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Behavioral Intention as Mediating Driver Towards Acceptability of UPI and E-wallet for Formalization of Economy

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JEL Classification

G1, G2, G5, H1

Abstract: Formalizing the economy is essential for national development, combating corruption and money laundering, and ensuring fair income distribution. Digital financial inclusion has emerged as a solution to these issues, particularly in urban areas. However, it is crucial to also prioritize rural India. Therefore, studying the factors that influence the use of digital financial platforms like UPI and E-wallet is necessary to provide proper financial services to rural communities. So, the study aimed to find the factors affecting the use of the UPI and E-wallet and their impact on the formalization of economy. In the study bibliometric analysis is done through VOS viewer software for finding research gaps. PLS-SEM is used to find the relationship among variables and the effect of independent latent variable on the dependent construct. From the study it is found that direct effect of the digital financial inclusion on the acceptance of UPI and E-wallet system and lead to formalization of economy.

1. Introduction

From tackling the issue of black money to a greater financial inclusion objective, the Indian financial system has taken many measures to reach out to its objectives. After independence, India has marked a severe financial distress with high level of corruption putting a large mass of people under the poverty line. Many reforms were introduced from time to time to rebuild a strong financial system, which can include as many as Indian in the purview of financial reach. But unfortunate for the India, many changes were made on paper applied to the urban masses and least implemented in the rural areas, where the true and large India resides. The unfair reach to finances made the rich richer and the poor, poorer and creating an environment that fills with corruption, power and wealth centricity and ultimately the crimes. Only better financial inclusion system can lift of the poverty in the country (Inoue, 2019).

A strong need towards the formalization of economy is very much an important aspect for the country. The formalization just not only helps in tracking the money flow but can also reduce much of the corruption (Eldomiaty *et al.*, 2020). But the lack of vision towards formalization of economy resulted in low development of poor mass, wealth concentration in few hands and inaccessibility of finances to the rural poor mass. The parallel economy is also an important aspect of non-formalization of Indian economy. With the use of UPI and e-wallet transaction, the economy has seems to be moving in the direction of formalization (Moyo, 2022), which can help in tax collection, more traceability of money, reduction in black money, corruption, and the financial criminalization.

But the success of the use UPI and e-wallets still remains with the urban masses but not much in the rural areas, where true and large India lives. The successful in the use of UPI and E-wallet platforms is incomplete without covering the large rural mass in the financial system. So it is necessary to understand the usefulness of the UPI and E-wallet platforms, which can be marketed to rural people to encourage them to use the UPI and E-wallet system in the future. It is also necessary to understand the factors, which encourages the urban mass to use the UPI and E-wallet, which again can be used to study and various advertising strategies can be made to encourage people to use UPI and E-wallet, so that formalization of economy can be achieved.

So the current study intends to find the effect of the factors of digital financial inclusion towards acceptability of formalized transaction and to study the behavioral factors that encourages people to use such UPI and E-wallet platforms for financial stability of people as well as the nation (Sethy and Goyari, 2022). The study also intent to find the impact of COVID-19 and demonetization on the use of the digital financial inclusion platforms, which can enhance the financial security and food security of the nation (Sharma *et al.*, 2021).

1.1. Problem Statement

A strong financial system and formalized economy are the parameters for nation's developments. Western nations have successfully evolved components of financial system and implemented in an effective way to have economic benefit out of it (Khan *et al.*, 2022). But, India still fall short of measures to make its financial system effective against the black money and parallel economy, which ended in exploitation of financial resources and concentration of wealth in few hands. But the digital financial services made the financial services more convenient and accessible. The UPI system and the e-wallet system made the transaction easier and useful for multipurpose activities. As banks were associated with it and the transactions were operated through the bank accounts, so the transaction were even more formalized and traceable. This traceability of financial transaction also helps in supervision and control over the illegal flow of money and reduced the corruption to some extent. But the vulnerability of these innovative financial platforms is restricted to urban mass only and still impregnable to the rural areas. So it is imperative to study the reasons behind the acceptability factors for rural people to use the UPI and e-wallet system in the demonetization and pandemic era, so that we can use those variables as strategies in encouraging the rural mass. In this context the research question is "Does behavioral intention act mediating in the effect of digital financial inclusion towards formalization of economy through acceptance of UPI and e-wallet payment platforms?"

