Impact Factor (SJIF): 6.092 E-ISSN: 2583-1615

International Journal of Research in Academic World

Received: 22/September/2023 IJRAW: 2023; 2(10):135-143 Accepted: 28/October/2023

Investigating Factors Influencing Farmer Adoption and Usage of the e-NAM Platform in Haryana: An Empirical Study

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Abstract

Purpose: This study examines the determinants of farmers' behavioural intention towards the e-NAM (National Agriculture Market) platform in the Indian state of Haryana.

Design/Methodology/Approach: Survey research was used and data was analyzed using Structural equation modelling via SPSS 22 and AMOS 24.0. Data were collected from 215 in Haryana using a multi-stage sampling technique.

Findings: The study explains key factors influencing farmer behaviour towards the e-NAM platform, including perceived usefulness, perceived ease of use, social influence, trust, perceived risk, and facilitating conditions.

Originality/Research Limitations/Implications: Our study contributes to the field by applying the proposed research model to e-NAM usage behaviour in India. It extends the understanding of new technology adoption in agriculture and provides practical insights into promoting e-trading platform in India.

Practical Implications: Policymakers and agricultural stakeholders can utilize these findings to enhance the efficacy of e-NAM. Recommendations provided in this research paper can guide all the stakeholders.

Social Implications: The study underscores the importance of using e-NAM and its increased adoption can lead to improved market accessibility, transparency, and profitability, contributing to the social and economic well-being of farmerst.

Keywords: e-NAM platform, farmer adoption, agricultural marketing, technology acceptance, Haryana

1. Introduction

The importance of agriculture is India can be adjudged by the massive workforce engaged in agriculture and allied activities. Agriculture stands as the cornerstone of Indian economy, culture and society. It is the basis of all economic activities and contributes significantly to GDP and employment generation (Islam *et al*., 2022) [27]. Despite the phenomenal importance of agriculture in India, agricultural sector has been facing numerous hurdles. These hurdles not only relate to cultivation and production of crops but also to post-production marketing of the produce. In the production stage, problems are born out of small and scattered landholding, lack of production infrastructure and low usage of scientific and technological processes. Agricultural sector is dependent on and vulnerable to natural uncertainties (Paul *et al*., 2021) [41]. Post-harvest problems majorly pertain to marketing weaknesses and the resulting low-value supply chain. Farmers' income is intricately linked to both crop yield and market prices. However, crop yield is adversely affected by challenges in cultivation and production, while market prices are depend on the market efficiency of supply chains (Mangala & Chengappa, 2008; Singh, 2020) [35, 44].

Agricultural supply chains lack market efficiency and due to the prevalent monopolistic practices, farmers face exploitation in terms of lower profit margins (Barrett *et al*., 2022) [4]. These supply chains are governed by APMC Acts (Agricultural Produce Marketing Committee) of the respective state governments. These regulations prohibit farmers to sell their produce outside the designated market yards known as *mandis* via commission agents known as *arhtiyas.* Heavy dependence of farmers on these low-value providing intermediaries is the underlying cause of all the marketing problems such as fragmented multiple markets, high transaction cost, lower bargaining power and information asymmetry (Sharma *et al*., 2019) [43]. The intermediaries add more cost than the value they provide. Lack of integration and less access to market information about market demand leads to non-transparent price discovery (Maina & Wingard, 2013) [34]. Integration of markets and formation of a unified platform can serve as a panacea to these problems (Smart & Harrison, 2003) [45].

