Digitalization of Banking through ATM and POS: A Case Study of Public & Private Sector Banks in India

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Abstract

The digitalization has transformed the financial scenario of Indian banking sector. There are different types of e-banking services which has significant impact on every financial transaction. The e-banking services have become an integral part of Indian banking sector. Modern e-banking services have significantly changed the life of a common man. The Automated Teller Machine and Point of Sale Machine are the main e-banking services. In this article an attempt has been made to study the growth and trend of ATM and POS machines in public and private sector banks in India during the last 10 years from 2013 to 2022. SBI & PNB banks from public sector as top leading banks have been selected. And from private sector banks HDFC & ICICI banks has been included in the study. The secondary data has been used from the website of Reserve Bank of India. The study reflects that there is a significant difference between growth of ATM services in public and private sector banks.As far as Point of Sale Machines are concerned it has been found that there is no significant difference between growth of POS services in Public and Private sector bank. The study suggests that for the along with the growth of these e-banking services banks should also focus on the spreading awareness for using these e-banking services.

Keywords:ATM, POS, Growth, Banking transactions, Growth, Millions, Public and Private Sector banks.

INTRODUCTION TO E-BANKING

Banking sector is the backbone of any economy. An effective banking structure leads to faster growth rate of an economy. With the advent of information technology the banking sector has been totally changed. It has replaced traditional banking system up to large extent. Nowadays e-banking have become popular modes for dealing with the financial transactions. Now banks are not limited with lending and depositing but along with that it include wide range of product and services to the customers. It provides various benefits to the customers which help in attract new and retain existing customers. By providing better quality services it has increased value to customer satisfaction (Tahseen, 2019).Few type of e-banking services are as follows

(a) AUTOMATED TELLER MACHINE

The ATM machines were introduced in 1960's which led sort of revolution in banking industries. In 1967 first ATM was installed in Landon by Barclays Bank. By the year 1970 many of the US banks installed the ATM machines. Master cards acquired the largest ATM network by 1988 in the world. VISA joined the ATM network in the year 1986. ATM is a cash rending teller machine. Customers can withdraw any sum money with defined limits , can view the status of his account. It is a computerized machine that offers variety of services to its users such as balance enquiry, fund transfer, dispensing of cash etc, financial & non-financial banking transactions without visiting bank branch only with the help of plastic card that issued by the bank. This card is being secured by secret PIN. Personal Identification Number (PIN) is consist of four digits, .ATM s are such e-banking outlets which allows customers to perform banking transactions without seeking any banking representative or teller support. It is also considered as mini bank branch which offer variety of product and services. Withdrawal of cash, Balance inquiry, Mini balance statement, Fund transfer, Pay credit card bills, Update mobile No./ Aadhaar No., Regular bills payment, Pin generation and change, Cheque book request, Insurance premium payment, User details updating etc. are the main services which are generally offered by the ATM machines (Mishra,2019).

Figure 1. Types of ATM
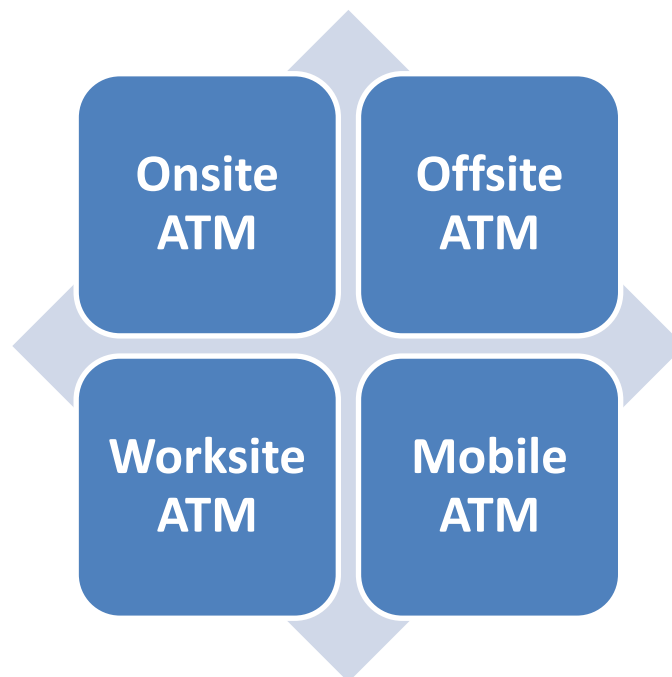
(b) POINT OF SALE MACHINE