1.2. Objectives of the Study

1. To explore the variables that affects the formalization of transaction through acceptability of UPI and E-wallet platforms.
2. To elucidate the effect of the attribute of digital financial inclusion on the use of UPI and E-wallet platforms for formalization of financial transactions.
3. To reveal the importance of behavioral intention towards the accessibility of UPI and e-wallet payment systems.

1.3. Hypotheses of the Study

H_{01}: The accessibility features of UPI and E-wallet positively affect the formalization of financial transactions.

H_{02}: Digital accuracy and safety influence positively towards formal transactions.

H_{03}: Mobile financial services help in acceptability of UPI and E-wallet transactions.

H_{04}: Utility services and reward system attracts customers towards use of UPI and E-wallet transactions.

H_{05}: Innovation acceptance drives human behavior towards formalizing financial transactions.

H_{06}: Social influence pursues behavioral sentiments to accept the UPI and E-wallet platforms.

H_{07}: Technological readiness assists the human behavior to accept formalization of transactions through UPI and E-wallet platforms.

2. Theoretical Framework

2.1. Bibliometric Analysis

The bibliometric analysis was carried out to find the research gap of the as well as to show the relationship among the variables. The CSV file from SCOPUS indexed data base was downloaded with keywords

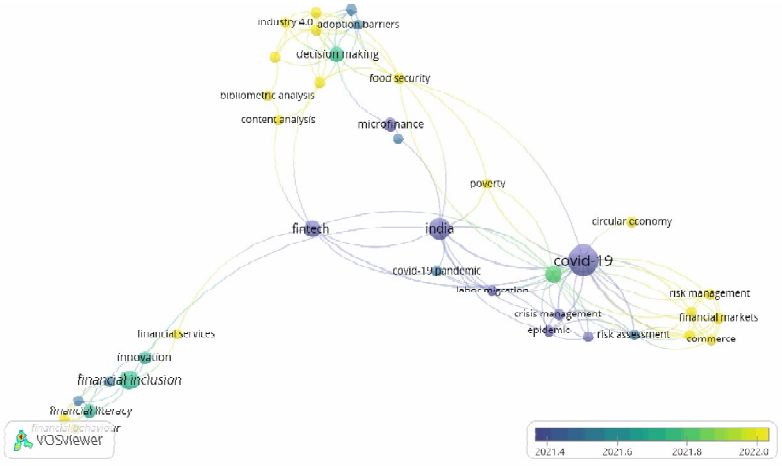

Figure 1: Bibliometric Network

like covid-19, India, Pandemic, fintech and financial inclusion. The CSV file is operated through the VOS Viewer software to present network diagram showing linkages among the variables and the unlinked variables.

The above figure shows that there is an interrelationship between financial inclusion with FinTech in Indian prospective but not much research work has been conducted in relation to COVID-19 pandemic. In the current study we expect to explore the relationship between the pandemic and the use of digital financial platform for providing better financial services. We found that the research on influence of behavioral factors with relation to financial inclusion is very insignificant. It has also been seen that the financial inclusion is not yet related to the COVID-19 pandemic, whereas statistical report says that the UPI payments transaction amount is increased in the pandemic and post pandemic period.

2.2. Through Literature Review

2.2.1. Digital Financial Inclusion and Formalization of Economy

With the greater objective of financial inclusion, the digital platforms are providing greater support to achieve the objective to develop the nation and livelihood of people (Raza et al., 2019). Starting from physical banking to the payment banking system, every aspect of the financial inclusion platforms played their respective role in providing masses with financial services (Bongomin *et al.*, 2017). But the revolutionary platforms like UPI and the mobile application based e-wallet platforms have penetrated to the rural areas and provided financial services to a large mass of people with easier way of operation. Human development index is often measured by the success of the financial inclusion scheme. The physical propinquity, availability of digital financial inclusion platforms, ease of use, affordability of transaction cost and usability of platforms are the features of digital financial inclusion, which help in the growth of financial system, economy and livelihood of the people (Nandru and Rentala, 2020).