There is an urgent need to radically solve the encountered problems and improve the agricultural supply chain efficiency. Improvements mean more sale routes, improved

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market accessibility, and better prices for the produce (Landes, 2010) [31]. The intended solution of all these problems is the implementation of e-NAM (National Agriculture Market) that aims to integrate multiple markets and enable the farmers to make more informed marketing decisions. Launched on April 14, 2016, the e-NAM platform promises modernization, transparency, and efficiency in the age-old practices of agricultural marketing (Dubey, 2018) [19]. Policymakers have always initiated changes in the structure and systematic processes but implementation remains a challenge (Babu *et al*., 2013) [3]. Effective implementation can only be done when the motivators of behavioural intention are well-recognized. The transition from conventional markets to a digital platform requires a behavioural shift, highlighting the importance of understanding the factors that shape farmers' intentions and actions. The current study examines the factors affecting usage behavioural intention of e-NAM platforms by farmers in Haryana. Farmers of Haryana were chosen because of their importance in agricultural landscape of the country.

The findings of this research hold significance for policymakers, regulatory bodies, and agricultural practitioners alike. Understanding the drivers and inhibitors of e-NAM adoption can inform strategies to enhance the platform's efficacy and ensure its widespread acceptance. Moreover, insights gained from this study contribute to the broader field of technology adoption in agriculture and shed light on the intricate interplay between traditional practices and modern innovations. We found a few similar studies conducted on this topic (Bisen & Kumar, 2018; Chaudhary & Suri, 2022) [11, 15] but owing to their specific nature and research methodology used, these have limited generalizability and considering the importance of agriculture in Haryana, we find it imperative to conduct this study. Also, the similar studies identified by us did not make use of the model conceptualised in our study. The subsequent sections of this paper will delve into a comprehensive literature review, hypotheses development, research methodology, results and findings, discussion and policy suggestions, and conclude by summarizing the overall findings and acknowledging the limitations inherent in the research.

2. Literature Review and Hypothesis Development

The extant literature pertaining to adoption of innovative technological solutions in the agricultural realm offers valuable insights into the factors that influence farmers' decisions to embrace new technology or systems. Building upon seminal theories such as the Technology Acceptance Model (TAM) and the Theory of Planned Behaviour (TPB), this section comprehends existing research to conceptualize the determinants of behavioural intentions for the e-NAM platform. The e-NAM platform has been introduced to create a unified national market for agricultural commodities, with the aim of providing farmers with a transparent and efficient market to sell their produce. However, despite the potential benefits of e-NAM, its adoption and usage among farmers in limited. To investigate the factors that influence farmer behaviour towards e-NAM in Haryana, we conducted a literature review of existing studies on e-NAM adoption and usage and found few important factors enlisted below.

a) **Perceived Ease of Use:** Perceived ease of use (PEOU) is one of the two key constructs of the Technology Acceptance Model (TAM). The TAM suggests that perceived ease of use significantly influences an individual's attitude and intention to use new systems. According to Davis (1989, p. 320) [17], PEOU is defined as "the degree to which a person believes that using a particular system would be free of effort." PEOU plays a significant role in shaping attitudes and behaviours, particularly in the context of new systems (Lee & Chen, 2010) [33]. PEOU has been extensively studied in the context of technology adoption in agriculture, with several studies investigating its impact on behavioural intention towards new technological solutions (Caffaro *et al*., 2020; Jain, 2017) [13, 29]. In our specific context, perceived ease of use can be explained as the farmers' perception of how user-friendly and accessible the e-NAM platform is for them to navigate, register, list their produce, and conduct transactions. Several prior studies on the adoption and usage behaviour of farmers towards e-NAM have investigated perceived ease of use (Chaudhary & Suri, 2022; Upadhyay *et al*., 2022) [16, 48]. These studies have often found that when farmers perceive the e-NAM platform as easy to use, they are more likely to engage with it and show a positive intention towards adopting it. On the basis of above discussion, we hypothesize that:
H1: *Perceived usefulness influences farmers' behavioural intention towards the e-NAM platform.*