Point of sale machine is software based machine which enables the business owners for finding out customers and of recording sales in convenient way. It keeps proper records of shop inventory and automatically get updated whenever it is required. It is useful for print out receipts, perform credit card processing, tracking of customers et. Point of sale software eases the flow at checkout terminals while recording all the data which will assist you to make better business decisions. Point of sale software permits users to input via keyboard or mouse, and a few even have a touch screen interface etc. Point of sale machine can even help with credit card processing. Credit card is the one of the preferred method of payment for any financial transactions. It is also helpful for calculation of tax. POS Machines are easy to install and simple to use. It provide its customer very simple user interface(Chavan and Waghmare,2020).

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REVIEW OF LITERATURE

Chattopadhyay and Sarelelimath (2012) had focused on customer preference towards use of ATM services in Pune city. They had assessed problems and awareness to use of ATM services offered by bank in Pune city. Both primary as well as secondary data was used under the study. Sample size was of 300 respondents. The collected data was analyzed through percentage, frequencies and chi- square tests. Charts and tables were also used. It was found that use of ATM had impacted the customer services and leaded to the better customer satisfaction. The major problem faced by respondents was non-operational ATM which had been reported by 43% respondents. It was also further found that there was association between age and preference to use ATM

Wali et al. (2014) had stated in their article "Cashless Policy, users Perception and Retail Marketing Performance" that the adoption of cashless policy impact on marketing performance of retail outlets in Nigeria. But it specifically revealed that the use of point of sale terminal (POS) as an instrument of cashless policy has strong and positive relationship with profitability and sales volume of retail outlet. The study further found that the use of E-cash wallet influences customers purchase intentions well as impact on customers repeat purchase behavior. Hence it was concluded that the Central Bank of Nigeria cashless policy was in line with international banking best practices. However, this study also revealed that in view of the implementation of cashless policy some bank's customers had not E- cash wallet instruments for business transaction.

Uday Singh Rajput (2015) in his study entitled "Customers Perception on E-banking Services" had tried to examine the perception of the customers towards e-banking services of the selected commercial banks in Gwalior. He had also studied the impact of e-banking on customers and bankers. The study's major objective was accomplished through the collection and analysis of primary data obtained through a purposive sampling technique. Likert scale questionnaire was used to measure the perception of customers about e-banking services.   Finally it can be concluded from his study that people had around 45 percent positive perception and were satisfactory with e-banking services. Still people of these areas were not using all the e-banking services frequently because they had very little knowledge about computer and internet; so they felt hesitation in using e-banking services.

Pearline (2015) had analyzed customer satisfaction, origin and development of modern banking services provided by the public and private sector banks in Trunelveli District. Both primary as well as secondary data was used under the study. Purposive sampling method was used for selecting sample. Total 256 bank branches were included under the study out which 186 branches and 56 branches were public and private branches respectively. Chi-square, ANOVA, t-test, factor analysis were used as statistical tools to analyze the data. It was found that 26.54 percent and 18.12 percent respondents were fully aware about modern banking services in private and public sector banks respectively. Majority of respondents felt that modern banking services required 10-30 minutes on an average time. Reputation and better services were considered as main factor for choosing of bank. Lacks of technical knowledge, risk, location of ATM, poor service quality were major problem in modern banking services. Speedy, safety and security were the major aspect to retain and attract customers. Cash deposit machine, SME/email alert services and payment of utility bills through internet were most desirable services by the customers.

Kaur (2017) in her article entitled growth of e-banking in India" has analysed growth of different e-banking services offered by the banks. it has been revealed that e-banking services are helpful for moving Indian economy from cash to cashless economy. From the years 2012 to 2016 banks have deployed ATM machines in upward trend which further shows tremendous growth of ATM machines during the this period of time.

Veena K.P and Shilpa D.(2017)in their study "Growth of onsite- offsite ATMs: A Comparative Study of Public sector, Private sector and Foreign banks in India" had examined the services and growth offered by public, private and foreign banks. The study was based on secondary sources. The sources of study were from various annual publications, reports, bulletins, trends and progress reports and speeches of RBI, IBA etc. It was found under the study that foreign banks were the pioneers in e-banking, private banks introduced it in a big way and public sector banks were in the process of transformation from traditional banking to e-banking. The study also showed that public sector banks had highest number of onsite and offsite ATMs services compared to private sector banks and foreign banks.