2.2.2. Accessibility of Financial Inclusion Platforms and Formalization of Economy

With user friendly application, the UPI and E-wallet platforms have delivered their task. But the success of platforms acceptability goes to the accessibility of the platforms. The applications are very innovative, easy to use, simple to understand but the most important aspect is that it can run through mobile with low band of internet availability and in some cases without internet (Omeje *et al.*, 2022). A country like India, where a greater mass lives in the rural areas and providing them with financial services sounded impossible as the commercial banks have to face lower profitability situation due to higher initial cost. But the introduction of UPI and E-wallet platforms solved the accessibility issue with the help of mobile based application. (Alam *et al.*, 2021) explained that e-wallet is the easier and accessible medium of fund transfer system, which connects the customer to customer with safety features but must make firewall to deal with new problems of malware and phishing software eliminating the financial frauds.

2.2.3. Digital Accuracy and Safety Mechanism of UPI and E-wallet Platforms and Formalization of Economy

Safety is the major concern among to user to use the digital financial platforms but the dual protection system of the UPI and E-wallet platforms makes the application more secure, which brings trust

among the users to use the systems. The payment through of digital platforms is very precise, which encourage the users to use UPI and E-wallet platforms. (Undale *et al.*, 2021) explained that safety feature of the UPI and E-wallet brings the trust among the users to use the innovative digital financial platforms. (Ozili, 2021) found that due to reduction in the use of credit and debit card for payment, replacing those with UPI based payment system reduce the financial risk associated with it.

2.2.4. Mobile Financial Services of Financial Inclusion Platforms and Formalization of Economy

The low cost financial transactions and most of the banking operation through the UPI and E-wallet system makes it a convenient (Myeni et al., 2020). UPI-based payment transactions can be operated anywhere with a less-band internet connection and through messages; the transactions are confirmed with details. Fund transfer from bank account to bank account is also very easy, which implies that the UPI based application is more useful for operating most of the banking based financial transactions. Umeokeke *et al.* (2017) explained in his study that the e-wallet system is more mobile and its acceptability as payment medium with many point of sale makes it more useful. Many street vendors use the UPI and E-wallet platforms for payment acceptance, so customers must use the UPI and E-wallet platforms for financial services (Nandru et al., 2021).

2.2.5. Utility Services and Reward System of UPI Transactions and Formalization of Economy

The utility services provided by the UPI and the E-wallet based application like the electricity bill, telephone bill, water bill, internet bills and shopping bills payment make the platforms more usable (Uduji et al., 2019). These additional services over the normal financial services make the UPI system more exploitable. Along with that the reward system associated with UPI platforms show case its philanthropic idea with the initiation of digital financial inclusion, which attracts much of the customers to use the systems.

2.2.6. Behavioral Intention and Formalization of Economy

Human perception and human behavior always have been the deciding factors, when it comes to decision making. Human behavior that influences the decision is driven by its intention regarding concern elements. (Candiya *et al.*, 2017) showcased that attitude, intention, behavior and knowledge regarding the concern factor always affects the decision making. So, financial literacy, which solidifies the intention positively help in the formalization of economy as they accept the digital financial inclusion schemes.

2.2.7. Innovation Acceptance and Formalization of Economy

Adoptability of new technological innovation requires will power of people, which is associated with the behavioral factor of an individual. The orthodox way of financial services is challenged by the UPI application, which initially unaccepted for the use but the new behavioral intent generated among individual accepted the use of the modern system (Kumar *et al.*, 2021). Building cognitive abilities enhances the innovation acceptance among the consumers. But the intermediaries must make sure to educate people to develop acceptability of the innovation (Okello *et al.*, 2018).

2.2.8. Social Influence and Formalization of Economy

Being a social animal, human beings are often influenced by the peer group, friends, and the expert group. When certain factors persuade the people in our surroundings, it also affects our behaviour and our decision (Evans, 2018). In this regard, the large use of the UPI and E-wallet system in our society and surrounding influence us to use UPI platforms instead of cash based transaction. Social acceptability also influences the financial inclusion platforms' individual acceptability for financial services (Amari and Anis, 2021).

