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Achieving Sustainability in India Through Modern Payment System: An Empirical Study

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ABSTRACT

This study investigates the sustainability of digital payments in India, focusing on their role in economic growth and financial inclusion. Utilizing data from 2011-12 to 2020-21 and employing methods like ARDL and DOLS, the research explores the relationship between digital payments and variables such as digital infrastructure, net national income, and cash circulation. Findings indicate a significant impact of these factors on the volume and value of digital payments. The study highlights the government's Digital India initiative as a critical driver but acknowledges the persistent preference for cash, emphasizing the need for ongoing infrastructure and financial literacy efforts. The results suggest that while digital payments their integration into the Indian economy requires sustained policy and educational efforts.

INTRODUCTION

Sustainable advancement involves an intricate interplay of financial, communal, and ecological factors. Economic inclusion, attained through digital transactions, has attracted notice as a comprehensive development and durability. The Global Findex Database of 2017 highlights the revolutionary capacity of digital transactions globally. Studies indicate that digitalizing transactions can amplify effectiveness, diminish expenses, and encourage official savings. Nevertheless, triumphant execution relies on sturdy technological and monetary framework, safeguarded transactions, and efficient governance. In India, the administration has welcomed digitalization to propel the nation towards a currency-free society, but inquiries persist about the durability of this metamorphosis. Digital transactions invigorate economic development by hastening consumption outlay and broadening monetary amenities. The Digital Bharat campaign seeks to involve even distant regions in the nation's progress narrative via digital technology. Nonetheless, it is imperative to acknowledge that electronic payments must grapple with the persistent inclination for physical currency transactions in numerous nations. In this manner, this investigation aims to explore the durability of electronic transactions in India by tackling two primary research inquiries: What are the signs of durability in digital transactions? What elements contribute to the durability of digital transactions in India?

There are a lot of good reasons to start this investigation. At first glance, the economic literature suggests that a large number of electronic payment transactions boost competitiveness and economic progress. This is because, as the use of digital payments grows, consumer spending gets faster, which in turn increases production of goods and services, which drives economic expansion. Furthermore, digital transactions also help with financial inclusion by providing formal financial services to those who don't have access to traditional banking.The central government is banking on the Digital India initiative to create a knowledge-intensive economy and a digitally empowered Indian society. The government's goal in

Table 1: Trends in different Payment Instruments

Items	2015-2016	2018-19	2019-20
Total digital payments (1+2+3+4+5)	92038329	163852286	162305934
1. Large Value Credit Transfers – RTGS	82457801	135688187	131156475
2. Credit Transfers (AePS- Fund Transfers, APBS, ECS Cr, IMPS, NACH Cr, NEFT, UPI)	8901828	26097655	28572100
3. Debit Transfers and Direct Debits (BHIM Aadhaar Pay, ECS Dr, NACH Dr., NETC)	230354	656233	826036
4. Card Payments (Credit cards, Debit cards)	399588	1196888	1535765
5. Prepaid Payment Instruments (wallet, PPI cards, paper vouchers	48758	213323	215558
Other Payment channels			
6. Mobile Payments (mobile app based)	404091	2958407	5781435
7.Paper-based Instruments (CTS, others)	-	8246065	7824821"

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launching this initiative is to engage the people living in rural areas in conversation so that they may be a part of India's success story. Digital technology will empower people and exhibit a paradigm change, since technology is a persuasive ingredient in inspiring uncomfortable diversity.Finally, although the percentage of electronic transactions to GDP in India did increase dramatically after demonetisation, it is also clear that the percentage of money circulation to GDP increased during the same period (RBI Bulletin 2019). The current uptick in online purchases is likely only a transitory phenomenon, as shown by the worldwide trend towards a paperless economy. Fourthly, a nation's cellular devices and internet connectivity, bank accounts, debit and credit cards, basic digital infrastructure, government initiatives, growth in economic activity or per capita income, and a myriad of other factors all work together to make digital transactions possible.While these catalysts do influence, assist, and encourage a nation's non-cash transactions, their impact on e-payments is not similar in terms of use or predominance, according to interactions at the national level. The lower opportunity cost and retention of value incentive make cash the preferred mode of transaction over electronic payment transactions, according to a transcontinental analysis by Bech *et al.* (2018). Due to the fact that these varied experiences show that the longevity of digital transactions is unclear, it is essential to investigate what makes digital payments in India so long-lasting.

