable they believe it will be. Furthermore, the idea of using

digital commerce on the ONDC platform will shape their habits of using Centralized Platforms and also affect the costs involved with using these platforms when transitioning to digital commerce.

3. Literature Review

The TAM developed by Davis (1989) asserts that PEOU and PU are the two primary beliefs affecting the ATT toward using technology and influencing their BI to adopt that technology. Numerous studies have validated this model within an array of diverse environments including e-commerce and digital banking (Agarwal & Prasad, 1999; Mathieson, 1991; Venkatesh, 2000). Further research has identified ease of use and functional utility as the primary factors contributing to the acceptance of technology (Adams et al., 1992). Lastly, the Trust added to the model by Gefen et al. (2003) refers to consumers' perception of the degree of security and reliability of their purchase decisions.

In a study that examined how the adoption and use of the ONDC could benefit MSMEs in India by improving their perceived Value and Trust through (1) improved Digital Infrastructure, and (2) increased Awareness; Walia et al., (2023) found that TAM was a valid means of assessing the ONDC. Kumar & M, (2023) discussed how ONDC would help to create interoperability and provide simplified User Interface Interaction for MSMEs. Dash et al., (2023) highlighted how ONDC would help to increase efficiency in Logistics, while also being Platform Neutral, which would ultimately allow for greater Autonomy and Perceived Value.

Recent validation of the Extended Technology Acceptance Model (ETAM) has been achieved through a systematic review of current e-commerce research. Rane et al. (2024) conducted a meta-analysis on the ATAM and found that factors such as PEOU, PU, user trust, and electronic word-of-mouth (eWOM) have a positive influence on consumer attitudes towards e-commerce and their intentions to adopt it. Because of this decentralized ownership structure, ONDC presents different types of trust issues than other e-commerce platforms or devices that have centralized ownership. Research on blockchain systems suggests that decentralization will impact the dynamics of consumer trust in different ways; two key factors regarding trust in block-chain systems are transparency and security (Le et al. 2026). Based upon the ONDC, trust is important for facilitating the adoption of users while perceived risk appears to be less influential (Sharma et al., 2024). This presents the opportunity for further investigation to ascertain if decentralized networks will elicit psychological responses similar or dissimilar from other traditional e-commerce networks — warranting further study.

Many researchers are now using broader academic discussions to evaluate the various external environmental factors which impact customer engagement. Caputa et al. (2021) highlight the necessity of recognizing the internet as a crucial source of information. In contrast, Daskalakis et al. (2022) have illustrated that the use of fusion techniques can significantly enhance decision-making processes in the realm of e-commerce. Bazarova and Botavina (2022) point out those small retailers need to become more digitally literate and flexible. Perceived risk and cyber security will also continue to be important factors, as both Saeed (2023) and Wahab and et al.(2023) have observed that concerns concerning trust will influence consumer participation in decentralized systems. Rajagopal et al. (2022) investigated a association between perceived risk and the Online payment practices of consumers utilising neuropsychological methods. As demonstrated in the consumer literature of Zhou (2022), Tayyab (2023) and, Rani and Catherine (2023), unethical advertising, online reviews, and impulse purchases have negatively impacted consumer trust and adoption of products and services. Bajracharya and Chatterjee (2023) identified a number of difficulties associated with using localized e-commerce solutions in areas that are less advanced in terms of the adoption of digital technology.

Currently, ONDC is still developing its user base and usage pattern as it's still in the early adoption stage, therefore we will use the TAM to measure the impact of PU and PEOU on future usage behaviour as described by Davis (1989). For example, Kim et al. (2010) demonstrated how PU and PEOU impacted the intentions of early adopters of smart phones. In addition, Hwang et al. (2016) demonstrated that TAM can successfully assess the users' perception of the product prior to hands on experience with it. With respect to e-commerce, Gefen et al. (2003) added the variable of trust to their use of TAM in the early days of online shopping; recently Al-Smadi et al., (2021) conducted a study on AI acceptance using TAM in rapidly changing educational

environments. The results of these studies indicate that TAM can and should be used to study ONDC user adoption given that it is still in the early stages of development.

This research examines consumer behavior related to adopting decentralized digital commerce, an area that has not been widely studied in academic literature. Using the TAM, the paper extends the TAM model to the emerging area of consumer adoption of decentralized digital commerce in order to provide both policymakers and platform developers with data-driven recommendations for improving user experience, trust, and engagement within ONDC. By examining user behavior within ONDC, stakeholders will have a better understanding of how to implement strategic initiatives that will increase platform adoption rates and facilitate the success of India's digital commerce transformation.

4. Research Aims

This research primarily aims to investigate the elements that affect consumer acceptance of ONDC through the application of the TAM framework. Specifically, the study seeks:

1. To analyse users' perceptions of ONDC in terms of PU and PEOU.
2. To examine the impact of PU and PEOU on ATT use and BI.
3. To estimate the relationship between ATT and BI toward adopting ONDC.
4. To inquire the mediating role of BI between ATT and PU.
5. To explore whether users' perceptions differ based on the frequency of ONDC usage.

