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An Empirical Analysis of Payment Card Usage in India

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ABSTRACT

A paradigm shift in the modus operandi of commerce across the globe has been significantly influenced by the payment card industry with brisk strides in digital technology. The blooming payment card industry has escorted the prosperity in economic growth of most of the countries. Besides, there exists a divergent level in subsuming card payment by different countries due to distinct social, economic and cultural background. In India, excessive use cash payments are due to offbeat business models and varied distinction in literacy levels. This paper aims to analyse outstanding payment cards in India by examining the number of cards in operation and the value of transaction in the past decade. Data from RBI source is collected to analyse for a period of eight years (2011-2019). The research finds that credit card penetration has increased by threefold with average growth of 15% YoY and debit cards increased by more than threefold with average growth of 19% YoY during the period of analysis. Yet, asymmetry between debit cards holders and credit card holders exists in India indicating credit card is still niche product. This provides platform for the payment card industry to unleash the potential to tap market in India.

Keywords-- Electronic Payments, Payment Cards, Economic Growth

I. INTRODUCTION

Electronic payments enhance economic efficiencies by making payments conveniently and reducing time thus imparting further economic and social development. In developed countries, there exists high penetration of payment cards resulting in paperless transactions. On the other hand, for developing countries, the benefits will be notable by increasing penetration. Nevertheless, repercussion will build upon the present situation of the payments infrastructure, government regulation, consumer education, and competition within the Industry. India, which was predominantly a cash economy, is slowly adopting digital banking. According to MasterCard Advisors report (2013), 98% of all its economic transactions are done through cash payments in India. In recent past, there is rapid expansion in payment card consumers, thereby slowly moving towards cashless society.

With the objective to curtail money laundering and terror financing, Indian government on November 8, 2016 announced demonetization of high value notes. Significant reforms in economy were expected by economists, business leaders, professionals, and bankers across the world. According to NPCI reports, India has witnessed a four-fold growth in digital transaction from 145.46 million in December 2017 to 620.17 million transactions worth Rs 1,02,59.48 billion in December 2018. This is the highest number of transactions and amount recorded since the inception of UPI back in August 2016. According to Mckinsey's report of world payments report (2017), Asia-Pacific region accounts for nearly three-quarters of global payment transactions. It forecasts that Asia-Pacific cash-intensive economies (India and China) will undergo robust growth in digital transactions.

The digital payments usage across the world was conducted by Fintech futures considering twenty developed markets. The study took into consideration number of debit and credit cards issued per capita, usage of cashless methods, growth of cashless payments, and customers availing mobile payment services. The rank computed based on the above stated metrics is exhibited in **Table 1**.