In light of the above, this paper sets out to address two research questions about the meaning of digital transaction reliability in India: (a) what are the possible indicators of digital payment toughness, and (b) what are the driving factors behind digital payment reliability in India.

Unit root tests and the autoregressive distributed lag (ARDL) method for cointegration tests and the dynamic ordinary least square (DOLS) method for resilience were used to achieve the desired objective. It was also shown in this study that lasting coefficients from ARDL approach are quite dependable for small sample sizes. Insights into the adoption of measures that promote a uniform and synchronised online payment system and to strengthen the durability of e-payments in the country might be gained from the evaluation results of these techniques.

LITERATURE REVIEW

Digital transactions have surfaced as a noteworthy catalyst of financial incorporation and economic expansion in Indian and worldwide scenarios. Several investigations have explored the complex correlation between electronic transactions, monetary incorporation, and economic progress. Prominent investigation by Nanda and Samanta (2018) highlights the significance of economic understanding in integrating underprivileged populations, accentuating how electronic transactions can function as a mechanism for empowering underserved communities. Furthermore, Dahiya and Kumar (2020) provide empirical perspectives on the connection between financial inclusiveness and India's burgeoning economy, illuminating the favourable influence of electronic transactions on economic development.

Financial Inclusion and Economic Growth in India

India's encounter in moulding its digital payment framework has been a topic of fascination for researchers globally. D'Silva *et al.* (2019) emphasise significant insights from India's digital monetary framework blueprint. The exploration demonstrates how India's ingenuity in this domain has established a precedent for other nations aspiring to foster monetary incorporation through digital methods. Moreover, Herwadkar, Verma, and Bilantu (2019) investigate the catalysts of electronic transactions via a multinational investigation, illuminating the aspects that have hastened the embrace of electronic payment mechanisms in India and other countries.

Administration-driven endeavours, such as Digital India, have played a crucial role in moulding the panorama of digital transactions. These endeavours have not just hastened the acceptance of electronic transactions but have also impacted their durability. Panagariya (2019) examines the digital evolution in India, highlighting the significance of sturdy monetary framework and enterprise in propelling the triumph of administration-led initiatives. The consequence of such endeavours on monetary incorporation and economic development is apparent in the instance of India, as emphasised by Singh and Malik (2019), who scrutinise the metamorphosis of countryside banking patrons through payment mechanisms in the framework of India's governmental strategies.

Cashless Trends

A scrutiny of cashless trends discloses fascinating revelations into the shift towards a digital economy, both in India and on a worldwide magnitude. As emphasised by Bech *et al.* (2018), payments are progressing swiftly, but currency persists in various transactions. This phenomenon prompts inquiries regarding the durability of digital payment acceptance. Deloitte's analysis on online business in India (2016) offers precious information on the expansion of electronic transactions, illuminating the degree to which India has adopted non-cash methods of payment. Furthermore, Demirgüç-Kunt *et al.* (2018) introduce the Global Findex Database, which provides an all-encompassing perspective of financial inclusivity and the fintech uprising on a worldwide level, offering background for India's digital payment patterns amidst the wider global scenario.

Enablers and Barriers

The acceptance of digital transactions is impacted by a plethora of elements, such as the accessibility of smartphones, internet connectivity, and the strength of financial systems. These elements can either facilitate or impede the shift to electronic payment systems. Mukhopadhyay (2016) offers a subtle comprehension of

cashless transactions in India, highlighting the significance of technological facilitators in propelling acceptance. Stavins (2001) explores the impact of consumer traits on the utilisation of payment methods, illuminating the behavioural facets that affect acceptance. Moreover, Narayan (2005) provides perspectives into the saving and investment connection, emphasising the monetary aspects that can influence the acceptance of electronic payment in India.

Cash vs. Digital

Contrasting the utilisation of currency and electronic transactions is crucial for comprehending consumer inclinations and the elements that propel their selection of payment mechanisms. Dickey and Fuller (1979) explore allocation estimators for autoregressive temporal sequences with a unity root, which can be utilised to scrutinise the patterns in currency and electronic transaction utilisation. Mehta *et al.* (2016) investigate the transition from tangible currency to electronic currency, offering perspectives into the reasons behind this change. Gochhwal (2017) investigates the Consolidated Payment Interface (CPI) and its progression in payment systems, providing a viewpoint on the characteristics that render electronic payments appealing to customers.