5. Hypotheses

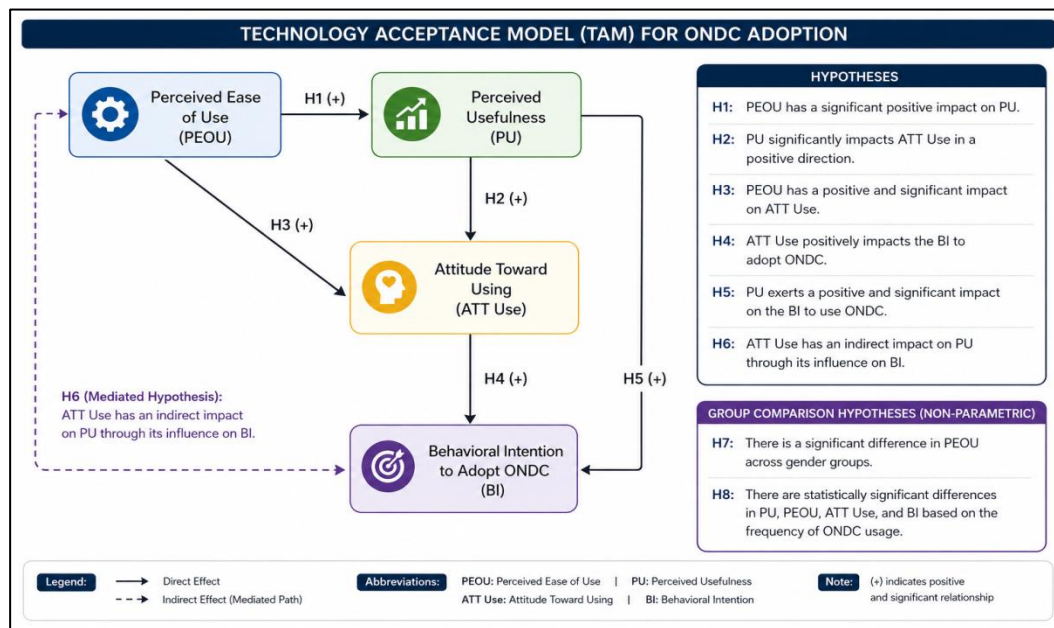
Based on TAM framework and previous research findings, the following hypotheses are proposed.

Model-Based Hypotheses (TAM Relationships):

- **H1:** A consumer's belief that ONDC is simple to operate leads to a stronger perception of its practical value.
- **H2:** When users find ONDC beneficial, their favourable stance toward the platform increases.
- **H3:** The perceived simplicity of using ONDC directly contributes to a more positive overall attitude toward it.
- **H4:** Having a positive attitude toward ONDC makes individuals more inclined to intend using it.
- **H5:** Recognizing ONDC as valuable has a direct and meaningful effect on one's willingness to adopt it.
- **H6 (Mediated Hypothesis):** The relationship between perceived practical value and adoption intention is partially explained by the user's attitude toward ONDC — meaning attitude serves as an intermediate link.

Group Comparison Hypotheses (Non-parametric):

- **H7:** Male and female users differ significantly in how easily they believe ONDC can be used.
- **H8:** Varying levels of prior experience with ONDC (frequency of use) are associated with noticeable differences in perceived value, perceived simplicity, overall attitude, and adoption intention.



6. Methodology

As per the SEM norms, the sample size of 361 is suitably large enough. According to Hair et al. (2019), there should be at least 200 instances available for tests when modelling using as many as five latent constructs, while Kline (2016) recommends collecting at least 10 responses for each estimated parameter, or a minimum of 180. The 361 samples used in this research exceeds each of the previous criteria, providing enough statistical power (Byrne, 2016), and meets the recommendation of those conducting similar research utilizing the Technology Acceptance Model (Jaiswal & Kumar, 2024; Walia et al., 2023). Additionally, this amount of data will support the results of Non-Parametric Tests and also the use of Bootstrap Testing (with 5,000 re-sampling).

7. Data Analysis

The study looked at the views of 361 participants from Mangalore city who have experience with using digital commerce platforms. The analysis was done using descriptive statistics, reliability tests and non-parametric tests with SPSS and using SEM with AMOS to validate relationships in the TAM.

7.1 Reliability of Constructs

The internal consistency of the measurement scales in this study was verified by the calculation of Cronbach's Alpha. All constructs within the TAM were found to have acceptable levels of reliability (all 0.70; Nunnally & Bernstein, 1994). Thus, all scales were deemed reliable for the main analysis.

Table 1: Sample Descriptive Information

	Option	Count	Percentage
Gender	Male	158	43.8
	Female	203	56.2
Age	18-25	303	83.9
	26-35	33	9.1
	36-45	13	3.6
	46-55	9	2.5

	56 and above	3	0.8
Education Level	Secondary School	235	65.1
	Undergraduate	107	29.6
	Postgraduate	7	1.9
	Doctorate	11	3.0
	Other	1	0.3
Occupation	Student	235	65.1
	Employed	107	29.6
	Self Employed	7	1.9
	Unemployed	11	3.0
	Retired	1	0.3
Monthly Income	Less than Rs 20000	238	63.2
	Rs 20000 to Rs 50000	94	26.0
	Rs 50001 to Rs 100000	24	6.6
	More than Rs 100000	15	4.2
Frequency of Online purchase	Rarely	132	36.6
	Occasionally	154	42.7
	Frequently	64	17.7
	Very Frequently	11	3.0

Source: Primary survey data collected by the author(s), 2025

With 65.1% of the sample pursuing education and 83.9% of the sample being between the ages of 18 and 25, the demographic profile shows that the sample is fundamentally young, female, and student-based. Agreeing with their status as students, the majority of respondents indicated low monthly incomes (less than ₹20,000). Despite being digitally active, the majority only occasionally or infrequently shop online, recommended a moderate level of e-commerce involvement.