Table 1: Forex Cashless rank for countries

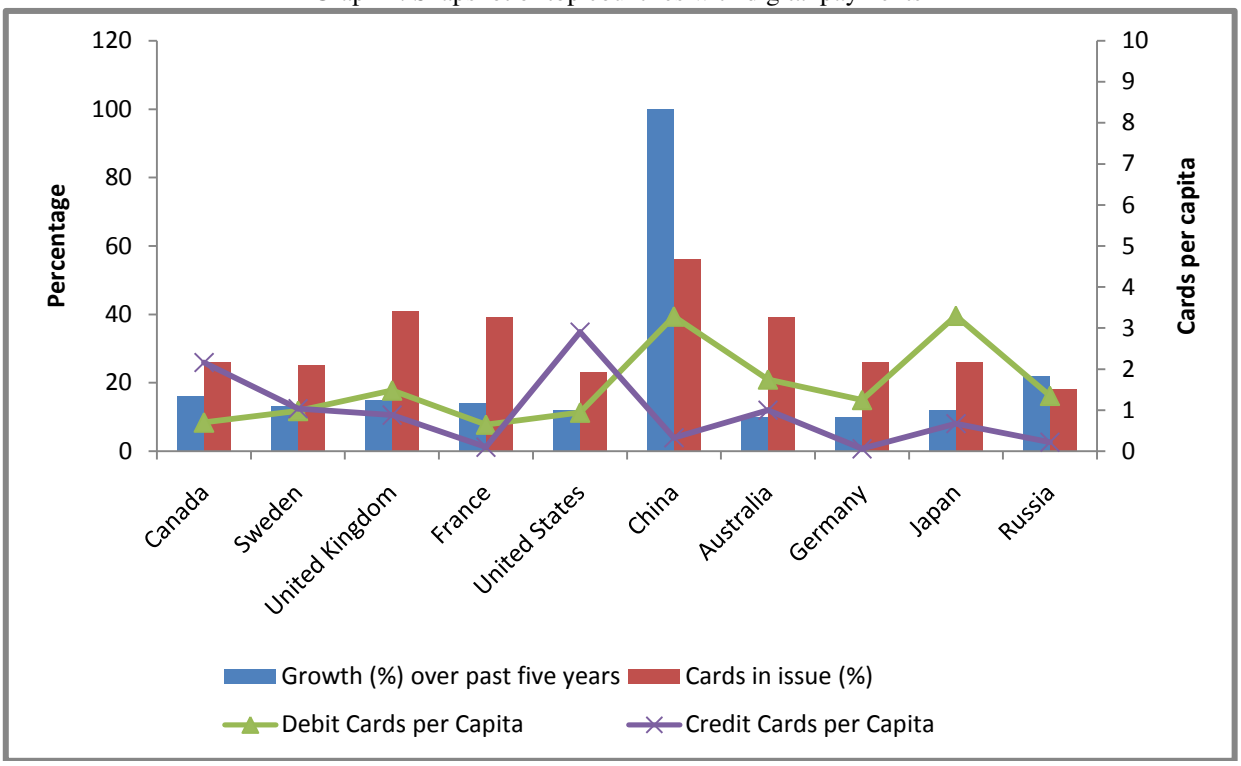
Rank	Country	Growth (%) over past five years	Cards in issue (%)	Debit Cards per Capita	Credit Cards per Capita
1	Canada	16	26	0.7	2.16
2	Sweden	13	25	0.98	1.04
3	United Kingdom	15	41	1.48	0.88
4	France	14	39	0.65	0.1

5	United States	12	23	0.94	2.9
6	China	100	56	3.28	0.33
7	Australia	10	39	1.75	1.0
8	Germany	10	26	1.25	0.06
9	Japan	12	26	3.3	0.67
10	Russia	22	18	1.35	0.22

Source: Fintech futures report

From the **Graph 1** below, it is evident that China has reported highest growth of 100% in payment cards in past five years. The country has around 3 debit cards per person which is in par with Japan. On the other hand, United States reports highest credit cards of around 3 per person. Also, China has got highest cards in issue compared to rest of the countries.

Graph 1: Snapshot of top countries with digital payments



The aim of the research is to analyse the payment card usage trends in India over past eight years. This paper is organised as follows: Section II presents literature review; Section III explains the digital payments available in India. Section IV analyses the Payment card industry in India, followed by Summary and conclusion presented in Section V.

II. LITERATURE REVIEW

Literature review has been conducted on various aspects of payment cards at different periods and different countries.

Maji et. al. (2019) desired to gain insights into market share of payment cards, position in market with respect to card payments, geographic location-wise business profiling, competitor's customer segmentation based on monthly card usage, monthly amount spent and much more. Hence they came up with framework of analytical processing which are useful for business. They suggested storing transactional data and constructed data warehouse to POS provider is useful for business gain.

Dimitriadis et. al. (2018) scrutinised 321 bank customers by classifying them into groups based on discriminant analysis and decision tree models to discover the inclination of usage of payment means. Results indicate that, by using discriminant analysis to classify the customers in a more effective way than the decision tree method.

Ding and Wright (2017) investigated the price discrimination among payment service providers in European countries. They conclude that there is

discrimination in price and fees based on card usage by provider, besides there is cards bias on fee and rewards based on type of retailer that the consumers transact with. This helps in choosing type of card by consumers.

Koulayev et. al. (2016) develops model to explain adoption and use of payment cards by card holders in U.S. due to changing patterns of payment choices. They claim that it is important to understand these issues from policy aspect.

Arango et. al. (2015) reports that cash transactions are still high for low value transactions in Canada. They performed survey from shopping diaries and deduce the reasons as speed, ease of use and extensive acceptance among merchants compared to other alternatives.