b) **Perceived Usefulness:** Perceived usefulness (PU) is another seminal concept that was first introduced by Davis (1989) [17] in the Technology Acceptance Model (TAM). According to Davis, perceived usefulness is "the degree to which a person believes that using a particular system would enhance his or her job performance" (Davis, 1989, p. 320) [17]. In most of the research studies, it is investigated along with the perceived ease of use, and it has similar nature and scope as that of PEOU (Sutharsini & Umakanth, 2021) [47]. In simpler manner, perceived usefulness refers to how useful a person believes a certain system is in helping them achieve their goals. For farmers adopting the e-NAM platform, perceived usefulness can be explained as the extent to which farmers believe that utilizing the platform will enhance their ability to sell agricultural produce, obtain better prices, and simplify the selling process. Previous research on the adoption and usage behaviour of farmers towards the e-NAM platform has extensively investigated perceived usefulness (Chaudhary & Suri, 2022) [16]. Studies have consistently shown that when farmers perceive any new technology as useful for improving their income, market access, and overall agricultural practices, they are more inclined to adopt and use it (Li *et al*., 2020; Muzari *et al*., 2012) [34, 38]. This underscores the critical role of perceived usefulness in shaping farmers' intentions and behaviours. On the basis of above discussion, we hypothesize that:
H2: *Perceived ease of use influences farmers' behavioural intention towards the e-NAM platform.*

c) **Social Influence:** The decision to use any new system is not always an individual choice and is often influenced by subjective norms such as social influence (Bhatti & Akram, 2020) [11]. Social influence is a variable that has been found to play a significant role in shaping in shaping individual decisions. It is defined as "the extent to which individuals are motivated to adopt or reject certain behaviors because of their beliefs about what others think or expect of them" (Ajzen & Fishbein, 1977) [1]. It encompasses the impact of social interactions and peer influence on attitudes, beliefs, intentions, and behaviours of individuals (Nolan *et al*., 2008) [39]. When farmers observe their peers benefiting from the any new system, they are likely to develop positive attitudes and intentions

towards using the platform themselves (Okoroji *et al*., 2021) [37]. Peer recommendations, shared experiences, and testimonials amplify the credibility and utility of the platform. In the context of e-NAM adoption, previous research has identified the need to investigate the role of social influence in shaping farmers' attitudes and intentions towards the platform. For instance, a study by (Dutta *et al*., 2023) [20] mentioned that social influence was positively associated with farmers' intention to use e-NAM. On the basis of above discussion, we hypothesize that:

H3: S*ocial influence impacts farmers' behavioural intention towards the e-NAM platform.*

d) **Perceived Risk:** Perceived risk can be defined as the degree of uncertainty or potential harm associated with a particular decision or action (Bauer, 1960) [5]. It is a subjective assessment that individuals make based on their perception of the situation. Influential researchers in the field have proposed that perceived risk encompasses multiple dimensions, including financial risk, performance risk, psychological risk, time risk, social risk, and privacy risk (Mitchell, 1999) [33]. This variable is crucial in the realm of technology adoption research because it plays a pivotal role in shaping individuals' decisions to use technological innovations (Jayashankar *et al*., 2018) [26]. In the specific context of farmers in Haryana adopting the e-NAM (National Agriculture Market) platform, perceived risk can be simplified as the apprehension that farmers might experience regarding potential losses, uncertainties, or difficulties associated with using the platform. For example, a farmer might worry about the security of their personal information, the reliability of online transactions, or the complexity of navigating the e-NAM system. Previous research in the context of farmers' adoption and usage behaviour towards the e-NAM platform has not incorporated the concept of perceived risk (for exception, see: (Upadhyay *et al*., 2022) [45] and we aim to fulfil this gap through our research model. On the basis of above discussion, we hypothesize that:

H4: *Perceived risk influences farmers' behavioural intention towards the e-NAM platform.*

e) **Trust:** Trust plays a pivotal role in the context of technology adoption, with influential researchers such as Venkatesh and Davis (2000) defining it as "the belief that an entity, such as a system or a person, can be relied upon to perform as expected." This definition underscores the importance of trust in shaping individuals' willingness to adopt and utilize technological innovations. In the context of our study on factors influencing the adoption and usage behavior of farmers towards the e-NAM platform in Haryana, trust manifests itself as the degree to which farmers believe that the e-NAM platform is reliable, secure, and will deliver the promised benefits. For instance, farmers in Haryana may exhibit trust in the e-NAM platform if they perceive that it effectively facilitates the sale of their agricultural produce, ensures fair pricing, and safeguards their transactions from fraud or manipulation. Previous research has shown that farmers' trust in the e-NAM platform positively influences their intention to use it for marketing their produce (Chaudhary & Suri, 2019) [13]. These findings highlight the need to delve deeper into the role of trust in shaping farmers' behavior, particularly within the unique context of Haryana. On the basis of above discussion, we hypothesize that:

H5: *Trust influences farmers' behavioural intention towards the e-NAM platform.*

f) **Facilitating Conditions:** Facilitating conditions encompass the external factors that enable or hinder technology adoption. Facilitating conditions is a pivotal construct in the realm of technology adoption, originally conceptualized by Davis (1989) [16] in the context of the Technology Acceptance Model (TAM). It refers to the degree to which individuals perceive that the technical infrastructure and resources necessary for technology use are readily available and accessible. In the specific context of the e-National Agriculture Market (e-NAM) platform adoption by farmers in Haryana, facilitating conditions can be understood as the extent to which farmers perceive the availability and accessibility of necessary resources and support systems for effectively using the platform. For instance, this may encompass factors such as the availability of internet connectivity in rural areas, access to smartphones or computers, training programs on e-NAM usage, and the presence of reliable technical assistance. To illustrate, a farmer in Haryana who owns a smartphone, has access to a stable internet connection, and has received training on using the e-NAM platform would likely perceive high facilitating conditions, thus increasing the likelihood of platform adoption. Research examining facilitating conditions in the context of new technology adoption among farmers has gained momentum in recent years. Earlier researches, such as Chaudhary & Suri (2021) [14] have highlighted the crucial role of facilitating conditions in influencing farmers' intentions to adopt e-NAM. These studies have consistently shown that when farmers perceive a supportive environment, including easy access to required resources and training, they are more inclined to adopt and engage with the e-NAM platform. On the basis of above discussion, we hypothesize that:

H6: F*acilitating conditions influence farmers' behavioural intention towards the e-NAM platform.*

2.2. Conceptual Framework

Based on the literature reviewed, the conceptual framework for this study is presented in Figure-1. The conceptual framework proposes that perceived usefulness, perceived ease of use, facilitating conditions, social influence, trust and perceived risk significantly influence the behavioural intention of farmers towards e-NAM platform.