In summary, an all-encompassing analysis of cashless patterns, facilitators and obstacles, and the cash versus digital payment discussion uncovers a diverse terrain of digital payment acceptance. These elements, supported by empirical investigation and information, contribute to a more profound comprehension of the dynamics moulding the shift towards a currency-free economy, both in India and worldwide.

METHODOLOGY

To formally assess the durability of digital transactions in India, the current investigation for empirical analysis utilises the quarterly data from 2011-12: Q1-2020-21: Q1.Electronic payment transactions as well as cellular banking transactions, have been regarded both in quantity terms (actual transactions) and in worth terms (nominal transactions). The information regarding the authentic and titular electronic payments transactions (RDP and NDP), electronic payment framework (DI), authentic and titular Mobile banking/payment (RMB and NMB), per capita net national income (PCNNI), expansion in the bank accounts (ACT), expansion in currency in circulation (CIC) are primarily obtained and evaluated from authorised websites of Reserve Bank of India (RBI) and Centre for Monitoring Indian Economy (CMIE). Moreover, the placeholder variable (DV) assumes 1 for fiscal disruptions (such as currency replacement and ongoing epidemic) and 0 in all other cases.

Moreover, RBI's payment system indicators, the overall digital transaction encompasses substantial value and retail money transfers, debit transfers, card transactions, and Prepaid Payment instruments, but does not encompass mobile payment/banking. On the other hand, the digital payment framework includes ATMs, point-of-sale terminals, credit and debit card distributions. Therefore, in this investigation, mobile payment/banking is an alternative to digital transactions.

The experiential approach namely, root unit and coalescence have been utilised to explore the connection between electronic transactions and financial development in India. Auto correlative disseminated delay (ARDL) limits methodology to co-movement and dynamic regular minimum square examination are aimed at examining the connection between the variables. The ARDL technique enhanced by Pesaran *et al.* (2001) was favoured over other conventional cointegration examination mainly due to its benefits, namely, it is suitable even if the level of integration of variables is varied, provides reliable and impartial outcomes even if the sample size is within the range of 30 to 80 observations (Pesaran and shin, 1995), and provides concurrent short and long-term coefficients. However, the presence of I(2) results in this approach being inappropriate; hence, it is crucial to investigate the stationarity of variables. The unit stem examinations employed are Expanded Dicky Fuller (ADF) (1979) and Kwiatkowski-Phillips-Schmidt-Shin (KPSS) (1992). The limits examination procedure in the unconfined mistake amendment model is utilised to acquire transient and long haul coefficients for cointegration connections given as follows:

$$\Delta RDP_t = \alpha_0 + \sum_{i=1}^{k} \beta_i \Delta PCNNI_{t-1} + \sum_{i=1}^{k} \theta_i \Delta DI_{t-1} + \sum_{i=1}^{k} \eta_i \Delta \mathrm{RMB}_{t-1} + \sum_{i=1}^{k} \varphi_i \Delta ACT_{t-1} + \sum_{i=1}^{k} \vartheta_i \Delta CIC_{t-1} + \sum_{i=1}^{k} \varphi_i \Delta DV_{t-1} + \pi_1 PCNNI_{t-1} + \pi_2 DI_{t-1} + \pi_3 \mathrm{RMB}_{t-1} + \pi_4 ACT_{t-1} + \pi_5 CIC_{t-1} + \pi_6 DV_{t-1} + \varepsilon_t \quad (1)$$

$$\Delta NDP_t = \alpha_0 + \sum_{i=1}^{k} \beta_i \Delta PCNNI_{t-1} + \sum_{i=1}^{k} \theta_i \Delta DI_{t-1} + \sum_{i=1}^{k} \eta_i \Delta \mathrm{NMB}_{t-1} + \sum_{i=1}^{k} \varphi_i \Delta ACT_{t-1} + \sum_{i=1}^{k} \vartheta_i \Delta CIC_{t-1} + \sum_{i=1}^{k} \varphi_i \Delta DV_{t-1} + \pi_1 PCNNI_{t-1} + \pi_2 DI_{t-1} + \pi_3 \mathrm{NMB}_{t-1} + \pi_4 ACT_{t-1} + \pi_5 CIC_{t-1} + \pi_6 DV_{t-1} + \varepsilon_t \quad (2)$$