Table 2: Constructs' Descriptive Information

Construct	Item	Min	Max	Mean	Std. Deviation
PU	PU1	2	5	4.133	0.5154
	PU2	1	5	4.083	0.5857
	PU3	1	5	4.072	0.6458
	PU4	1	5	4.086	0.5877
	PU5	1	5	4.102	0.5406
PEOU	PEOU1	1	5	4.025	0.6385
	PEOU2	1	5	3.983	0.695
	PEOU3	1	5	4.008	0.7245

	PEOU4	1	5	4.033	0.6617
BI	BI1	1	5	4.089	0.6565
	BI2	1	5	3.911	0.8185
	BI3	1	5	3.784	0.8869
ATT	ATT1	1	5	4.008	0.7245
	ATT2	1	5	4.017	0.6829
	ATT3	1	5	3.9	0.7895
	ATT4	1	5	4.1	0.5686
	ATT6	1	5	4.127	0.6149

According to the findings, participants' view point about ONDC was largely favorable. Strong agreement about the platform's ease of use and utility was denoted by the high average scores (around 4.0) for PU and PEOU. ATT which had mean values ranging from 3.9 to 4.127 likewise recommended a positive viewpoint. While there was a little more variation in the overall positive responses, BI exhibited a moderate to high intention to use ONDC.

Table 3: Descriptive statistics along with normality test

Descriptive Statistics		Shapiro Wilk Test	
	Median (IQR)	W	p- value
PU	15(1)	0.761	< .001
PEOU	15(1)	0.76	< .001
BI	9 (1)	0.851	< .001
ATT	12(1)	0.806	< .001

All TAM components had non-normal distributions according to the Shapiro-Wilk test ($p < .001$), which promoted the use of medians and interquartile ranges for interpretation. The platform's usefulness was strongly supported by users, who rated ONDC as being very helpful and simple to use (Median = 15 for both PU and PEOU). Though opinions are favorable, some users may still be hesitant to completely use the platform, maybe because of trust or security concerns, as indicated by moderate BI (Median = 9) and somewhat lower attitude ratings (Median = 12). Therefore, non-parametric tests were employed for additional analysis.

Table 4: Mann-Whitney U test: Comparison based on Gender

	Statistic	p
PU	14702	0.122
PEOU	13645	0.006
BI	15375	0.429
ATT	14717	0.123

Perceived Ease of Use (PEOU) for ONDC differs significantly between males and females ($p = 0.006$), according to table 4 data, with males finding ONDC simpler to use than females.

Table 5: Kruskal–Wallis Test Results for Group Differences

Factors	Age		Education		Income		Occupation		Frequency	
	χ^2	p-value	χ^2	p-value	χ^2	p	χ^2	p-value	χ^2	p-value
PU	4.10	0.39	1.64	0.80	1.35	0.72	4.19	0.38	11.3	0.01
PEOU	3.57	0.47	2.25	0.69	0.97	0.81	7.60	0.11	15.8	0.001
BI	5.06	0.28	1.31	0.86	1.65	0.65	8.39	0.08	18.5	<.001
ATT	1.58	0.81	2.97	0.56	4.12	0.25	4.30	0.37	10.2	0.017

The Kruskal–Wallis test analysis indicated that none of the demographic variables, including age, educational qualification, income, and occupation, showed a statistically significant difference on users’ perceptions of ONDC in terms of PU, PEOU, ATT, or BI. However, the frequency of online shopping emerged as a key differentiator. Participants who reported higher frequency of online purchases consistently demonstrated more favorable perceptions across all TAM constructs. This suggests that regular interaction with digital platforms enhances users’ familiarity and confidence, making them more receptive to adopting decentralized models like ONDC. Therefore, promoting habitual engagement and building digital comfort among infrequent users may be critical to boosting broader adoption of the platform.

Table 6: Multiple Pairwise Comparisons among Groups Using the DSCF Procedure

Pairwise comparisons	PU		PEOU		BI		AT	
	W	p	W	p	W	p	W	p
Frequently- Occasionally	-0.42	0.99	1.03	0.89	-1.32	0.79	1.26	0.81
Frequently-Rarely	-0.77	0.95	-0.76	0.95	-4.03	0.02	0.39	0.99
Frequently-Very Frequently	4.11	0.02	4.74	<.001	2.84	0.18	3.80	0.04
Occasionally-Rarely	-0.44	0.99	-2.26	0.38	-3.70	0.04	-1.20	0.83
Occasionally-Very Frequently	4.62	0.01	4.50	0.01	3.62	0.05	3.94	0.03
Rarely-Very Frequently	4.58	0.01	5.62	<.001	4.68	0.01	4.48	0.01

The results of multiple comparisons show distinct differences among extreme usage groups: rare users vs. very frequent users are statistically different on almost all traits, and very frequent users and frequent/occasional users are also statistically different on most traits (with some notable exceptions). Frequent users and occasional users do not show statistically significant differences in terms of trait score. The only statistically significant difference among rare users other than the very frequent/rare user comparison is that the rare users and occasional users are significantly different in terms of the one trait (and the trait where rare users are significantly different from frequent users). In general, the findings indicate that very frequent users are markedly different from lower usage level users, while frequent and occasional users are very similar to each other.