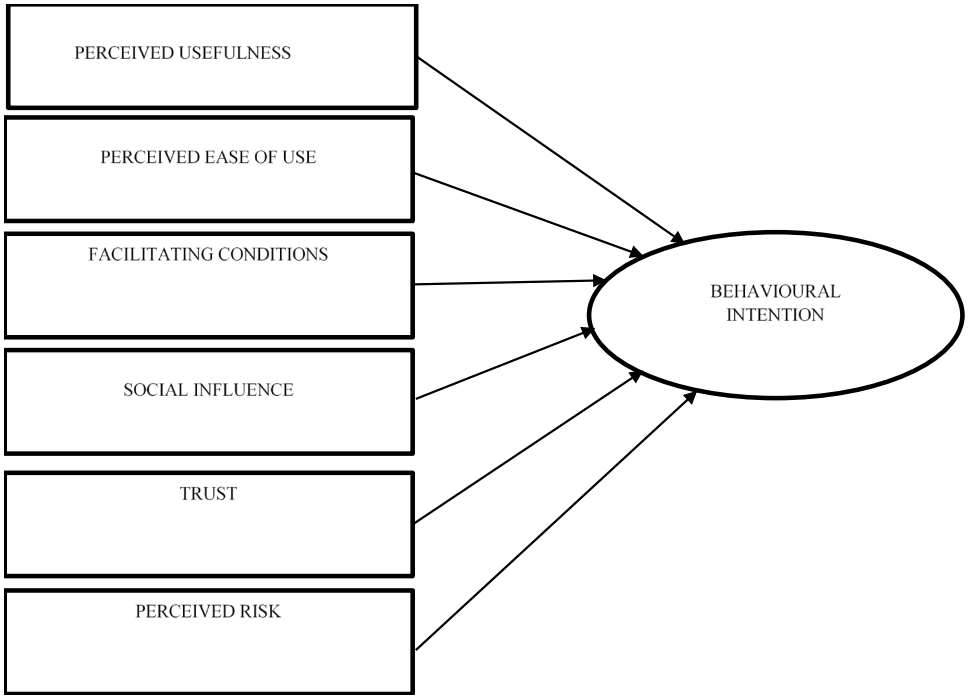

Fig 1: Proposed Conceptual Model

The conceptual model is based on the dimensions adopted from the TAM and some other related frameworks (Bauer, 1960; Davis, 1989) [5, 16]. It attempts to explain the adoption and usage behaviour towards e-NAM platforms among the farmers. We empirically test this model on the basis of primary data collected in Haryana.

3. Research Methodology

3.1. Measurement Instrument Development: To test the proposed hypotheses, we developed a questionnaire based on the theoretical framework proposed in Section II. We conducted a literature survey to identify existing scales and items that have been used to measure behavioural intentions and factors affecting intention in similar contexts. Our questionnaire included items on perceived usefulness, perceived ease of use, peer influence, perceived risk, trust, and facilitating conditions. To ensure the validity and reliability of the questionnaire, we conducted a pilot study with a sample of 30 farmers in Haryana. Based on the results of the pilot study, we made necessary revisions to the questionnaire and finalized the instrument. The questionnaire contained two parts. Part-A included a cover page, which provided introduced the context of our study for the respondents. The purpose of the study was mentioned and confidentiality was ensured. Furthermore, it included questions relating to the demographic profile and agribusiness status of the respondents. Part-B contained fixed alternative questions related to the constructs under study. These items were modified and adapted to suit the needs of our study. Each item was measured using 5-point Likert scales rated as 1 for strongly agree to 5 for strongly disagree. To measure perceived usefulness and perceived ease of use we adapted 12 items from Davis (1989) [16]. Trust was measured using 2 items from Chen (2010) [29] and one statement was self-constructed. Facilitating conditions was measured using items adapted from a previous study Kalule *et al*. (2019) [27] and statements for perceived risk were adapted from Bettman (1973) [7]. To assess behavioural intention five items were used from Osei-Frimpong *et al*. (2019) [34] after required modifications. For social influence, we adapted and contextualized statements from Ambrosius *et al*. (2015) [2].

3.2. Data Collection and Analysis: Data for this study were collected through a structured survey administered to farmers in Haryana over a period of three months (May 2023 to July 2023). The survey was conducted using a multi-stage sampling technique to select a representative sample of farmers. In the first stage, we randomly selected 3 districts from Haryana. In the second stage, we randomly selected 3 *mandis* (market yards) from each district. In the final stage, we randomly selected 25 farmers who sell their produce in each *mandi*. During the data collection ethical considerations were adhered to ensure confidentiality. The survey was administered in person, and respondents were provided with clear instructions regarding the purpose of the study and the significance of their participation. A total of 225 farmers (later on 215 were found valid for analysis) participated in the survey, representing a diverse range of farmers in different regions of Haryana. Our study employed structural equation modelling to measure the impact of various factors on the usage intention of e-NAM among farmers of Haryana and Bhatia, Jyani, & Bansal (forthcoming) served as a guiding article for the data analysis as we conducted our analysis in lines with this paper. In the following sections, the obtained results and findings from the data analysis are discussed.

4. Results and Findings

4.1. Sample Profile

The study sample consisted of 215 farmers from Haryana, India. This section provides an overview of the demographic and farm-related characteristics of the respondents. The majority of the farmers were between 35-45 years old (40.5%), with similar numbers belonging to the 25-35 (35.3%) and above 45 years (22.3%) age groups, indicating various stages of their careers as farmers. There were only 4 farmers (1.9%) which were under 25 years.