Bagnall et. al. (2014) conducted survey on consumer payment methods at seven countries (Canada, Australia, Austria, France, Germany, Netherlands and United States) during different time periods. They found that there is usage of cash at different levels based on transaction size, demographics, merchant card acceptance and point-of sale characteristics.

Kosse and Jansen (2013) inspect payment choice of Dutch and migrants of Netherlands to Dutch. They observe the cash payment still dominates in first generation migrants. The payment behaviour is influenced by host country habits and transferred between generations.

Carbo-Valverde and Linares-Zegarra (2011) evaluates the strategic reward programs by card issuers to increase the transactions of electronic payment through cards in Spain. The paper reveals that incentives vary across merchants and is more effective for debit cardholders.

Amromin and Chakravorti (2009) argue that there is expansion in merchant card acceptance and rewards provided for payment through cards. This has ushered customers to make electronic payment through payment cards.

Borzekowski et. al. (2008) concludes that cash transactions are complemented by debit cards compared to credit cards in United States. They used open ended questions and found that convenience is the prime reason for using debit cards and the probability of using debit cards elevates with educational qualification and diminishes with age.

Rysman (2007) conducts empirical analysis on the payment card industry in U.S. He establishes the fact that consumers concentrate their spending on a single payment card and keep unused cards that allow the ability to use multiple network.

III. DIGITAL PAYMENTS AVAILABLE IN INDIA

The Digital India Initiative was launched under the flagship of Government of India in 2015. The mission is to transform India into a digitally empowered society and knowledge economy. Following are the different methods of digital payments available in India.

Banking cards:

It includes debit cards, credit cards, pre-paid cards and travel cards or international cards.

Unstructured Supplementary Service Data (USSD) Channel:

This service allows access to mobile banking services through basic feature mobile phone. There is no need to have mobile internet data facility for using USSD-based mobile banking. The customers can avail the service by dialling *99# Balance Enquiry.

Aadhaar Enabled Payment System (AEPS):

It allows online interoperable financial transaction at POS (Point of Sale) through the Business Correspondent (BC)/Bank Mitra of any bank using the Aadhaar authentication.

Unified Payments Interface (UPI):

It is a system which combines multiple bank accounts into a single mobile application seamless into one. Each Bank provides its own UPI App for Android, Windows and iOS mobile platform(s).

Mobile Wallet:

It is a way to carry cash in digital format. The card (credit or debit) information can be linked in mobile device to mobile wallet application or money can be transferred online to mobile wallet. Payments can be made through Smartphone and tablet instead of using your physical plastic card to make purchases.

A Point of Sale (POS):

Also called as point of purchase, is the place where sales are made and customer completes a transaction, such as a checkout counter. It can be Physical POS and mobile POS.

National Electronic Fund Transfer (NEFT):

It is a scheme offered to Customers for electronically transferring funds from any bank branch to any individual having an account with any other bank branch in the country in batches.

Real Time Gross Settlement (RTGS):

It is similar to NEFT of electronically transferring funds. However, there is gross settlement where the transaction is settled on an instruction by instruction basis mostly used for high value transactions.

Electronic Clearing System (ECS):

It is an electronic mode of funds transfer from one bank account to another used by institutions for periodic payments.

Immediate Payment Service (IMPS):

It is an instant real-time inter-bank electronic funds transfer system which offers service through mobile phones. Hence the service is available 24/7 throughout the year including bank holidays unlike NEFT or RTGS.

IV. RESULTS AND INTERPRETATION

This section of paper presents the empirical analysis of payment card usage in India from 2011- 2019. The secondary data is collected from RBI bulletin for each month over past eight years. It inspects the number of debit and credit cards outstanding issued in India at the end of each financial year. It also aims to compare number of card transactions of payment cards (both debit and credit) and the amount involved in the transaction.