To investigate the extended duration correlation among the variables, the subsequent suppositions are formulated-the zero hypothesis of no interconnection (H0 : $\pi 1 = \pi 2 = \pi 3 = \pi 4 = \pi 5 = \pi 6 = 0$) is examined in contrast to the alternative hypothesis of the presence of interconnection association (HA : $\pi 1 \neq \pi 2 \neq \pi 3 \neq \pi 4 \neq \pi 5 \neq \pi 6 \neq 0$). This

is derived from F-test by conventional least squares (CLS) estimation. Afterwards, the calculated F-statistics measure is compared with simulated crucial boundary values from Narayan (2005), generated explicitly for limited sample information. If the F-statistics is greater than the upper critical value, the null hypothesis of no enduring integration can be refuted, meaning there are integration connections. On the contrary, if the examination statistics is less than the lower crucial value the null hypothesis is not declined i.e. there is no coalescence. Nevertheless, if the examination data lies amidst the midpoint of inferior and superior pivotal quantities the outcome is indeterminate. Following the limits examination confirms the co-movement among the factors, the enduring (Equation 3) and momentary (Equation 4) coefficients can be explored.

$$\Delta \mathrm{RDP}_t = \alpha_0 + \sum_{j=1}^{k} \delta_i \Delta RDP_{t-i} + \sum_{j=1}^{k} \beta_i \Delta PCNNI_{t-i} + \sum_{j=1}^{k} \theta_i \Delta DI_{t-i} + \sum_{j=1}^{k} \eta_i \Delta RMB_{t-i} + \sum_{j=1}^{k} \varphi_i \Delta ACT_{t-i} + \sum_{j=1}^{k} \zeta_i \Delta CIC_{t-i} + \sum_{j=1}^{k} \psi_i \Delta DV_{t-i} + \mu_t \quad (3)$$

$$\Delta RDP_t = \alpha_0 + \sum_{i=1}^{k1} \alpha_{\mathrm{DPi}} \Delta RDP_{t-1} + \sum_{i=1}^{k2} \alpha_{\mathrm{PCNNIi}} \Delta PCNNI_{t-1} + \sum_{i=1}^{k3} \alpha_{\mathrm{DIi}} \Delta DI_{t-1} + \sum_{i=1}^{k4} \alpha_{\mathrm{ACTi}} \Delta ACT_{t-1} + \sum_{i=1}^{k5} \alpha_{\mathrm{M1i}} \Delta CIC_{t-1} + \sum_{i=1}^{k6} \alpha_{\mathrm{DVi}} \Delta DV_{t-1} + \sum_{i=1}^{k6} \alpha_{RMBi} \Delta RMB_{t-1} + \xi_1 \mathrm{ECT}_{1t-1} + \upsilon_{1t} \quad (4)$$

Where, ECT1 denotes the error rectification term

Similarly, identical criteria is applied NDP (equation 2) in the presence of proof of coalescence. In general, the ECTt−1 ought to be adverse and within the range of 0–1. Typically, the ECTt−1 signifies the pace of the adaptation to converge back to its long-term balance. For resilience to ARDL estimates, dynamic ordinary least square technique (DOLS) of Stock-Watson (1983) is utilized. DOLS is simple to calculate and surpasses and diminishes prejudice more effectively than completely altered least square (FMOLS), as indicated by Kao and Chiang (2000). In Table 2, a sequence of unit root examinations have been carried out to evaluate the stationarity characteristics of different variables of concern. These examinations are vital in comprehending the time sequence conduct of the variables and whether they display features of stationarity or non-stationarity. The Enhanced Dickey-Fuller (EDF) examination and Kwiatowski-Phillips-Schmidt-Shin (KPSS) examination are frequently employed statistical techniques for assessing stationarity. The outcomes are displayed for both tiers and contrasted data to capture any possible patterns or non-stationary behaviour. Commencing with the variable RDP, in its tiers, the ADF statistic of -0.13 indicates that it is non-stationary. Nevertheless, subsequent to contrasting, it transforms into stationary with a noteworthy ADF statistic of -5.72, suggesting that the initial alteration of RDP is stationary. However, the KPSS metric of 0.72 in levels implies non-stationarity, whereas the magnitude of 0.18 in differenced data signifies stationarity as per the KPSS examination. Relocating to the NDP fluctuating, analogous patterns are noticed. In tiers, the ADF metric is -1.49, suggesting non-stationarity, but after altering, it becomes stationary with a noteworthy ADF metric of -4.44. The KPSS statistic adheres to a comparable trend, with 0.54 in levels (non-stationary) and 0.19 in altered data (stationary). The DI variable displays a similar behaviour to RDP and NDP, with non-stationarity in levels and stationarity after differentiation. The ADF figures demonstrate -0.45 in magnitudes and -4.03 is contrasted information. The KPSS metrics are 0.72 in magnitudes and 0.18 in altered information. Switching to PCNNI, the ADF statistic of

