



A COMPARATIVE STUDY OF SIGNIFICANCE OF DIGITAL TRANSACTION USE IN THE ERA OF DEMONETIZATION IN THE STATES OF TELANGANA AND ANDHRA PRADESH

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ABSTRACT :

With the continuous rise of innovative technologies for a better human life, the Nation of India started moving towards a digital and cashless economy. The growth of Internet has significantly impacted the use of digital transactions over a decade. To further accelerate the surge in digital transactions the Government of India announced the concept of 'Demonetization', an attractive package to promote the use of cashless payments through digital means. This research paper address the significant use of digital transactions in the states of Telangana and AndhraPradesh through a comparative study by means of four digital transaction media like Credit cards, Debit Cards, Internet Banking, e-wallets. The essence of the research is to highlight the significance of the digital transactions to evoke a positive shift to digital mode of payment across the said states to empower demonetization.

KEYWORDS : Digital Transactions, Demonetization, Credit Cards, Debit Cards, Internet Banking E-wallets, DigitalPayments.

INTRODUCTION

Business processes have witnessed drastic changes through innovative use of Information Technology over the decades. The switch to the digital economy has its myriad benefits with the nation's latest monetary change being the start of a new economic era. With an objective to reduce dependence on cash, digital payments were encouraged as momentous demonetization by the government. Non-cash payments saw a surge immediately following the demonetization policy enacted in November 2016, when cash in circulation fell by two-thirds. Digital transaction volumes grew 43 percent between November and December 2016, driving hopes that the shock would kick-start India's transition to a cashless economy. This enabled the more digital savvy Indians to embrace the opportunity of digital transactions as part of demonetization. Post demonetization, a lot of transformation in Indian Business has been taking place. One of the most notable changes the common public has adopted pertains to shifting towards cashless economy through digital payment systems.

REVIEW OF LITERATURE

Nicole Koenig-Lewis, Adrian Palmer, Alexander Moll, (2010) this paper aims to investigate the barriers for adopting mobile banking services. From a methodological perspective, this paper seeks to build on two widely used models for technology adoption, the Technology Acceptance Model (TAM) and Innovation Diffusion Theory and to test a model that is better able to predict consumers' intention to use mobile banking.

OBJECTIVES OF THE STUDY

1. To understand the concept of use of digital transactions in the era of demonetization in Telangana and Andhra Pradesh.
2. To analyze the distribution of digital transactions volumes in the states of Telangana and Andhra Pradesh.
3. To compare digital transaction volumes by transaction types in the states of Telangana and Andhra Pradesh
4. To highlight the significance of digital transaction system in Telangana and Andhra Pradesh.

RESEARCH METHODOLOGY

To examine the significance of digitalization of transactions, a sample of 1000 observations pertaining to digital transactions across the states of Telangana and AP were used for the study.

RESEARCH HYPOTHESIS

Hypothetical assumptions were formulated to address the objectives of the study which include:

H_0 : There is no significant difference in the use of digital transactions in the states of Telangana and Andhra Pradesh.

H_a : There is a significant difference in the use of digital transactions in the states of Telangana and Andhra Pradesh.

Digital Payments: The Digital Frontier

Digital payment systems were working on the principle of e-commerce and e-payment systems. The objective is to facilitate an environment for the users to conduct transactions digitally to avoid dependence on cash while not compromising with transaction security. A simple architecture of digital payment systems is illustrated hereunder:

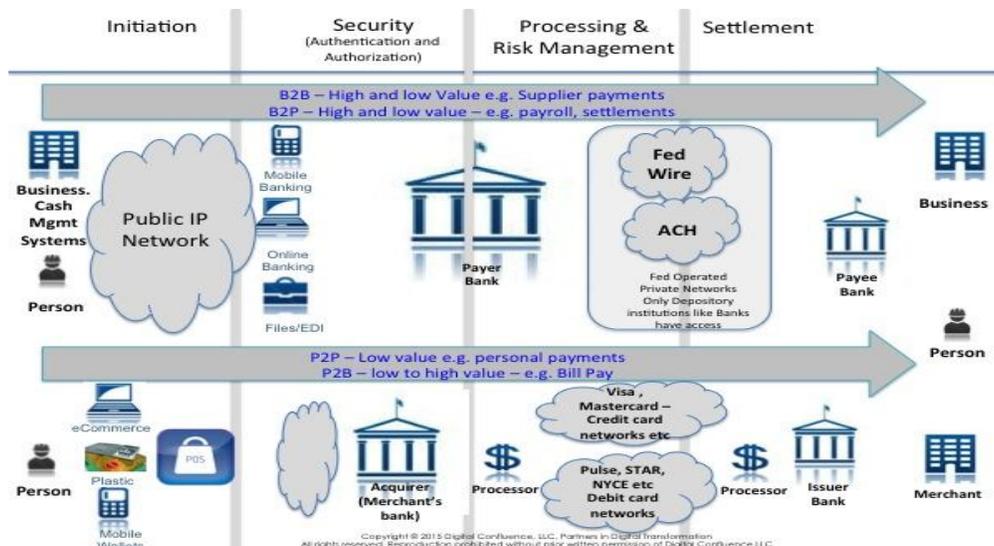


Fig: Architecture of a Digital Payment System

Description of the Digital Payment System

An individual or a person opting to embrace the opportunity of demonetization through digital transactions over a public network via a digital payment method (like plastic cards-Debit card/Credit card, e-wallets on mobiles, e-Commerce Internet banking etc.) can initiate and conduct digital transactions. The

acquirer or merchant's bank verifies the authenticity of information of the transaction initiating individual by contacting the payer's bank and processes the transaction through the payment gateway (like Visa, MasterCard-credit card networks etc.) opted by the individual for a final settlement. The process not only focuses on conduct of digital transactions but also as keen eye on entrusting transaction security.

Data Analysis

1. Descriptive Statistics for understanding Data Distribution

Table 1: Descriptive Statistics for Digital Transactions of Telangana and AP

<i>Telangana</i>		<i>AndhraPradesh</i>	
Mean	1236.052539	Mean	1252.734266
Standard Error	18.09044221	Standard Error	20.30218652
Median	1227	Median	1241
Mode	1302	Mode	1660
Standard Deviation	432.2820847	Standard Deviation	420.505286
Sample Variance	186867.8007	Sample Variance	176824.6956
Kurtosis	-1.11663882	Kurtosis	-1.1559154
Skewness	0.024475593	Skewness	0.008416606
Range	1497	Range	1498
Minimum	500	Minimum	501
Maximum	1997	Maximum	1999
Sum	705786	Sum	537423
Count	571	Count	429

Source: Statistical Computing using MS-Excel

Table1 illustrates the descriptive statistics summary of the digital transactions happening at Telangana and Andhra Pradesh. It is noticeable that the average transaction price is higher at AP while compared to Telangana although the no. of digital transactions are more in number at Telangana.

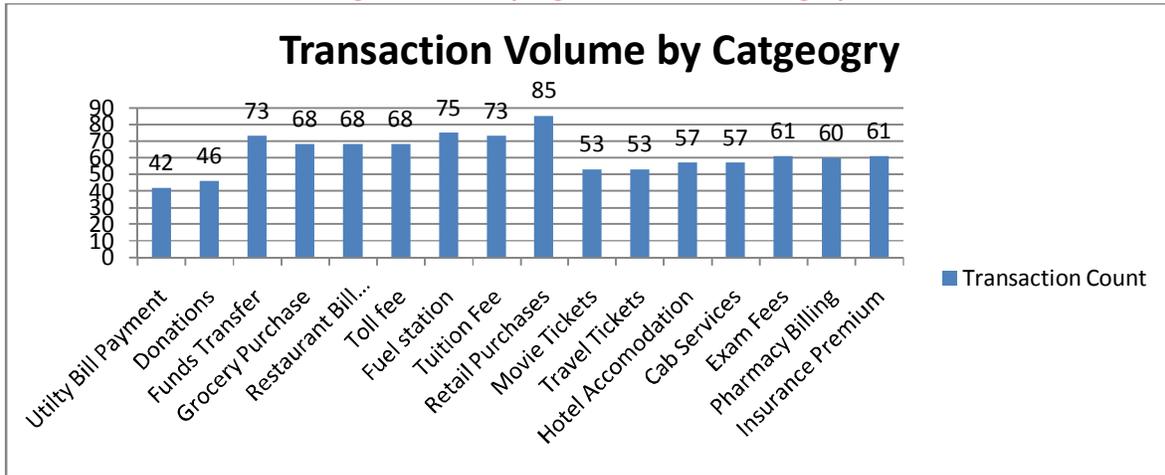
Sample Variance parameter from Table of the Descriptive Statistics Summary indicates that digital transaction behavior is consistent in AP while compared to Telangana. However there is no much difference in the type of transactions at both the states.