Table 1: Sample profile

		Frequency	Percentage
Age (in years)	Under 25 years	4	1.9
	25-35 years	76	35.3
	35-45 years	87	40.5
	Above 45 years	48	22.3
Education	No formal education	51	23.7
	12th	123	57.2
	diploma	20	9.3
	graduate	21	9.8
Landholding (in acres)	1-5 acres	107	49.8
	5-10 acres	78	36.3
	10 acres and above	30	14.0
Agricultural Experience (in years)	0-10	114	53.0
	10-20	81	37.7
	20-30	19	8.8
	above 30	1	.5

In terms of education, 21 farmers (9.8%) had completed graduation, similarly 20 (9.3%) farmers had diploma, while majority of the farmers (123 farmers) which holds 57.2% of the total sample, had completed schooling but did not attend college. Only, 51 farmers (23%) out of total sample had no formal education, indicating a relatively high level of education among the farming population in Haryana. Regarding landholding, 49.8% owned farms below 5 acres, 36.3% owned farms between 5-10 acres, and the remaining 14.0% owned farms above 10 acres. In terms of agricultural experience, 53.0% had less than 10 years of experience, while 37.7%, 8.8%, and 0.5% had 10-20, 20-30, and over 30 years of experience, respectively.

4.2. Common Method Biasness

Common method bias is a challenge that emerges due to single rater effects (Podsakoff *et al*., 2003) [36]. To assess this bias, Harman's one factor test (Harman, 1976) [21] was employed. Following the protocols, all variables were subjected to an unrotated factor analysis to explore their shared variance. The findings revealed that the primary extracted factor accounted for 28.31% of the total variance. As a result, the presence of common method bias was ruled out, since no individual factor accounted for more than 50% of the variance.

4.3. Measurement Model

The results of the confirmatory factor analysis revealed significant relationships between the factors affecting behavioural intention and the behavioural intention towards e-NAM among farmers in Haryana. The structural model exhibited a good fit with the data, as indicated by various fit indices. The $\chi 2/df$ value was 1.416, the comparative fit index (CFI) was 0.963 suggesting a good fit of model, and the Tucker-Lewis index (TLI) was 0.959, Normed fit index (NFI) was 0.885 which is near to .90, goodness of fit index (GFI) was 0.834 and the root mean square error of approximation (RMSEA) was 0.44 which suggest that the model is fit and acceptable (Baumgartner & Homburg, 1996). Since, all the values were above the recommended cut-off range, the hypothesised model ensures an adequate fit for further analysis.

Table 2: Summary statistics of model fit

Fit index	Recommended values*	Observed values for measurement model	Observed values for structural model
Chi-square/degrees of freedom	< 3	1.416	1.548
CFI	>.95 (good)	0.963	0.950
	>.90 (acceptable)		
TLI	>.95	0.959	0.946
NFI	<.09	0.900*	0.900**
RMSEA	<.05 (good)	0.044	0.051
GFI	<.80 (acceptable)	0.834	0.813

Notes: CFI = comparative fit index; TLI = Tucker-Lewis index; NFI= Normed fit index RMSEA = root mean square error of approximation; * calculated value 0.885 approximated as 900, ** calculated value 0.870 approximated as .900.
Source: Hu & Bentler (1999) [25]

The validity and reliability of the constructs were examined using Cronbach's alpha and composite reliability. All the values were above the threshold limit of 0.07 as recommended by Fornell & Larcker (1981) [21] (see Table 3). Convergent validity was assured using the factor loadings and the average variance extracted (AVE). Factor loadings were significant ($p<0.005$) and higher than the recommended limit of 0.50 (Hulland, 1999) [26]. AVE values were also above the 0.50 threshold (Hair, 2013) [23] as given in Table 3.