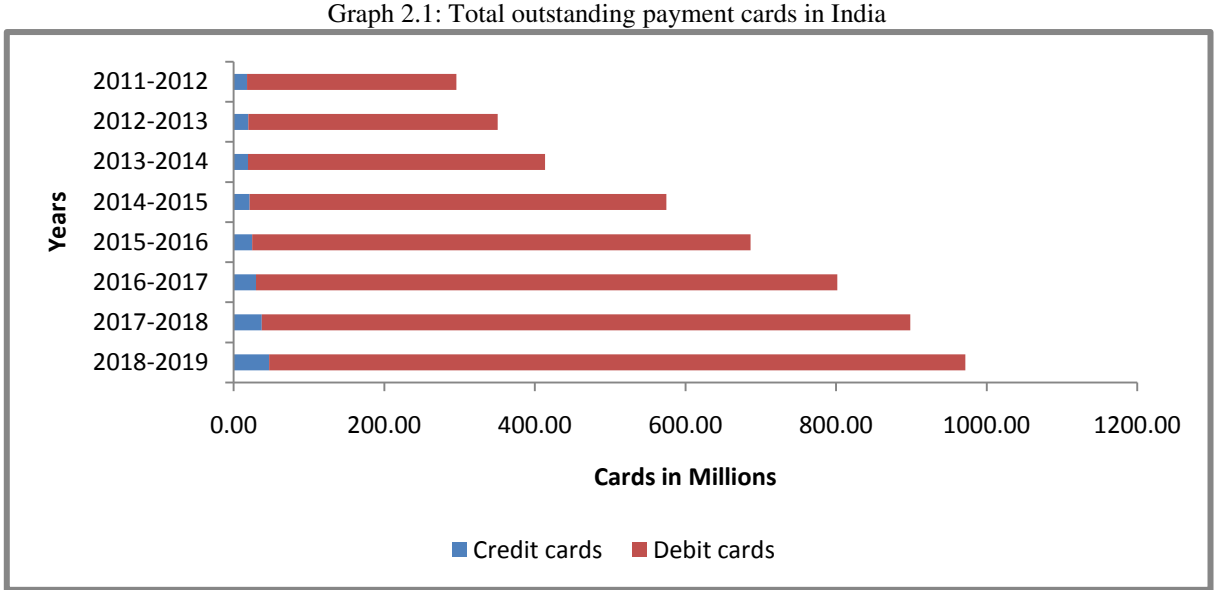
Table 2: Market penetration of payment cards in India

Year	No. of outstanding credit cards (in Millions)	No. of outstanding debit cards (in Millions)
2011-2012	17.65	278.28
2012-2013	19.54	331.20
2013-2014	19.18	394.42
2014-2015	21.11	553.45
2015-2016	24.51	661.82
2016-2017	29.84	771.65
2017-2018	37.48	861.08
2018-2019	47.09	924.63