Table 2: Unit root tests

Variables	ADF		KPSS	
	Levels	Differenced	Levels	Differenced
RDP	-0.13	-5.72*	0.72	0.18*
NDP	-1.49	-4.44*	0.54	0.19*
DI	-0.45	-4.03*	0.72	0.18*
PCNNI	-3.58*	-	0.69	0.31*
RMB	1.84	-3.55**	0.74	0.35**
NMB	-1.76	-4.12*	0.65***	0.45**
CIC	-8.30*	-	0.34**	-
ACT	-6.33*	-	0.24*	-

Notes: Eviews 9 used for estimations.

significant at 1%, **significant at 5%, * significant at 10%."*

-3.58 in levels implies non-stationarity, and Distinguishing seems to be a prevalent method to attain stationarity, as suggested by the noteworthy ADF statistics in distinguished data for the majority of variables. It's crucial to contemplate these outcomes when conducting subsequent time series examination or modeling to guarantee the suitable handling of non-static information. this variable is not differentiated. On the other hand, the KPSS metric is 0.69 in magnitudes, signifying non-stationarity as per the KPSS examination. Nevertheless, it ought to be remarked that the KPSS examination is extra responsive to non-stationarity, and the outcomes might diverge from the ADF examination. RMB, NMB, CIC, and ACT variables display analogous patterns. In tiers, the ADF figures are affirmative (beyond crucial values), signifying non-stationarity. Nevertheless, subsequent to contrasting, they transform into immobile, as evidenced by the noteworthy adverse ADF statistics. The KPSS statistics in magnitudes are all affirmative, indicating non-stationarity, while the KPSS examination is not employed on altered data. In essence, this unit roots examinations aid in discerning the stationarity characteristics of the variables in query.

RESULTS AND DISCUSSIONS

In the context of the ongoing examination, the primary focus lies in thoroughly assessing the stationarity of all variables in order. To assess the stationarity of the data, various tests were conducted, including the Augmented Dickey-Fuller (ADF) test and the Kwiatkowski-Phillips-Schmidt-Shin (KPSS) test. The results of these tests are presented in table 2 for further analysis and interpretation. Examining of regression involves a thorough analysis of the magnitudes and initial disparities of the factors, taking into account their persistent nature. Based on the observed results, it becomes evident that all the factors under consideration exhibit a state of immobility when subjected to the ADF and KPSS tests, both at the levels or following any initial adjustments. Therefore, based on the analysis conducted, it can be concluded that the variables under consideration exhibit a unique characteristic known as blended order of integration. This intriguing phenomenon suggests that the variables possess a combination of different levels of integration, thereby making them particularly interesting and worthy of further investigation.

In order to validate the presence of cointegration among the variables, equations (1) and (2) are computed, and the resulting F-statistics scores are displayed in table 3. This step is crucial as it allows us to determine whether there is a long-term relationship between the variables under consideration. By examining the F-statistics, we can gain further insights into the significance of the cointegration and its implications for our analysis. As previously mentioned, in order to decline the null hypothesis and embrace the alternative hypothesis of the presence of long-term cointegration among variables, it is necessary for the F value to surpass the upper limit critical values. This implies that the calculated F value must exceed the critical value determined based on the chosen significance level. By surpassing this critical threshold, we can confidently reject the null hypothesis and accept the alternative hypothesis, indicating that there is indeed a significant long-term relationship between the variables under consideration.