Table 7: Pearson Correlation matrix and results of test for significance

	PU	PEOU	BI	AT
PU	1			
PEOU	0.651***	1		
BI	0.58***	0.563***	1	
ATT	0.579***	0.585***	0.628***	1

Note: *** indicates $p < .001$

Strong positive correlations between TAM components are disclosed by correlation analysis. While BI has a positive correlation with PU and PEOU, PU is strongly related with PEOU. Furthermore, ATT has a strong correlation with every variable, signifying that utility,

usability, and intention all control the positive user sentiments. These correlations were supported by SEM using AMOS with bootstrapped Maximum Likelihood Estimation, which made it suitable for the non-normal data.

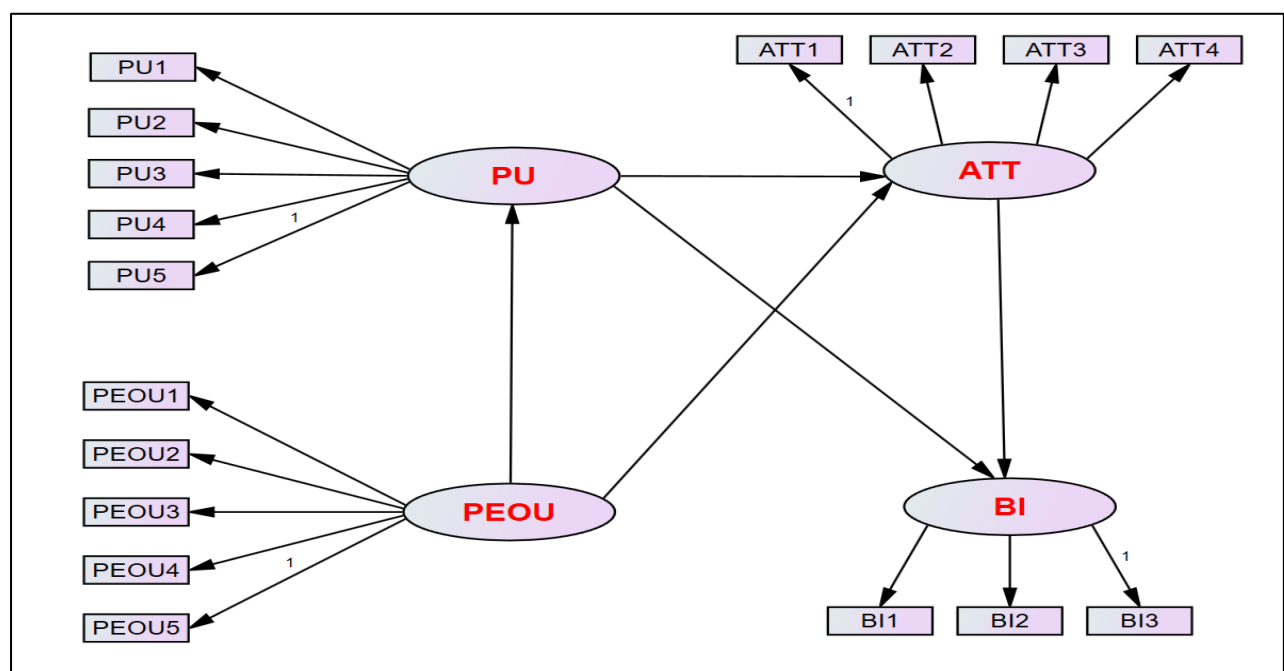


Figure 1: Conceptual TAM Model (Model - 1)