Table 3: Convergent validity and reliability of constructs

Research constructs	Items	Factor loading	AVE	Composite reliability	Cronbach's alpha
Perceived Usefulness	PU 1	.881	0.768	0.959	0.940
	PU 2	.867			
	PU 3	.895			
	PU 4	.894			
	PU 5	.860			
	PU 6	.880			
	PU 7	.856			
Facilitating Conditions	FC 1	.847	0.725	0.929	0.929
	FC 2	.850			
	FC 3	.862			
	FC 4	.861			
	FC 5	.836			
Social Influence	SI 1	.864	0.743	0.935	0.935
	SI 2	.850			
	SI 3	.867			
	SI 4	.867			
	SI 5	.863			
Trust	TR 1	.830	0.714	0.926	0.926
	TR 2	.834			
	TR 3	.840			
	TR 4	.861			
	TR 5	.860			
Perceived Ease of Use	PEOU 1	.809	0.669	0.910	0.909
	PEOU 2	.816			
	PEOU 3	.817			
	PEOU 4	.814			
	PEOU 5	.832			
Behavioural Intention	BH 1	.850	0.719	0.928	0.927
	BH 2	.846			
	BH 3	.882			
	BH 4	.839			
	BH 5	.822			
Perceived Risk	PR1	.849	0.707	0.906	0.905
	PR 2	.828			
	PR 3	.844			
	PR 4	.842			

Note: AVE = average variance extracted

Discriminant validity was also examined by comparing the square root of AVE to the interconstruct correlation as suggested (Fornell & Larcker, 1981a) [19]. It was found that the square root of AVE is larger than the interconstruct correlation as demonstrated in Table 4. Thus, it can be concluded that our measurement model ensures reliability and adequate convergent and discriminant validity. At last, a test for multicollinearity was conducted. The VIF scores were less than 3.33, which is much below the recommended value of 10, establishing that correlation between variables was not high and multicollinearity was ruled out (Diamantopoulos & Siguaw, 2006) [18].

Table 4: Discriminant validity of each construct

Research constructs	PU	FC	SI	Trust	EOU	BI	PC
PU	*0.876*						
FC	0.121	*0.876*					
SI	0.337	0.331	*0.862*				
Trust	0.290	0.107	0.264	*0.845*			
PEOU	0.085	0.126	0.198	0.118	*0.818*		
BI	0.424	0.410	0.460	0.394	0.341	*0.848*	
PR	0.054	0.313	0.260	0.099	0.198	0.392	*0.841*

Notes: The diagonal italic numbers between the constructs are the square root of the average variance extracted (AVE) for constructs, and below it are the correlation coefficients between the two constructs. Discriminant validity between constructs is established when the square root of AVE is greater than the absolute value of the correlation coefficient between the constructs.

4.4. Structural Model

The hypothesised relationships were tested using structural equation modelling (SEM) in AMOS 24.0. The model fit indices confirmed a reasonably good fit as per the threshold limits given in the literature (Hu and Bentler, 1999) [25] $\chi 2/df$ = 1.548, RMSEA = 0.051, CFI = 0.95, TLI = 0.94, GFI= 0.813, NFI = 0.870 (see 'observed values for structural model' from Table 2). The standardised path coefficient, path significance, and explained variance (R2) are given in Figure 2. All the six hypothesis were supported (see Table 5). Perceived usefulness (β = 0.299, $p < 0.001$), Facilitating conditions (β = 0.252, $p < 0.001$), Social influence (β = 0.186, $p < 0.01$), Trust (β = 0.245, $p < 0.001$), Perceived ease of use (β = 0.228, $p < 0.001$) and Perceived Risk (β = 0.247, $p < 0.001$) demonstrated a significant positive effect on Behavioural intentions.

Table 5: Hypotheses test results

Hypothesis	Path	Standardised Path Coefficient	Result
H1	PU>BI	0.299***	Supported
H2	FC>BI	0.252***	Supported
H3	SI>BI	0.186**	Supported
H4	Trust>BI	0.245***	Supported
H5	PEOU>BI	0.228**	Supported
H6	PR>BI	0.247***	Supported

Notes: PU=Perceived Usefulness, FC= Facilitating Conditions, SI=Social Influence, EOU=Ease of Use, BI= Behavioural Intention and PR= Perceived Risk.