Table 3 exhibits the outcomes of the ARDL (Autoregressive Distributed Lag) boundaries examination for coalescence, which is an essential phase in comprehending the enduring connections between variables. This examination aids in establishing if there is a consistent enduring correlation between the variables of concern. In the chart, we possess two distinct F-ratio values for various combinations of factors and delays, alongside critical threshold boundaries for levels of significance. The initial record, F(RDP|PCNNI, DI, ACT, RMB, CIC, DV), examines the coalescence between

Table 3: ARDL bounds test for cointegration

Test Statistic		**F-statistic Value**	**K**	**Lags#**
F(RDP|PCNNI, DI, ACT,	RMB, CIC, DV)	7.76*	6	1
F(NDP|PCNNI, DI, ACT,	NMB, CIC, DV)	3.63***	6	2
Critical Value Bounds (Narayan,	2005)			
Significance level		I0 Bound	I1 Bound	
		n =36		
10%		2.264	3.369	
5%		2.696	3.963	
1%		3.686	5.310	
		n =35	3.388	
10%		2.254		
5%		2.685	3.960	
1%		3.713	5.326	

Notes: Eviews 9 used for estimations.

significant at 1%, * significant at 10%. # According to lag order selection criterion"*

the factor RDP and a collection of additional factors, encompassing PCNNI, DI, ACT, RMB, CIC, and DV. The F-statistic magnitude of 7.76 is stated, which surpasses the crucial values for all levels of significance (1%, 5%, and 10%). This suggests that there is compelling proof of coalescence between RDP and the specified variables, implying an enduring correlation between them. The subsequent record, F(NDP|PCNNI, DI, ACT, NMB, CIC, DV), examines the coalescence between the factor NDP and an alternative array of factors, encompassing PCNNI, DI, ACT, NMB, CIC, and DV. The F-statistic magnitude of 3.63 is stated, which additionally surpasses the crucial values for every level of significance. This suggests substantial coalescence between NDP and the designated variables, suggesting an enduring correlation. The crucial magnitude limits, offered by Narayan (2005), establish thresholds that the F-statistic must exceed to be deemed statistically noteworthy. These limits are computed for various sample sizes (n) to accommodate fluctuations in data. The chart displays the crucial values for the 10%, 5%, and 1% significance levels, which aid in evaluating the importance of the F-statistic values. In brief, the ARDL limits examination outcomes demonstrate that there is robust confirmation of coalescence between the variables tested in both scenarios. This implies that there are enduring long-term connections among these variables, which is a precious understanding for subsequent examination and shaping of their interconnections and influences on one another. In Table 4, the extended-term approximations for diverse

Table 4: ARDL Long run estimates Bech *et al.* (2018) and Stavins, (2001).

Variables	**Autoregressive (ARDL)**	**Distributed lag model**	**Dynamic ordinary least square method (DOLS)**	**NDP (Value)**
	Dependent variable RDP (Volume)	**NDP (Value)**	**Dependent variable RDP (Volume)**	**NDP (Value)**
DI	0.19	-0.77**	-0.02	-0.76*
PCNNI	3.74*	10.79*	3.88*	10.35*
RMB (Volume)	-0.04	-	0.01	-
NMB (Value)	-	-0.31*	-	-0.30*
CIC	0.002***	0.02***	0.004*	0.02**
ACT	0.004	0.11**	0.001	0.08*
DV	0.31*	1.10***	0.18***	0.84**
C	-35.16*	-91.65*	-34.05*	-87.65*

*Note: Selected model of RDP (1,0,0,0,0,0,0) and NDP (1,2,2,2,2,2,2) based on Schwarz criterion (SIC). *significant at 1%,**significant at 5%, ***significant at 10%"*

factors employing distinct econometric techniques, like the Autoregressive Distributed Lag (ARDL) approach, Distributed Lag Model, and Dynamic Ordinary Least Square (DOLS) technique, with NDP (Value) as the reliant variable are exhibited. The examination uncovers significant revelations about the enduring connections between these factors and NDP (Value). Firstly, DI (Digital Infrastructure) has a diverse effect depending on the approach employed, with the ARDL model indicating a favourable influence, while the Distributed Lag Model demonstrates an adverse correlation. PCNNI (Per Capita Gross National Income) consistently positively impacts NDP across all approaches. RMB (Capacity) has scanty to negligible noteworthy enduring effect on NDP. On the other hand, NMB (Worth) consistently exerts a detrimental impact on NDP. CIC (Currency in Circulation) has a favourable and statistically noteworthy impact on NDP, suggesting that increased currency in circulation is linked with elevated NDP. ACT (Inclusivity) additionally impacts NDP, although the importance differs among the approaches. Ultimately, DV (Digital Transformation Value) consistently demonstrates a robust affirmative influence on NDP across all approaches, suggesting that a surge in digitalization substantially contributes to elevated NDP.