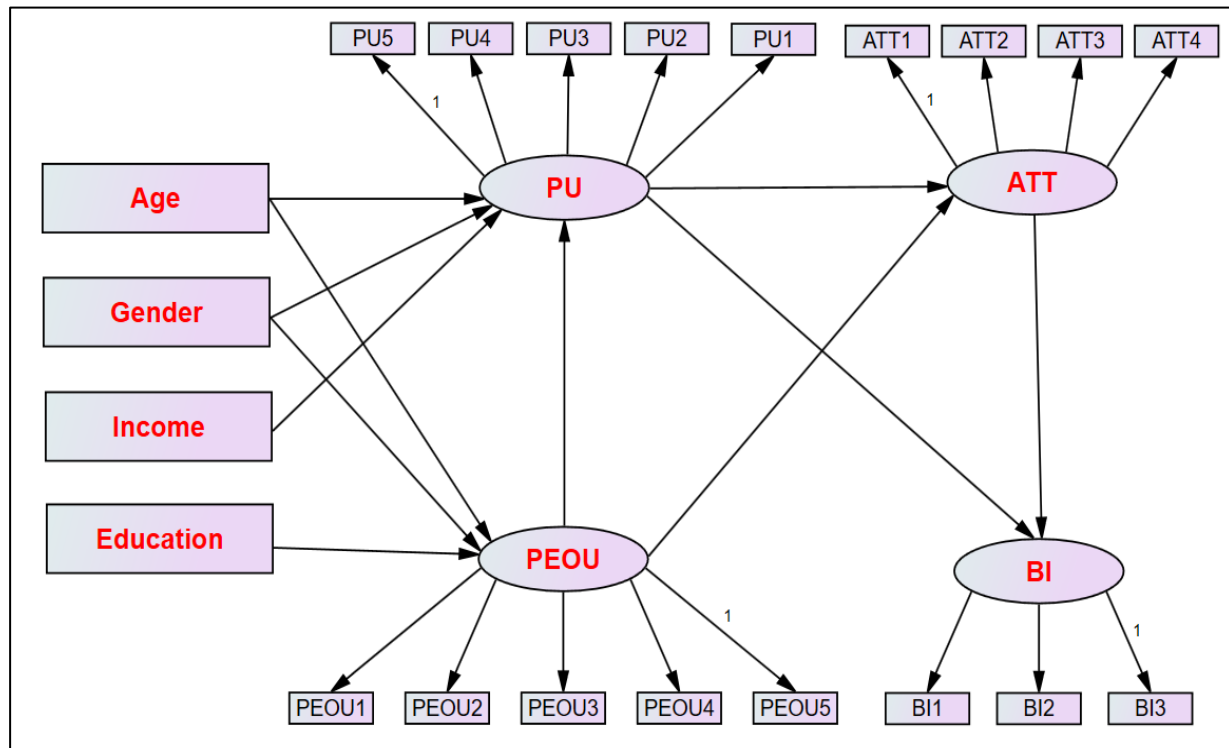


Figure 2: Conceptual TAM model with demographic variables (Model-2)

Table 8: Measurement Model estimates with p value

Factor	Items	Estimate	p- value	Conclusion
PU	PU5	1		
	PU4	0.98	<0.01	Significant
	PU3	1.094	<0.01	Significant
	PU2	0.976	<0.01	Significant
	PU1	0.894	<0.01	Significant
PEOU	PEOU5	1		
	PEOU4	1.073	<0.01	Significant
	PEOU3	1.097	<0.01	Significant
	PEOU2	1.025	<0.01	Significant
	PEOU1	0.978	<0.01	Significant
ATT	ATT1	1		
	ATT2	1.067	<0.01	Significant
	ATT3	1.078	<0.01	Significant
	ATT4	0.847	<0.01	Significant
BI	BI3	1		
	BI2	0.972	<0.01	Significant
	BI1	0.706	<0.01	Significant

Table 8 shows that all item scales are statistically significant in determining their respective latent variables: PU, PEOU, ATT and BI. These results substantiate the validity of each measurement model, indicating their suitability for further analysis.

Table 9: Estimates along with p-value of fitted Structural Equation model

			Estimate	p-value	Conclusion
PU	<---	PEOU	0.643	<0.01	Significant
ATT	<---	PU	0.337	<0.01	Significant
ATT	<---	PEOU	0.402	<0.01	Significant
BI	<---	ATT	0.817	<0.01	Significant
BI	<---	PU	0.36	<0.01	Significant

Regarding ONDC, the SEM results confirm that there are noteworthy positive correlations between the TAM components. Attitude is strongly impacted by both PU and PEOU, whereas PEOU has a major impact on PU. The greatest influence on BI is attributed to ATT, which is followed by a direct effect from PU. These findings highlight how important it is for users to have good attitudes and believe that ONDC is valuable in order to motivate them to use it.

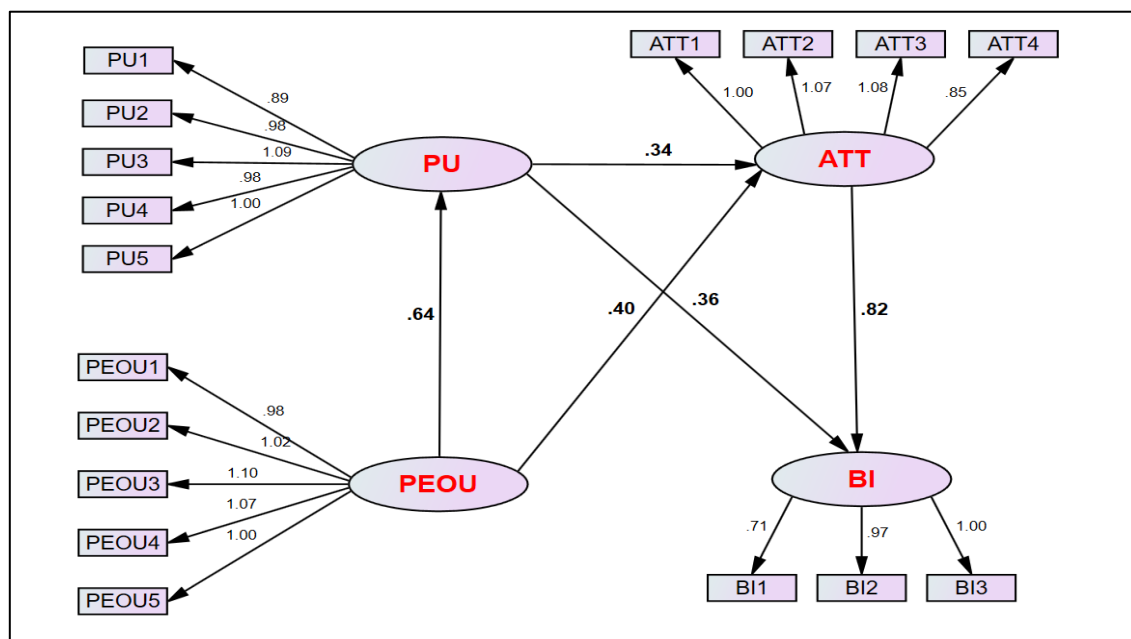


Figure 3: Fitted TAM model (Model-1)

Table 10: Identification of mediators and significance of indirect effects

Hypothesis	Estimate	P - value	Decision
Indirect effect of ATT on PU mediating through BI	0.198	0.011	Significant

The substantial indirect effect of ATT on PU through BI, with an estimate of 0.198 ($p = 0.011$) imply that a positive attitude escalates users' intentions, which thereafter strengthens their perception of usefulness.