The results have shown the prominent role the identified factors play in forming behavioural intention towards using e-NAM. Overall, the findings supported the hypothesized relationships. In the following section, the discussion will delve into the implications of these findings and provide policy suggestions to enhance usage intentions of e-NAM in the farming sector.

5. Discussion and Policy Suggestions

5.1. Discussion

The results of this study provide useful insights into the factors that influence usage of e-NAM in Haryana. Firstly, the results confirm the importance of perceived usefulness (PU) and perceived ease of use (PEOU) in predicting farmer adoption and usage of e-NAM. Farmers who perceive e-NAM as useful and easy to use are more likely to adopt and use the platform. This finding is consistent with previous studies on technology adoption in agriculture (Chaudhary & Suri, 2022) [16]. Secondly, the results suggest that social influence plays an important role in usage of e-NAM. Farmers who receive positive feedback from their peers are more likely to use e-NAM. We can substantiate that social networks help in shaping farmer behaviour. On the basis of it we suggest that policy interventions should target influential farmers to promote e-NAM adoption. Moreover, risk associated with using e-NAM negatively affects farmer behaviour and hence there is need to improve farmer perception about the benefits and risks associated to the usage of the platform and in similar lines to it our finding highlights the importance of building trust among farmers. Furthermore, on ground level there is an unrealised need to improve facilitating conditions, such as availability of technical support and infrastructure available in *mandis* to promote e-NAM adoption. Improved *mandi* infrastructure will ensure the flow of logistics much easier and along with e-NAM promotion it is essential to ensure it. The theoretical contributions of this study lie in its application of the Technology Acceptance Model (TAM) or Theory of Planned Behaviour (TPB) to investigate the factors that influence farmer adoption and usage of e-NAM in Haryana. We have extended the previous knowledge about this domain by proposing a research model to explain the rudiments of e-NAM usage behaviour.

5.2. Policy Suggestions

To foster the adoption and effective utilization of the e-NAM platform among farmers, we provide a comprehensive set of policy recommendations on the basis of the outcomes of this study. Firstly, an extensive awareness campaign should be launched to inform farmers about the manifold advantages of using e-NAM, emphasizing its central role in securing better crop prices and streamlining the trading process. Simultaneously, user-friendliness should be ensured, with continuous efforts to refine the platform, making it more easy to use. Peer-to-peer training programs, featuring successful e-NAM users, can significantly influence their fellow farmers, instilling confidence in using the platform. Trust-building measures must be a central focus. Administrators should uphold transparency in transactions, furnish accurate market information, and establish efficient mechanisms for dispute resolution to foster trustworthiness. Concurrently, investments in infrastructure at *mandis* and support centres, with reliable technical support are vital for effective platform usage. A feedback mechanism should be implemented to solicit farmer input, allowing for continuous platform refinement. Lastly, continuous monitoring and evaluation of performance, user satisfaction, and adoption rates of e-NAM are essential to identify areas for improvement. Prioritizing these policy recommendations, policymakers can help in transforming the agricultural marketing practices.

Conclusion

This study contributes to current understanding of the factors influencing farmer behaviour towards e-NAM platform. It highlights the importance of addressing perceived usefulness, ease of use, social influence, trust, perceived risk, and facilitating conditions in promoting e-NAM adoption. By implementing the suggested policies and addressing the identified limitations, policymakers and agricultural stakeholders can work towards enhancing the efficiency and effectiveness of e-NAM in transforming agricultural marketing practices in India. Although our study makes good contribution in terms of theoretical and practical realm, it bound by a few limitations owing to its specific geographical focus. The study can act as a guide to enhance the e-NAM adoption and thereby meeting the intended outcomes of launching the platform.

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