Anis Ali and L.S Bisht (2018) in their study "Customers' satisfaction in public and private sector banks in India : A comparative Study" had ascertained the difference between the satisfaction level of private and public sector customers of banks considering various aspects of satisfaction. In the study it had been also emphasized to identify the factors responsible for the low satisfaction level among the banking customers. The sample size for the study was 200 banking customers. It was revealed under the study that customers of public and private banks were satisfied but the gap between perception and expectation were more in private sector banks. The customers of public sector banks were found not satisfied with the interrupted services of ATMs in rural and remote areas and always found crowded. Overall it was revealed under the study that customers were satisfied from public and private sector banks but comparatively more from private sector banks.

Bharathiet. al. (2019)has analysed advantages and problems of ATM machines in their research paper entitled "Automated Teller Machine: usage and issue- A conceptual study" . it is found that ATM is considered as most popular mode of delivery channel as it permit customers to do anywhere, anytime banking. Increased usage of ATM has decreased the workload of staff and increased efficiency, accuracy, speed and saved time. There is negative impact of ATM usage on stealing of money.

Gupta (2022) has assessed growth and usage of ATM/POS in India: Pre and Post Covid-19. The outcome of study reveals that there is a high development in the utilization of Indian ATMs, particularly after demonetization conspire. It has been also observed that awareness level about cashless transactions among the public was significantly growing high in few years especially in pandemic. POS machines assist the customers to carry the less amount and with high safety. The considerable hike in POS transactions has been recorded in 2019 as compared to 2017 but in 2020 and 2021 it has been declined because of pandemic.

RESEARCH GAP

The review of literature regarding growth of ATM & POS Machines has been analyzed from different sources. Different articles and research papers online sources have been reviewed. From the analysis of literature review it has been found that there are few studies has been conducted on growth of ATM & POS machines and majority of them also have been conducted before 2016. These study focused on awareness and satisfaction level of customers for using these e-banking study. From the above literature review it was summarized that the studies so far conducted on

awareness and satisfaction and no study has been conducted for the decade 2013 to 2022, which the a major research gap between the existing literature and requirement of the study.

OBJECTIVES OF THE STUDY ON THE BASIS OF RESEARCH GAP

Following are the main objectives of the study;

➢ To study the growth of ATM Machines in Public and Private Sector banks.
➢ To analyze the growth of POS Machines in Public and Private Sector banks.

HYPOTHESIS OF THE STUDY

Following are the major hypothesis of the study

H_o: There is no significant difference between growth of ATM services in public and private sector banks.

H_o: There is no significant difference between growth of POS services in public and private sector banks.

RESEARCH MYTHOLOGY

Under the study the secondary data has been used from website of Reserve Bank of India. Data has been furnished from 2013 to 2022 for the period of 10 years. Under the study both public as well as private sector banks has been included. Form the public sector banks SBI and PNB as top two leading bank in public sector has been included. And HDFC & ICICI banks from private sector banks have been included. To analyze the data average, Standard deviation, coefficient of variation, and Compounded annual growth model has been used. The test the hypothesis the Mann-Whitney U test of independent sample has been used.

ANALYSIS AND INTERPRETATION

The analysis of ATM and POS machines in public sector and private sector banks in context of their growth during the last 10 years from 2013to 2022 in India is as under.

PERPFORMANCE OF PUBLIC & PRIVATE SECTOR BANKS ON BASIS OF NUMBER OF ATM MACHINES INSTALLED

There is high growth in utilization of ATMs for the period 2016 to 2022. The awareness level regarding e-banking services is growing rapidly in the past few years particularly in the pandemic period. For the floatation of the Indian economy on the path of cashless economy both government as well as public is responsible. The number of on-site ATMs is more than off-site ATMs (Gupta, 2022)

Table 1. Performance of Public and Private Sector Banks for installation of ATM Machines