2.2.9. Technological Readiness and Formalization of Economy

The transition from cash based economy to a digital based economy needed the technological revolutions. In the recent past, India worked on many projects like 4th generation internet facilities, with digital platforms operating with mobile-based applications making the nation more technologically ready. This readiness affects the behavior of Indian user to shift their preference from cash transaction to digital transactions. In the demonetization time the recognition of the e-wallet system got faster because of the technological readiness of the people with 4^{th} generation internet speed and equipped with greater feature smart phones. The technological readiness brings effect to behavioral intention which induce user to use more e-wallet system than to carry cash for financial transactions. This technological readiness was effective because many banks enable them with technology (Nagdev *et al.*, 2021).

3. Research Methodology

The research adopted the causal research design with interpretivism philosophy. Cross sectional primary data is collected through a structured questionnaire, where the variables are extracted from different literature. The data was collected from four stratum of Odisha through the stratified random sampling methods by making each directional zone of Odisha as one stratum. A total of 430 responses were collected. The scale used in the questionnaire is the 5 point likert scale. Concerning the research objective and the hypothesis, a conceptual model is created and tested through the Partially Least Square Structural Equation Modeling (PLS-SEM) (Chin et al., 2020). In the current study the researcher investigates the direct influence of the Digital Financial Inclusion (DFI) on the Formalization of Transaction (FOT). Further it is also investigated the mediation role of the Behavioral Intention (BEI) among the relationship of DFI and the FOT. In order to access the higher order measurement model in the PLS -SEM the two stage approach is applied (Sarstedt *et al.*, 2019). The lower order measurement models are the reflective constructs and the higher order measurement models are the formative constructs. Here the values of the lower order constructs are taken for the accessing the higher order constructs in the second phase (Tyagi *et al.*, 2022). To computing the path analysis all, the direct, indirect and the total effect are accessed and interrelationship and the effects are shown accordingly as per the calculation as shown in the model figure 2 and explained in the discussion part.

3.1. Sample and Respondent Profile

(Cochran, 1963) the minimum sample size for a population of over a hundred thousand is 384. A total of 430 responses were collected and analyzed. 308 respondents are male and 122 are female.

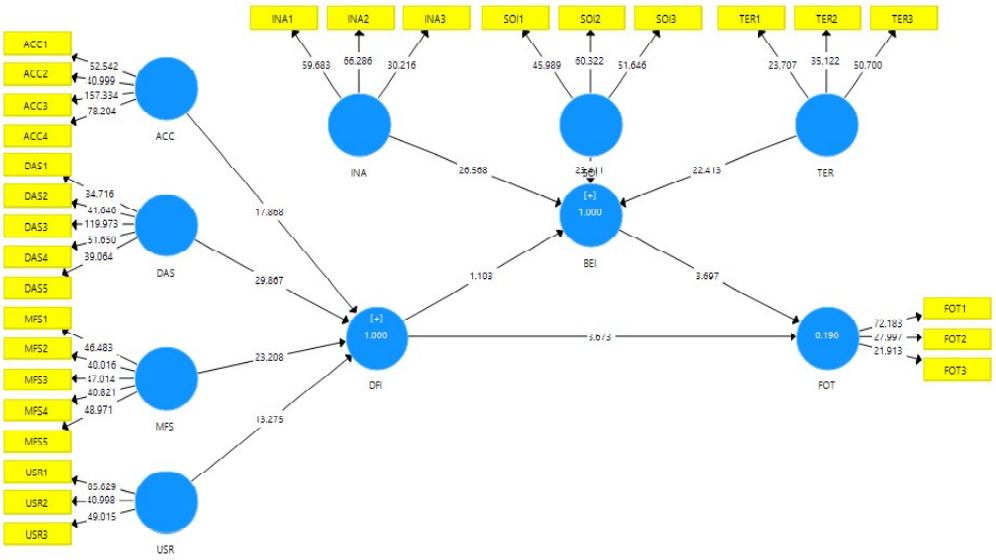

Figure 2: Structural Model

254 respondents are single and 176 respondents are married. 19 respondents are undergraduate, 134 are graduates, 185 are post graduate and 92 are having professional degree. 77 respondents have government service, 63 have private jobs, 127 have their own business, 69 are from professional service and 94 are students. 167 respondents have income less than 20000, 68 respondents have income between 20001-40000, 95 respondents are between the income group of 40001-60000, 56 are between 60001-80000, 35 are between 80001-100000 and 9 respondents are having income over 100001.