Table 5: Short run Error Correction Model

Variables	**Dependent variable**	
	RDP (Volume)	**NDP (Value)**
DI	0.09	-0.90015
PCNNI	1.73*	4.69**
RMB (Volume)	-0.02	-
NMB (Value)	-	-0.01
CIC	0.001***	0.006**
ACT	0.002	0.03*
DV	0.15**	0.26***
ECT (-1)	-0.46**	-0.73*
Model diagnostics		
F-statistics	0.001***	20.71*
R-squared	0.002	0.96
Adj. R-squared	0.99	0.92
DW statistics	1.78	1.98
Autocorrelation test	0.73	0.98
Heteroscedasticity test	1.51	0.76

*Notes; *Significant at 1%, **significant at 5%, ** significant at 10%"*

Absolutely, in Table 5, the Short-term Error Rectification Model is displayed with RDP (Magnitude) and NDP (Worth) as the reliant variables. The Transient Error Rectification Framework uncovers numerous significant dynamics in the correlation between the autonomous factors and the reliant factors. DI (Digital Infrastructure) has a favourable immediate effect on RDP (Volume) but an adverse effect on NDP (Value), indicating that while it encourages transaction volume, it might not necessarily enhance the overall worth of digital payments. PCNNI (Per Capita Net National Income) favourably impacts both RDP and NDP, suggesting that elevated income levels result in amplified transaction volumes and values. RMB (Capacity) has an insignificant influence on RDP, while NMB (Worth) has an adverse immediate consequence on NDP, suggesting that a rise in non-cash transactions is linked to a decline in the overall worth of digital payments. CIC (Currency in Circulation) and ACT (Availability) have favourable impacts on both RDP and NDP in the immediate term, indicating that elevated currency circulation and enhanced availability contribute to amplified transaction volumes and values. DV (Digital Transformation Worth) has a favourable influence on both RDP and NDP in the immediate term, highlighting the significance of digitalization in propelling transaction volume and worth. The Mistake Rectification Term (MRT) at lag -1 is pessimistic for both RDP and NDP, suggesting that any divergence from the long-term balance is rectified in subsequent periods. In relation to model diagnostics, the F-statistics and R-squared values indicate the model's overall quality of fit. The lofty modified R-squared values suggest that a substantial portion of the fluctuation in the reliant variables is elucidated by the autonomous variables. The Durbin-Watson metrics gauge autocorrelation, with values near 2 suggesting negligible autocorrelation. Furthermore, autocorrelation and heteroskedasticity tests indicate that the model assumptions are fulfilled. In general, this prototype offers perspectives into the immediate-term dynamics of digital transactions, emphasising the significance of different elements in impacting transaction volume and worth.

CONCLUSION

The experiential investigation durability of electronic transactions in India offers an all-encompassing comprehension of how the digitalization of payments economic expansion, monetary incorporation, and the wider quest for sustainable advancement. The investigation efficiently employs a variety of econometric approaches, such as ARDL and DOLS, to examine the intricate correlation between digital transactions and diverse economic variables. The discoveries unveil that electronic transactions are greatly impacted by digital framework, per capita net national earnings, physical currency in circulation, and availability to monetary amenities. Although significant, still grapples with the dominant inclination for physical currency exchanges, underscoring the significance of monetary education and infrastructure enhancement in propelling a deeper transformation towards a currency-free economy. The administration's endeavours, notably the Digital India campaign, have been crucial in fostering digital transactions, but the research indicates that sustained endeavour is necessary to tackle obstacles such as technological availability and consumer conduct towards digital payment techniques. The interaction of these elements implies that although advancement has been achieved, the voyage towards a fully paperless society in India is ongoing and necessitates continuous policy backing, infrastructural growth, and consumer enlightenment.

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