Table 11: Assessment for model goodness of fit

Fit Indices	χ^2/df	RMSEA	CFI	TLI	GFI	AGFI
Model-1	2.295	0.058	0.933	0.920	0.919	0.892
Model-2	2.055	0.054	0.916	0.903	0.907	0.882
Accepted value	< 3	< 0.06	≥ 0.9	≥ 0.9	> 0.9	> 0.8

The two models indicate acceptable fit for understanding user behavior in the ONDC through the TAM model. However, Model-1, without demographic variables, shows a slightly better overall fit, suggesting it may offer a more thorough analysis of the elements influencing user behavior within the ONDC framework.

8. Summary:

Hypothesis Code	Statement	Result	Evidence
H1	PEOU positively influences PU.	Supported	$\beta = 0.643, p < 0.01$
H2	PEOU positively influences ATT.	Supported	$\beta = 0.402, p < 0.01$
H3	PU positively influences ATT.	Supported	$\beta = 0.337, p < 0.01$
H4	ATT positively influences BI.	Supported	$\beta = 0.817, p < 0.01$
H5	PU positively influences BI.	Supported	$\beta = 0.36, p < 0.01$
H6	ATT has an indirect effect on PU through BI.	Supported	Indirect effect = 0.198, $p = 0.011$
H7	Frequency of online purchase significantly influences TAM constructs (PU, PEOU, ATT, BI).	Supported	Kruskal-Wallis and DSCF test
H8	There is a significant difference in PEOU based on gender.	Supported	Mann-Whitney U, $p = 0.006$

9. Discussion

The entire core Technology Acceptance Model (TAM) hypotheses (H1-H5) were supported in this ONDC context, with PEOU being a significant predictor of PU ($\beta = 0.643, p .01$). Additionally, AT was the strongest predictor of BI ($\beta = 0.817, p .01$), indicating that users' emotional evaluation of an experience is important in the open network context. A new mediated effect was found (H6), where ATT influences PU through BI ($\beta = 0.198, p = 0.011$), which indicates that there is a bilateral relationship between beliefs and intentions. Finally, all TAM constructs were previously shown to be differentiated by the number of times online purchases were made; however, demographics showed very little differentiation between constructs with the exception of males, who perceived ONDC to be significantly easier than females ($p = 0.006$).

10. Theoretical Implications

The research provides three core theoretical contributions. First, TAM is validated in the new context of ONDC; however, an individual's attitude is of greater importance than with regard to centralized platforms. Second, the study discovered a dynamic feedback loop, with BI mediating the relationship between ATT and PU; challenging the linearity of TAM and linking the findings to post-adoption theories such as ECM. Finally, it was determined that an individual's digital habitus (amount spent online) was more important in predicting a person's adoption of ONDC compared to demographic variables (e.g., age or income). This supports the notion that future research on TAM should focus on experience-based measures and not demographic variables (age or income).

11. Practical Implications

There are three major implications that all participants in ONDC should consider. Firstly, platform developers need to perform gender-sensitive audits and offer local language on boarding video tutorials to minimize the gender gap in PEOU. Secondly, regulators should spend more time promoting benefits (e.g., cost savings, variety of products) than they currently do and less time explaining what ONDC does. Finally, in order to attract frequent users, buyer application developers should create "power buyer" groups and offer incentives to switch from their previous online shopping practices to ONDC.

12. Study Limitations and Directions for Future Research

This study reports on a number of issues we used convenient sampling in Mangalore which in turn means the results may not be applied to rural and semi-urban India, we had a cross sectional design which didn't allow us to see how people's perceptions change over time, also we left out what may be important elements like trust in unknown sellers, perceived cyber security risk, and digital literacy. To improve on this we suggest that going forward research should use longitudinal and multi-regional designs which include rural, semi-urban and large cities, also we recommend that the TAM framework be expanded to include context specific variables like "Trust in Network Governance" or "Perceived Interoperability Risk", do studies which look at ONDC as against large centralized players like Amazon and Flipkart using quasi experimental methods, and we also put forth that qualitative methods like in depth interviews or focus groups be used to research the gender gap in PEOU and the role of attitude.

13. Declaration of Conflicting Interest

The Authors declared no potential conflicts of interest with respect to the research, authorship and/or publication of this article. The authors received no financial support for the research, authorship and/or publication of this article.