Years	PUBLIC SECTOR BANKS				PRIVATE SECTOR BANKS			
	PNB	SBI	Total (PNB+SBI)	GR	HDFC	ICICI	Total (HDFC+ICICI)	GR
2013	108852	435544	544396		12333	129517	141850	
2014	138922	620424	759346	39.48	137342	138730	276072	94.62
2015	155772	665845	821617	8.20	141534	153592	295126	6.90
2016	171517	705177	876694	6.70	144031	168706	312737	5.97
2017	178948	708892	887840	1.27	146820	167303	314123	0.44
2018	171092	710233	881325	-0.73	153594	164437	318031	1.24
2019	164479	702261	866740	-1.65	160766	185193	345959	8.78
2020	154609	702036	856645	-1.16	170075	207612	377687	9.17
2021	208937	757173	966110	12.78	182489	201502	383991	1.67
2022	231325	718932	950257	-1.64	202841	182082	384923	0.24
CAGR	8.74%	5.73%	6.39%		36.50%	3.86%	11.73%	
Mean	168445	672651	841097		145183	169867	315050	
S.D.	34174.32	90556.06	119539.85		50965.45	25187.01	71835.80	
C.V.	20.29	13.46	14.21		35.10	14.83	22.80	

Source: RBI Reports
Mann-Whitney U- 0.000   P.V 0.000

The above table shows indicates bank wise performance of public and private sector banks for installation of ATM machines for the period from 2018 to 2022. It includes the on-site and off –site installation of ATM machines by the public and private sector banks. The following Null Hypothesis has been formulated to analyze the growth of ATM services by the selected public and private sector banks.

H_0: There is no significant difference between growth of ATM services in public and private sector banks.

The both public as well as private sector banks have secured phenomenal growth for installation of ATM machines in the year 2014 i.e. 39.48 percent for public sector banks and 94.62 percent in private sector banks respectively. Public sector banks have recorded their lowest growth rate of -1.65 percent in the year 2019, whereas private sector banks have faced a decreased growth rate of 0.24 percent in the year 2022. In public sector banks SBI bank has more value (672651) of mean for installation of ATM machines as compared to PNB bank (168445). On the other hand, in private sector banks ICICI bank is leading with average number (169867) of ATM machines from HDFC bank (145183). On overall comparison between the public and private sector banks, it is found that public sector banks have more average number of ATM machines (841097) which is followed by private sector banks with 315050 ATM machines. SBI has a high value of coefficient of variation i.e. 13.46 percent within the public sector banks, which further indicates that there is more variability and less consistency for installation of ATM machines in SBI bank as compared to the PNB bank. As far as private sector banks are concerned, HDFC bank is leading in the regard with the higher

value of coefficient of variation i.e. 35.10 percent. Further it is revealed that public sector banks have more consistency and low variability for installation of ATM machines as compared to the private sector banks. The analysis of compounded annual growth rate (8.74%) is most satisfactory for Punjab National Bank in public sector banks. On the other hand, it is satisfactory in case of HDFC band for private sector banks. On sector wise analysis of CAGR, private sector banks hold most satisfactory results as compared to the public sector banks.

While applying the Mann-Whitney U to analyze the Null Hypothesis on growth of ATM services it has been found that the calculated P value of Mann-Whitney U test is 0.000 which is less than 0.05 hence Null Hypothesis is rejected.

Type of Hypothesis	Results
H_0: There is no significant difference between growth of ATM services in public and private sector banks.	Rejected
H_1: There is a significant difference between growth of ATM services in public and private sector banks.	Accepted

And it can be further concluded that there is a significant difference between growth of ATM services offered by Public and Private sector banks.