2. Analyzing data distribution by exploration

To examine the association between the digital transaction and its corresponding transaction type data were analyzed by volume and percentage of processing.

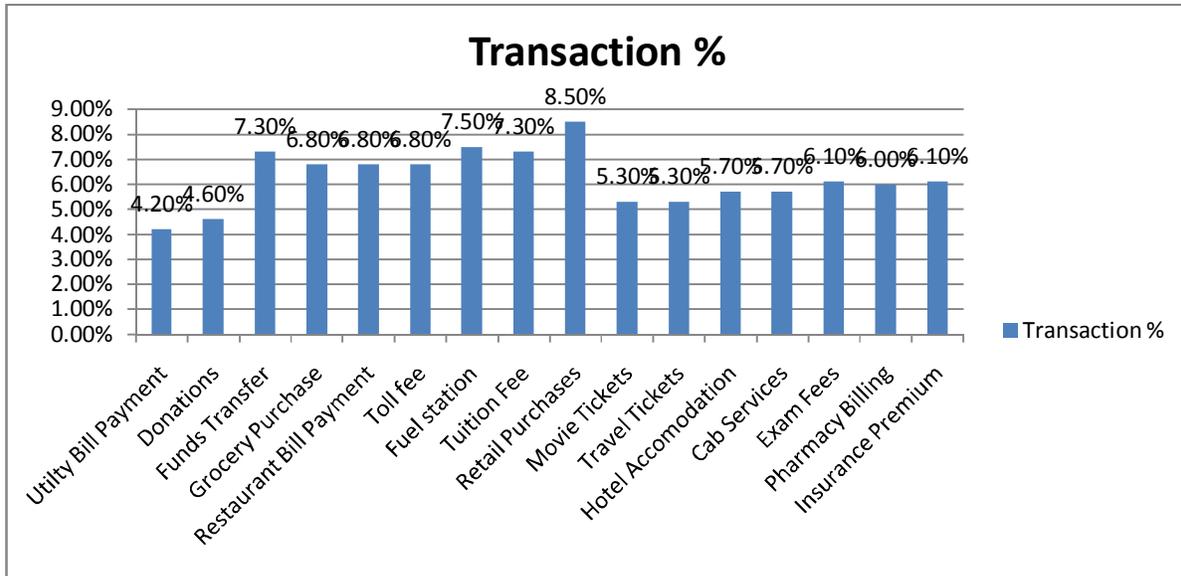
2.1. Digital Transaction volume by category

Fig 1: Volume by Digital Transaction Category



Source: Column Chart from MS-Excel

Fig 2: Percentage of Digital Transaction by Category



Source: Column Chart from MS-Excel

Fig1 & Fig2 reveal that a majority (8.50%) of digital transactions attribute to 'Retail Purchases' category while the least count (4.20%) was observed in 'Utility Bill Payment' category.

2.3. Cross tab summary of Transaction Category by Transaction Type

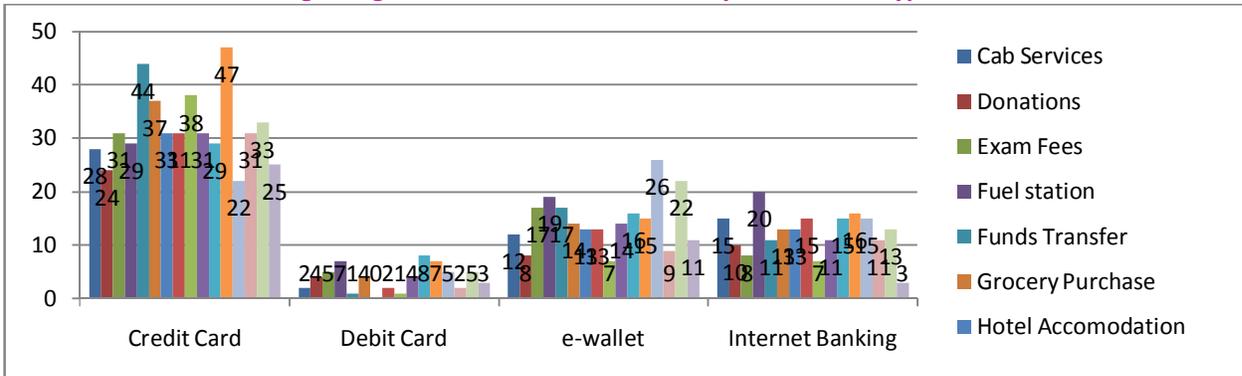
A further investigation of digital transactions is obtained to understand the distribution of digital transactions by their transaction using a cross tabulation summary:

Table 2: %Transaction Summary by Transaction Type

% Transaction Summary	Column Labels				
Transaction Category	Credit Card	Debit Card	e-wallet	Internet Banking	Grand Total
Cab Services	2.80%	0.20%	1.20%	1.50%	5.70%
Donations	2.40%	0.40%	0.80%	1.00%	4.60%
Exam Fees	3.10%	0.50%	1.70%	0.80%	6.10%
Fuel station	2.90%	0.70%	1.90%	2.00%	7.50%
Funds Transfer	4.40%	0.10%	1.70%	1.10%	7.30%
Grocery Purchase	3.70%	0.40%	1.40%	1.30%	6.80%
Hotel Accommodation	3.10%	0.00%	1.30%	1.30%	5.70%
Insurance Premium	3.10%	0.20%	1.30%	1.50%	6.10%
Movie Tickets	3.80%	0.10%	0.70%	0.70%	5.30%
Pharmacy Billing	3.10%	0.40%	1.40%	1.10%	6.00%
Restaurant Bill Payment	2.90%	0.80%	1.60%	1.50%	6.80%
Retail Purchases	4.70%	0.70%	1.50%	1.60%	8.50%
Toll fee	2.20%	0.50%	2.60%	1.50%	6.80%
Travel Tickets	3.10%	0.20%	0.90%	1.10%	5.30%
Tuition Fee	3.30%	0.50%	2.20%	1.30%	7.30%
Utility Bill Payment	2.50%	0.30%	1.10%	0.30%	4.20%
Grand Total	51.10%	6.00%	23.30%	19.60%	100.00%

Source: Pivot table computational analysis using MS-Excel

Fig 3: Digital Transaction distribution by Transaction Type



Source: Pivot chart analysis using MS-Excel

From Table 2 & Fig3 it is evident that more than 50% of the digital transactions take place through credit card across both the states.

3. State-wise transaction analysis

3.1. Analyzing transaction summary using t-Test

The analyze the difference in values of digital transaction for the states under study, theindependent sample t-Test assuming equal variances was performed. The results of the test summary are described as follows:

**Table 3: Summary Statistics of Transaction Values of Telangana and AP
t-Test: Two-Sample Assuming Equal Variances**

	<i>Transaction Value in Telangana</i>	<i>Transaction Value in AP</i>
Mean	1236.052539	1252.734266
Variance	186867.8007	176824.6956
Observations	571	429
Pooled Variance	182560.7376	
Hypothesized Mean Difference	0	
df	998	
t Stat	-0.611060205	
P(T<=t) one-tail	0.270649435	
t Critical one-tail	1.646381877	
P(T<=t) two-tail	0.54129887	
t Critical two-tail	1.962343846	

Source: t-Test Statistical Computation using MS-Excel

Table 3 depicts that mean transaction values across Telangana (1236.052539) and Andhra Pradesh (1252.734266) are not much varying indicating the equal significance of use of digital transactions across both the states. This is statistically supported by the test static P (T<=t) two tail with value 0.54129887 being greater than standard alpha value (0.05). However a little higher inconsistency could be observed in the transaction values at Telangana.

3.2. Analyzing transaction variance using F-Test

To improve the strength of analysis an F-Test was conducted to examine the significance of variances of the transaction sample under study.

**Table 4: Variances Summary of Digital Transactions
F-Test Two-Sample for Variances**

	<i>Transaction Value in Telangana</i>	<i>Transaction Value in AP</i>
Mean	1236.052539	1252.734266
Variance	186867.8007	176824.6956
Observations	571	429
df	570	428
F	1.05679696	
P(F<=f) one- tail	0.272490117	
F Critical one- tail	1.161651783	

The test static (F) has a value 1.05679696 which is less than the F-critical value 1.161651783 denoting a least significant difference in use of digital transactions at Telangana and AP.