14. Reference:

- [1] Adams, D. A., Nelson, R. R., & Todd, P. A. (1992). Perceived usefulness, ease of use, and usage of information technology: A replication. *MIS Quarterly*, 16(2), 227–247.
- [2] Agarwal, R., & Prasad, J. (1999). Are individual differences germane to the acceptance of new information technologies? *Decision Sciences*, 30(2), 361–391.
- [3] Al-Abbadi, L. H., Bader, D. M. K., Mohammad, A., Al-Quran, A. Z., Aldaihani, F. M. F., Al-Hawary, S. I. S., & Alathamneh, F. F. (2022). The effect of online consumer reviews on purchasing intention through product mental image. *International Journal of Data and Network Science*, 6(4), 1519–1530. <https://doi.org/10.5267/j.ijdns.2022.5.001>
- [4] Al Smadi, M., Al Smadi, A., & Al Zboon, S. (2021). The acceptance of artificial intelligence in educational settings: A technology acceptance model approach. *International Journal of Emerging Technologies in Learning*, 16(7), 184–198. <https://doi.org/10.3991/ijet.v16i07.21345>
- [5] Aribowo, H., Mokal, Y. I., Widjaja, A. E., & Haryani, C. A. (2024). Examining student acceptance and attitudes toward the learning management system through the lens of the technology acceptance model and

- the information system success model. In *2024 10th International Conference on Education and Technology (ICET)* (pp. 102–107). IEEE. <https://doi.org/10.1109/ICET64717.2024.10778473>
- [6] Bajracharya, S., & Chatterjee, J. M. (2023). Challenges for online purchase intention: A qualitative study of e-commerce sector of Nepal. *LBEF Research Journal of Science, Technology and Management*, 5(1), 21–33.
- [7] Bazarova, A. A., & Botavina, E. B. (2022). The impact of the digital economy on new business models: The emergence of outsourcing, e-commerce and app stores. *E-Management*, 5*(3), 83–89. <https://doi.org/10.26425/2658-3445-2022-5-3-83-89>
- [8] Caputa, W., Krawczyk-Sokolowska, I., & Pierscieniak, A. (2021). The potential of web awareness as a determinant of dually defined customer value. *Technological Forecasting and Social Change*, 163, Article 120443. <https://doi.org/10.1016/j.techfore.2020.120443>
- [9] Costa, J., & Castro, R. (2021). SMEs must go online—e-commerce as an escape hatch for resilience and survivability. *Journal of Theoretical and Applied Electronic Commerce Research*, 16(7), 3043–3062. <https://doi.org/10.3390/jtaer16070166>
- [10] Dash, B., Sharma, P., Ansari, M. F., & Swayamsiddha, S. (2023). A review of ONDC's digital warfare in India taking on the e-commerce giants. *International Journal of Engineering & Technology*, 11(2), 96–99.
- [11] Daskalakis, E., Remoundou, K., Peppes, N., Alexakis, T., Demestichas, K., Adamopoulou, E., & Sykas, E. (2022). Applications of fusion techniques in e-commerce environments: A literature review. *Sensors*, 22(11), Article 3998. <https://doi.org/10.3390/s22113998>
- [12] Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS Quarterly*, 13(3), 319–340.
- [13] Davis, F. D., Bagozzi, R. P., & Warshaw, P. R. (1989). User acceptance of computer technology: A comparison of two theoretical models. *Management Science*, 35(8), 982–1003.
- [14] Davis, F. D., Bagozzi, R. P., & Warshaw, P. R. (1992). Extrinsic and intrinsic motivation to use computers in the workplace. *Journal of Applied Social Psychology*, 22(14), 1111–1132.
- [15] Fishbein, M., & Ajzen, I. (1975). *Belief, attitude, intention, and behavior: An introduction to theory and research*. Addison-Wesley.
- [16] Gefen, D., Karahanna, E., & Straub, D. W. (2003). Trust and TAM in online shopping: An integrated model. *MIS Quarterly*, 27(1), 51–90.
- [17] Ghosh, A., Kulkarni, L., Pramanik, S., Tripathi, V., & Kumar, V. (2025). *Study on nano enterprises' digital formalisation in India*. LEAD at Krea University.
- [18] Ghosh, G. (2021). Adoption of digital payment system by consumer: A review of literature. *International Journal of Creative Research Thoughts*, 9(2), 2320–2882.
- [19] Guhan, R., & Vivekanandan, K. (2023). Mobile application adoption in business by the unorganized retailers and expanding the constructs by using TAM, DOI, TOE theories. *Management Science Letters*, 13(2), 96–107.
- [20] Hwang, Y., Al Arabiat, M., & Shin, D. H. (2016). Understanding information proactiveness and the content management system adoption in the pre implementation stage. *Computers in Human Behavior*, 64, 515–523. <https://doi.org/10.1016/j.chb.2016.07.032>
- [21] Islam, M. I. U., Lone, U. M., Bhat, I. A., Aamir, S., & Salau, A. O. (2024). Open Network for Digital Commerce in India: Past, present, and future. *Open Information Science*, 8(1), 1–15. <https://doi.org/10.1515/opis-2024-0001>
- [22] Jaiswal, L. B., & Kumar, B. (2024). Open Network for Digital Commerce (ONDC): In depth analysis to revolutionize the e-commerce industry in India. *ANWESH: International Journal of Management & Information Technology*, 9(2), 40–48.
- [23] K. M., M., Aithal, P. S., & K. R. S., S. (2022). Open Network for Digital Commerce – ONDC (e-commerce) infrastructure: To promote SME/MSME sector for inclusive and sustainable digital economic growth. *International Journal of Management, Technology, and Social Sciences*, 7(2), 320–340. <https://doi.org/10.47992/ijmts.2581.6012.0223>