4. Findings and Discussion

4.1. Construct Validity and Reliability of the Lower-order Construct

The lower-order reflective constructs of the model's validity and reliability are investigated by applying Cronbach's Alpha, rho A, composite reliability (CR), and average variance explained (AVE) (Hair et al., 2019) as presented in table-1. Because it indicates the degree to which each construct is internally consistent, Cronbach's Alpha is an indicator of the construct's reliability. Because the values of Cronbach's Alpha for all of the constructions are greater than 0.7, the constructs are reliable. Again, the rho A values for all of the constructs are higher than 0.7, indicating that the constructs are reliable. The value of the CR greater than 0.7 is shown in Table 1, which further reveals again that the constructs are reliable. The average variance explained (AVE) of each construct is more than 0.5, which shows that the constructs have satisfactory convergent validity (Hair *et al.,* 2019). Hence, all the parameter of the construct validity and reliability is satisfied.

Table 1: Construct Reliability and Validity of the Lower-order Components

Constructs	*Cronbach's Alpha*	*rho_A*	*CR*	*AVE*
ACC	0.864	0.867	0.907	0.71
DAS	0.851	0.853	0.894	0.627
FOT	0.721	0.73	0.844	0.643
INA	0.803	0.813	0.884	0.718
MFS	0.896	0.897	0.923	0.707
SOI	0.832	0.832	0.899	0.748
TER	0.742	0.749	0.853	0.66
USR	0.834	0.841	0.9	0.751

4.2. Discriminant Validity

The assessment of discriminant validity is shown in Tables No. 2 and 3. The Fornell and Larcker criteria (Fornell & Larcker, 1981) and Henseler's Heterotrait-Monotrait (HTMT) (Henseler et al., 2015) criteria are used to test the discriminant validity analysis (Hasan and Bao, 2022).

Table 2: Fornell and Larcker Criteria

	ACC	*DAS*	*FOT*	*INA*	*MFS*	*SOI*	*TER*	*USR*
ACC	0.843							
DAS	0.494	0.792						
FOT	0.233	0.331	0.802					
INA	0.208	0.301	0.314	0.847				
MFS	0.367	0.664	0.283	0.297	0.841			
SOI	0.257	0.352	0.339	0.534	0.402	0.865		
TER	0.243	0.248	0.261	0.528	0.204	0.444	0.812	
USR	0.394	0.503	0.307	0.167	0.401	0.212	0.117	0.867

According to the Fornell and Larcker criteria, it has been determined that the square root of the AVE for each of the constructs is more than the correlation estimate for each of the constructs. This indicates that the constructs are notably distinct from one another (Fornell and Larcker, 1981).

In this study, the Heterotrait–Monotrait (HTMT) correlation is tested along with the Fornell and Larcker criteria to find a greater understanding of the discriminate validity. Most researchers concur that 0.9 is the greatest possible HTMT value that is acceptable. In the current study, the HTMT values ranged from.0147 to.758. So, the test of the discriminate validity of this study was a success (Henseler *et al.,* 2015).

Table 3: Henseler's Heterotrait-Monotrait (HTMT)

	ACC	*DAS*	*FOT*	*INA*	*MFS*	*SOI*	*TER*	*USR*
ACC								
DAS	0.569							
FOT	0.293	0.419						
INA	0.251	0.361	0.404					
MFS	0.412	0.758	0.354	0.347				
SOI	0.303	0.419	0.439	0.648	0.465			
TER	0.304	0.312	0.355	0.677	0.247	0.563		
USR	0.456	0.589	0.388	0.196	0.463	0.253	0.147	

4.3. Second order Formative Measurement Model

PLS-SEM is the most viable approach for access the second-order formative constructs of the structural model. On the basis of the convergent validity, indicator collinearity, statistical significance, and relevance of the indicator weights, the second-order formative measurement model is evaluated.