Source: RBI

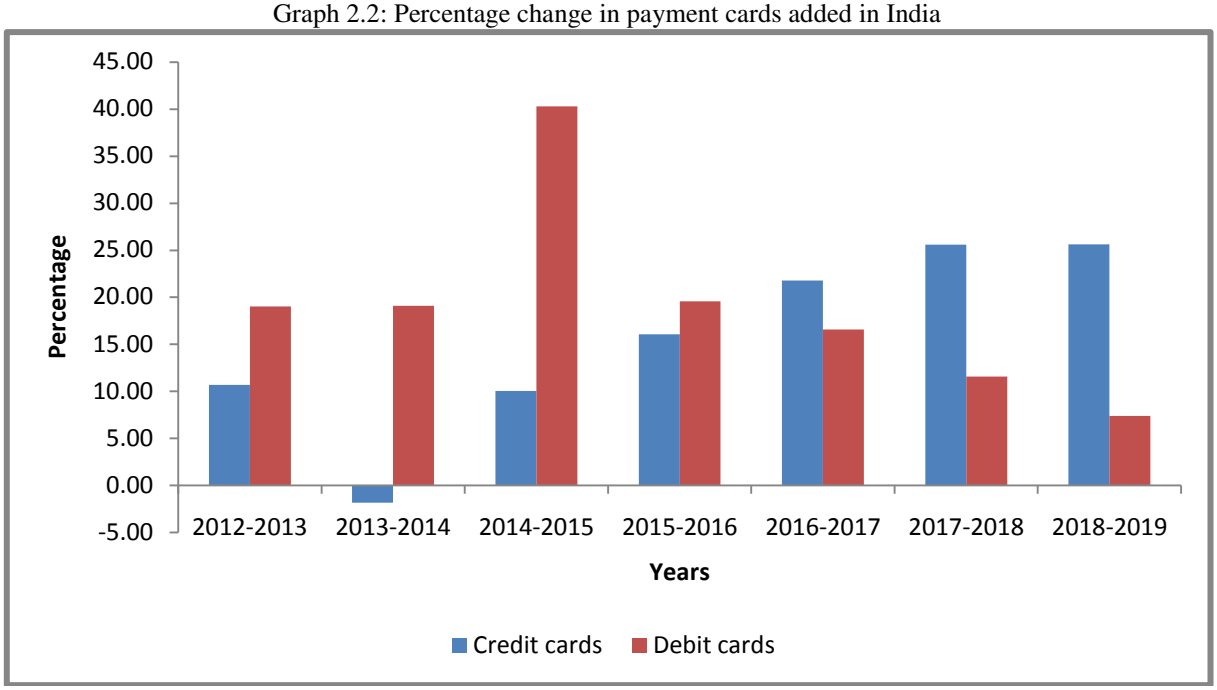
The **Table 2** above indicates the number of credit and debit cards in operation at end of financial year (31st march) for past eight years i.e. from 2011 till 2019. The number of credit cards outstanding is rapidly increasing from 2013-2014 onwards. On the other hand, there is increase in debit card at diminishing rate from 2013-2014 onwards. By the financial year ending 2018-2019, there are around 47.09 million credit cards outstanding indicating threefold growth from 2011-2012. Furthermore, debit cards outstanding at the end of financial year 2018-2019 is 924.63 million manifesting more than threefold growth.

Graph 2.1: Total outstanding payment cards in India



The above **Graph 2.1** compares the number of credit and debit cards outstanding at end of each financial year from 2011-12 onwards. It reveals that even though there is sharp increase in number of credit cards, the number of debit cards dominates in India. At the end of financial year 2018-2019, credit card accounts for only 5% share out of the total payment cards while rest of them is debit cards.

Graph 2.2: Percentage change in payment cards added in India



The **Graph 2.2** deduced from **table 2**, indicates the marginal percentage change in credit and debit cards outstanding in India. There was dip of around 2% in number of credit cards during the year 2013-14. The reason revolved around cardholders unable to make payments at regular interval turning accounts into NPA. It gained the momentum and started increasing trend at an exponential rate with stringent policy measures and simultaneously flexible policies in prerequisites for issuing card by the issuing banks. Contrarily, the growth of debit cards spurted during the financial year 2014-2015 as a consequence of new Jan Dhan accounts. The debit card flourished at marginal growth of around 40% in year 2014-2015. From then, the number of outstanding debit cards increased at diminishing rate.

Table 3: Payment Cards usage and Transaction value in India

Year	No. of credit card transaction (in Millions)	Transaction value (Rs. In Billions	No. of debit card transaction (in Millions)	Transaction value (Rs. In Billions)
2011-2012	320.42	978.72	5,409.45	14,521.25
2012-2013	399.23	1,244.59	5,778.35	17,435.67
2013-2014	512.03	1,556.72	6,707.10	20,602.86
2014-2015	542.56	1,651.62	6,951.61	21,146.66
2015-2016	791.65	2,436.82	9,246.15	26,949.27
2016-2017	1,093.51	3,312.21	10,962.36	26,901.79
2017-2018	1,412.97	4,626.33	11,920.04	33,556.84
2018-2019	1,772.36	6,078.81	14,273.89	39,042.64

Source: Authors' own computation

The **Table 3** above indicates that number of transactions of credit and debit card has proliferated along with the transaction values. The credit card transactions have risen by five times, from 320.42 million in 2011-12 to 1.77 billion in 2018-19. The transaction value has inflated by six times from Rs. 978.72 billion to Rs. 6.07 trillion, which is relatively high compared to increase in number of transactions. Simultaneously, the debit card transactions have also increased from 5.40 billion in 2011-12 to 14.27 billion in 2018-19, which amounts to around three fold increase. The transaction value has also surged at same pace of around three fold, from Rs. 14.21trillion to Rs. 39.04 trillion.