4. Analyzing the impact of transaction type on transaction category

To understand the significance of impact of transaction category on transaction type and state, logistic regression analysis was performed. The summary of regression analysis is provided as follows:

Table 5: Transaction Category as a driving factor for Digital Transactions

Call:

glm(formula = Transaction. Type ~ Description + State, family = binomial, data = input)

Deviance Residuals:

Min	1Q	Median	3Q	Max
-1.5095	-1.1363	-0.8116	1.1965	1.5942

Coefficients:

	Estimate	Std. Error	z value	Pr(> z)
(Intercept)	0.05028	0.27482	0.183	0.8548
DescriptionDonations	-0.12083	0.39669	-0.305	0.7607
DescriptionExam Fees	-0.06844	0.36851	-0.186	0.8527
DescriptionFuel station	0.42660	0.35557	1.200	0.2302
DescriptionFunds Transfer	-0.45200	0.35695	-1.266	0.2054
DescriptionGrocery Purchase	-0.21131	0.35986	-0.587	0.5571
DescriptionHotel Accomodation	-0.21099	0.37540	-0.562	0.5741
DescriptionInsurance Premium	-0.06799	0.36850	-0.185	0.8536
DescriptionMovie Tickets	-0.96454	0.40396	-2.388	0.0170 *
DescriptionPharmacy Billing	-0.10210	0.37006	-0.276	0.7826
DescriptionRestaurant Bill Payment	0.26191	0.36103	0.725	0.4682
DescriptionRetail Purchases	-0.24757	0.34321	-0.721	0.4707
DescriptionToll fee	0.70326	0.37069	1.897	0.0578 .
DescriptionTravel Tickets	-0.37793	0.38460	-0.983	0.3258
DescriptionTuition Fee	0.15766	0.35427	0.445	0.6563
DescriptionUilty Bill Payment	-0.41986	0.41115	-1.021	0.3072
StateTelangana	-0.02705	0.13000	-0.208	0.8352

Signif. Codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

(Dispersion parameter for binomial family taken to be 1)

Null deviance: 1385.8 on 999 degrees of freedom

Residual deviance: 1352.9 on 983 degrees of freedom

AIC: 1386.9

Number of Fisher Scoring iterations: 4

Source: Logistic regression analysis for transaction category as driver for digital transactions

From Table 5 it is evident that all test significance ($Pr > |z|$) for all categories is higher than alpha (0.05) except for 'Movie Tickets' category (marked with *) indicating that transaction categories were significant drivers of digital transactions by transaction type (i.e. credit card, debit card, Internet Banking, e-Wallet) while state being insignificant.

5. FINDINGS AND SUGGESTIONS

1. Sample Variances of Telangana (186867.8007) and Andhra Pradesh (176824.6956) from Descriptive Statistics Summary (Table1) highlight the significant use of digital transaction in demonetization era with no much difference.
2. Retail purchases span 8.50% and Utility bill payments span 4.20% of digital transactions across both the states.
3. 51% of the digital transactions in both states attribute to credit card as major transaction type. (Table2& Fig3).
4. Computed values of test statics using t-Test ($P(T \leq t \text{ two-tail})$) with value 0.54129887 and F-test ($F \leq f$) one-tail with value 0.272490117 clearly higher than alpha (0.05) indicating a no significant difference in use of digital transaction highlighting the equal importance of using digital transactions across both states under study.
5. Test significance obtained from Logistic regression analysis on Transaction type against transaction category is significant for most transaction categories with $Pr(>|z|) > \alpha(0.05)$ except for 'Movie Tickets' category signifying the essential use of digital transactions across both the states.

CONCLUSION

Information Technology advances have drastically changed the picture of transaction processing systems. Digital payments are beneficial for all parties with consumers saving time that they spend on conducting cash based transactions rummaging for exact change. With the masterstroke of demonetization by the government to establish a cash independent environment to fight financial issues of the country, has been well praised by many people as they have understood the need and benefits of utilizing digital transactions and digital payments. The study has clearly proved the significance of digital transactions irrespective of the states of Telangana and Andhra Pradesh. Although it may take further quite some time to realize the essence of demonetization, digital payments still prove to be handy in the crucial situations.

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