Figure 2. Growth of ATM Services in Public and Private Sector Banks.
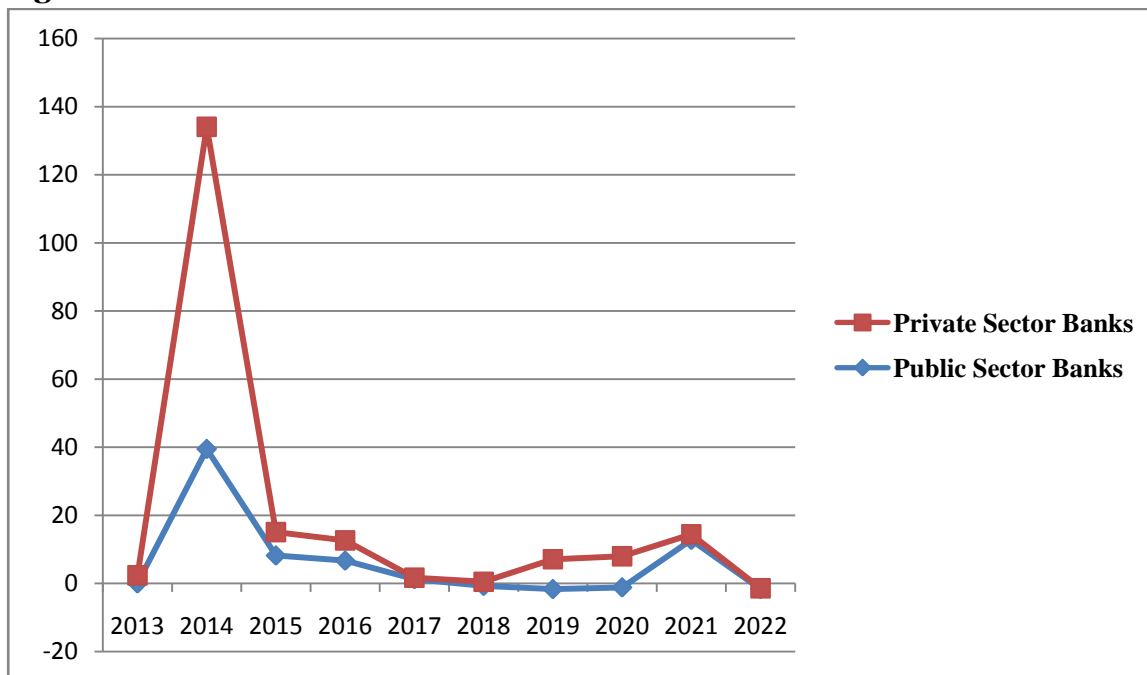
PERPFORMANCE OF PUBLIC & PRIVATE SECTOR BANKS ON BASIS OF NUMBER OF POINT OF SALE MACHINES INSTALLED ON-SITE AND OFF-SITE.

The top private sector banks were leading for installation of POS machines as of March, 2011. Majority of other banks have either minor exposure or do not offer this kind of services. The state bank of India which is the largest public sector bank in India represents not a single POS machine as on 31 march 2011(Sabharwal et. All, 2014).

Table 2. Performance of Public and Private Sector Banks for installation of POS Machines

| Years | PUBLIC SECTOR BANKS | | | | PRIVATE SECTOR BANKS | | | |
	PNB	SBI	Total (PNB+SBI)	GR	HDFC	ICICI	Total (HDFC+ICICI)	GR
2013	132871	1054726	1187597		2837395	2893591	5730986	
2014	149913	1862105	2012018	69.42	2540677	3441759	5982436	4.39
2015	174064	2875870	3049934	51.59	3082951	2509430	5592381	-6.52
2016	277320	4165881	4443201	45.68	3509358	2443318	5952676	6.44
2017	590911	7145140	7736051	74.11	4977897	3864713	8842610	48.55
2018	802517	7101394	7903911	2.17	5037219	4089503	9126722	3.21
2019	1013824	7471545	8485369	7.36	7434748	4948159	12382907	35.68
2020	1556642	8286754	9843396	16.00	10687702	5816230	16503932	33.28
2021	1350280	9103661	10453941	6.20	10804989	8216041	19021030	15.25
2022	412170	10279315	10691485	2.27	13786071	11405898	25191969	32.44
CAGR	13.40%	28.79%	27.66%		19.20%	16.46%	17.88%	
Mean	646051	5934639	6580690		6469900	4962864	11432764	
S.D.	517563	3206308	3594020		4002623	2862712	6765119	
C.V.	80.11	54.03	54.61		61.87	57.68	59.17	

Source: RBI Reports

Mann-Whitney U- 30.00   P.V 0.143

The table shows bank wise performance of public and private sector banks for installation of POS machines for the period of 2018 to 2022. It includes the on-site and off –site installation of POS machines by the public and private sector banks. To analyze the growth of Point of Sale machines in public and private sector banks in a decade i.e. 2013 to 2022, following Null Hypothesis has been formulated.

H_o: There is no significant difference between growth of POS services in public and private sector banks.

Both public as well as private sector banks have faced a zigzagging trend in their growth for installation of POS machines in this time period. The highest growth rate of 69.42 percent has been secured by the public sector banks in 2014 and least in the year 2018 i.e. 2.17 percent. On the other hand private sector banks have also faced a negative growth rate of -6.52 percent in the year 2015. The 48.55 percent is the highest growth rate for POS services by the private sector banks in 2017.SBI Bank has more average number of POS machines (5934639) as compared to the PNB Bank (646051) in public sector banks. As far as private banks are concerned in this regard, ICICI bank is leading with 4962864 average numbers of POS machines. Among all these banks SBI is leading with the highest average number of POS machines, followed by ICICI, HDFC and PNB banks. On overall comparison between public and private sector banks, it is revealed that private sector banks have more average number of POS machines (11432764) which is followed by public sector banks with (6580690) POS machines.