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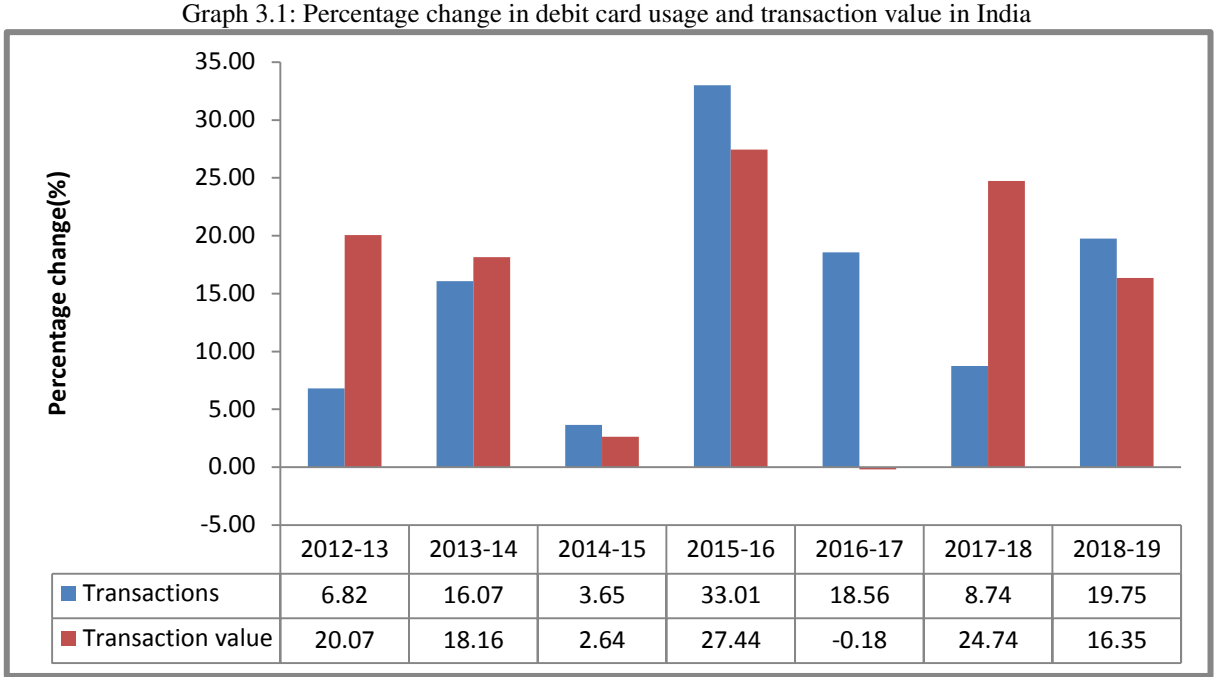
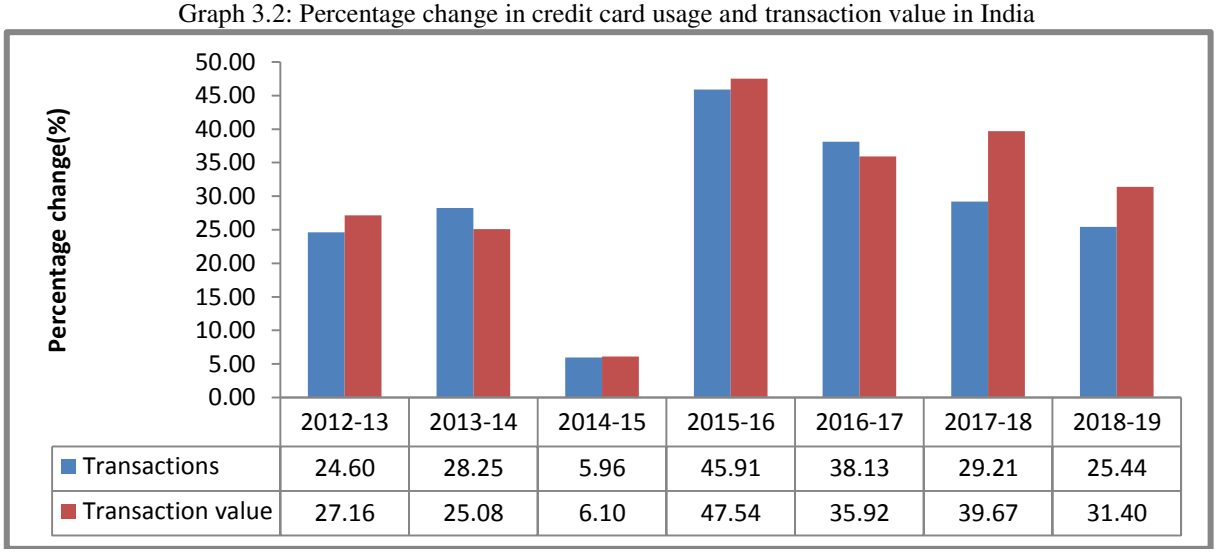
Graph 3.1: Percentage change in debit card usage and transaction value in India