Table 4: Reliability and Validity of the Second Formative Measurement Model

HOCs	*LOCs*	*Outer waights*	*t value*	*p value*	*outer loading*	*P value*	*VIF*
DFI	ACC	0.218	1.833	0.067	0.648	0	1.377
	DAS	0.386	3.068	0.002	0.89	0	2.219
	MFS	0.46	4.475	0	0.869	0	1.813
	USR	0.179	1.398	0.162	0.644	0	1.402
BEI	INA	0.339	3.78	0	0.787	0	1.641
	SOI	0.675	7.531	0	0.929	0	1.474
	TER	0.164	1.674	0.094	0.642	0	1.46

The variance inflation factor (VIF) is frequently applied to evaluate the collinearity amongst formative indicators. The VIF value is less than 3, showing that there is no collinearity issue with the formative constructs, as revealed by the study. The outside weights of the three factors ACC, USR, and TER are not statistically significant. However, we continue to evaluate these components for the model because there are sufficient theoretical evidences and all the outer loadings of the constructs are over 0.50 and statistically significant (Reinartz *et al.,* 2009).

4.4. Assessment of the Structural Model

Table 5 :R Square Value and Q Square Value

	R Square	*R Square Adjusted*	Q^2
BEI	0.189	0.187	0.108
FOT	0.192	0.188	0.166

As there is no collinearity issue, the current study evaluates the coefficient of determination (R2) of the endogenous construct (s) (Hair *et al.*, 2016). As a measure of the model's explanatory ability, the R2 quantifies the variance that is explained by each of the endogenous components. Here the $R^2$is less than the 0.25 hence the independent variables are low weak explanatory power on the dependent variables. Q2 (Hair *et al.*, 2016) is another parameter that can be used to determine how accurate the PLS path model is at making predictions. This metric is based on a method called "blindfolding," which removes single points from the data matrix, replaces them with the mean, and estimates the model parameters. Here, Q^2 value BEI and FOT is less than 0.25 hence, there is weak prediction of independent variable over the dependent variable.

Table 6: Direct Effects

Hypothesis	*Relation*	*IV effect on DV*	*t value*	*P Values*	*Decision*
H_1	BEI -> FOT	0.271	3.897	0	Supported
H_2	DFI -> BEI	0.435	7.533	0	Supported
H_3	DFI -> FOT	0.246	3.152	0.002	Supported

With considering the table-6 it is found it is revealed that the all the hypothesis applied in the study to find out the direct relationship of the dependent variable and the independent variables are supported (Richter et al., 2020). Here the effect of the BEI on the FOT is 27.1 %, DFI on BEI is 43.5% and DFI on FOT is 24.6%.

Table 7: Direct, Indirect and Total Effect

Relation	*Direct effect*	*Indirect effect*	*Total effect*	*VAF*	*P Values*	*Decision*
DFI -> BEI -> FOT	0.246	0.118	0.364	0.324	0.001	Partial mediation

The table number 7 showing that the value of VAF (variance accounted for the indicator) (Joseph F. Hair *et al.,* 2016) is less than 0.80 and more than 0.20 , hence it is revealed that the mediation effect of BEI on the DFI and the FOT is partial mediation . However, the direct effect of the study is greater than the in direct effect hence the mediation effect on the relation have not influence to a greater extent (G. F. Khan *et al.,* 2019).

5. Conclusion

Starting from the demonetization period to the pandemic period, the importance of the digital platforms for financial services are highly recognized and used to bring a successful financial revolution within very short span of time (Ramachandra and Wells, 2020). Basic financial transactions are now seems to be very difficult without the digital financial platforms like UPI based applications and the E-wallet

applications (Nandi *et al.*, 2022). It has brought ease in having financial transaction and due to the extent of use of these platforms; the economy has attested a positive growth. The study with a moral objective to encourage the rural masses of people to use the application for having financial services, conducted the research for having the preferential factors of UPI and E-wallet based application. The UPI based applications are accessible, financial services are mobile in nature, safer and accurate and a wide variety of utility features attracts the customers to accept the system and use it. But the acceptability increases with increase in the behavioral intention of the user, which is driven by is innovative acceptance mechanism, induced by social influence and technological readiness. Policy makers need to make strategies viewing the impact of these factors, so that better strategies can be made to encourage rural mass, which are deprived from getting the financial services. With better reach of financial services, the objective of financial inclusion schemes can be achieved with the use of the digital platforms like UPI and E-wallet (Lenka and Barik, 2018).

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