- [24] Kim, S., Lee, Y., & Lee, J. (2010). The impact of perceived usefulness, ease of use and enjoyment on intention to continue using a smartphone. *Journal of Information Technology Applications & Management*, 17(4), 61–80.
- [25] Kumar, M. N. V., & M, H. (2023). An evaluation of Open Network for Digital Commerce (ONDC) implementation for MSMEs in India. *International Journal of Trendy Research in Engineering and Technology*, 7(1), 43–45. <https://doi.org/10.54473/ijtret.2023.7108>
- [26] Kumar, P., Anu, & Shabnam. (2025). Unravelling the path to retail CBDC adoption in India: Insights from the technology acceptance model. *International Journal of Electronic Banking*, 5(1), 62–76.
- [27] Mathieson, K. (1991). Predicting user intentions: Comparing the technology acceptance model with the theory of planned behavior. *Information Systems Research*, 2(3), 173–191.
- [28] Morsi, S. (2023). Evaluation of e-service quality and its impact on customer satisfaction for mobile commerce applications in Egypt. *AJA*, 1–18. <https://doi.org/10.21608/aja.2023.208530.1435>
- [29] Nunnally, J. C., & Bernstein, I. H. (1994). *Psychometric theory* (3rd ed.). McGraw-Hill.
- [30] Ogunmola, G. A., & Das, U. (2024). Analyzing consumer perceptions and adoption intentions of central bank digital currency: A case of the digital rupee. *Digital Policy, Regulation and Governance*, 26(4), 450–471. <https://doi.org/10.1108/DPRG-09-2023-0136>
- [31] Patel, K. J., & Mistri, K. H. (2025). Consumer adoption of mobile shopping applications: Empirical evidence from India. *Lex Localis*, 23(3).
- [32] Qalati, S. A., Vela, E. G., Li, W., Dakhan, S. A., Hong Thuy, T. T., & Merani, S. H. (2021). Effects of perceived service quality, website quality, and reputation on purchase intention: The mediating and moderating roles of trust and perceived risk in online shopping. *Cogent Business and Management*, 8(1), Article 1869363. <https://doi.org/10.1080/23311975.2020.1869363>
- [33] Rajagopal, N. K., Ramkumar, G., Yousoof, M., & Tripathi, D. A. P. (2022). Neuropsychological study of how shoppers handle dubious online payment behavior. *Journal of Contemporary Issues in Business and Government*, 28(4), 49–62. <https://doi.org/10.47750/cibg.2022.28.04.049>
- [34] Rani, N. M., & Catherine, S. (2023). A study on impulsive buying behaviour in online shopping. *International Journal of Professional Business Review*, 8(3), Article e01237. <https://doi.org/10.26668/businessreview/2023.v8i3.1237>
- [35] Rietveld, R., van Dolen, W., Mazloom, M., & Worrying, M. (2022). What drives consumers to shop on mobile devices? Insights from a meta-analysis. *Journal of Retailing*, 98(1), 178–196. <https://doi.org/10.1016/j.jretai.2021.02.002>
- [36] Saeed, S. (2023). A customer-centric view of e-commerce security and privacy. *Applied Sciences*, 13(2), Article 1020. <https://doi.org/10.3390/app13021020>
- [37] Sharma, P., Dash, B., & Ansari, M. F. (2024). Navigating the adoption landscape of blockchain in food delivery: A UTAUT perspective. *British Food Journal*, 126(8), 3120–3138. <https://doi.org/10.1108/BFJ-10-2023-0895>
- [38] Tayyab, M., Qureshi, M., & Gopal, K. (2023). The impact of unethical and false advertising on social media towards consumer buying behaviour: An examination among young adults in Malaysia. *International Journal of Business and Technology Management*, 5(1), 124–139.
- [39] Tikhomirova, A., & Shuai, C. (2019). Assessment of trust building mechanisms of e-commerce: A discourse analysis approach. *Professional Discourse & Communication*, 1(4), 23–32. <https://doi.org/10.24833/2687-0126-2019-1-4-23-32>
- [40] Venkatesh, V. (2000). Determinants of perceived ease of use: Integrating control, intrinsic motivation, and emotion into the technology acceptance model. *Information Systems Research*, 11(4), 342–365.
- [41] Venkatesh, V., & Davis, F. D. (2000). A theoretical extension of the technology acceptance model: Four longitudinal field studies. *Management Science*, 46(2), 186–204. <https://doi.org/10.1287/mnsc.46.2.186.11926>
- [42] Venkatesh, V., Morris, M. G., Davis, G. B., & Davis, F. D. (2003). User acceptance of information technology: Toward a unified view. *MIS Quarterly*, 27(3), 425–478. <https://doi.org/10.2307/30036540>

- [43] Wahab, F., Khan, I., Kamontip, Hussain, T., & Amir, A. (2023). An investigation of cyber attack impact on consumers' intention to purchase online. *Decision Analytics Journal*, 8, Article 100297. <https://doi.org/10.1016/j.dajour.2023.100297>
- [44] Walia, A., Varalakshmi, D., & Maney, D. K. (2023). Predicting consumer acceptance of the proposed Open Network for Digital Commerce. *IRE Journals*, 6(9), 87–96.
- [45] Walia, N., Soni, S., & Kaur, J. (2023). Challenges and opportunities in India's Open Network for Digital Commerce. *Journal of Digital Commerce*, 8(2), 45–62.
- [46] Zhou, Y. (2022). Research on the impact of online reviews on consumer buying behaviour. *SHS Web of Conferences*, 148, Article 03056. <https://doi.org/10.1051/shsconf/202214803056>