	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19
Transactions	6.82	16.07	3.65	33.01	18.56	8.74	19.75
Transaction value	20.07	18.16	2.64	27.44	-0.18	24.74	16.35

The Graph 3.1 above, deduced from table 3, exhibits the annual percentage changes in number of debit card transactions and amount transacted. The number of times debit cards used has improved remarkably over the years along with transaction value. However, an exception can be noticed during the financial year 2016-17 that even though number of times debit cards used has grown by 18.56%, the transaction amount has decreased by 0.18%. This is attributed to the effect of demonetization due to government policy which restricted the amount to be withdrawn and number of transactions. The number of transactions had huge leap during financial year 2015-16 of around 33% along with surge in the transaction value of 27.44%. The relatively high number of transaction coupled with less transaction value indicates that the average amount involved in each transaction is reducing. In other words, transaction amount is becoming smaller during each transaction over years.

Graph 3.2: Percentage change in credit card usage and transaction value in India



	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19
Transactions	24.60	28.25	5.96	45.91	38.13	29.21	25.44
Transaction value	27.16	25.08	6.10	47.54	35.92	39.67	31.40

The **Graph 3.2** above, deduced from table 3, indicates the annual percentage changes in number of credit card transaction and its transaction value. The number of credit card transactions has intensified from 2014-15 onwards over the years. It can be noticed that, the marginal increase in credit card transaction is almost equal to its transaction value. This states that consumer spend relatively high amount compared to debit cards in each transaction.

V. SUMMARY AND CONCLUSION

The study is aimed to analyse the trends of payment card usage in India. The data was collected from RBI website for period of eight years from 2011 to 2019. By the financial year ending 2018-2019, there are around 47.09 million credit cards outstanding indicating threefold growth and debit cards outstanding is 924.63 million manifesting more than threefold growth.

The number of outstanding credit cards is expanding every year with liberal expansion of credit limits and prerequisites by bank and stringent measures by Government. CIBIL, a credit information company operating in India, provides CIBIL score which is easily accessible by citizens and credit card issuing institutions. From the analysis it is evident that there are around 95% debit cards holders and only 5% credit card holders in India indicating it is still niche product.

Looking at the report, cardholders (credit and debit card), transactions, and transaction value have increased tremendously. The total transaction amount in debit cards in 2018-19 is consolidated to Rs. 39.04 trillion and credit cards are consolidated to Rs. 6.07 trillion. The magnification of debit cards shot up by 40% in the year 2014-15 because of policy implication. The Government of India undertook national mission of financial inclusion by opening Jan Dhan accounts and issuing debit cards. There was dip in transaction value to 0.18% in year 2016-17, besides remarkable increase in number of operating debit cards to 18.56%. This was the effect of policy of restricting amount to be withdrawn and number of transactions due to demonetization.

The Government of India reported the key achievement of demonetisation as lower cash-to-GDP ratio. The cash to GDP ratio is the ratio between the public debts incurred by the government to its gross domestic product. The ratio reduced from 12% to 8% due to reduction of currency circulation to the extent of Rs 3.89 lakhs crore as claimed by Government of India. According to Nasscom report, still less than 30% of population in India are unbanked, and hence growth opportunity is very high. Finally, the question boils down whether to have cashless economy or less cash economy.

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