The highest values of coefficient of variation 80.11 percent and 61.87 percent have been calculated for PNB and HDFC banks among public and private sector banks respectively. On the sector wise comparison, it has been found that private sector banks hold high value of coefficient of variation as compared to the public sector banks. This further indicates that there is more consistency and low variability in public sector banks for installation of POS machines. The analysis of compounded annual growth rate (29.79%) is most satisfactory for SBI banks in public sector banks. Among the private sector banks it is satisfactory in case of HDFC bank with value of CAGR 19.20%. On sector wise analysis of CAGR, public sector banks hold most satisfactory results as compared to the public sector banks. On applying the Mann-Whitney U test to analyze the Null Hypothesis on growth of POS services it has observed that the calculated P value of Mann-Whitney U test is 0.143 which is more than 0.05, hence Null Hypothesis is accepted.

Type of Hypothesis	Results
H_0: There is no significant difference between growth of POS services in Public and Private sector bank.	Accepted
H_1: There is significant difference between growth of POS services in Public and Private sector bank.	Rejected

From the P value calculated with Mann- Whitney U test, it is summarized that no significant difference has been revealed on growth of POS Machines in public and private sector banks.

Figure 3. Growths of POS Services in Public and Private Sector Banks.

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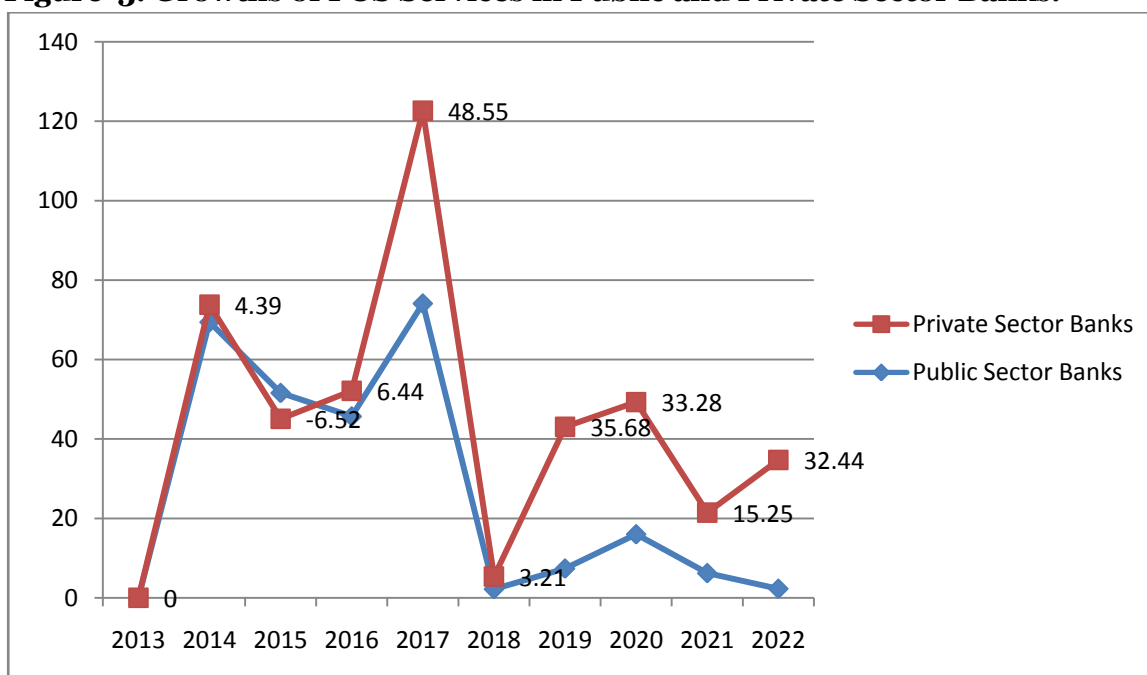
FINDINGS OF STUDY

Following are the major findings of the study;

(a) Growth and Development of ATM Machines

Public sector banks have recorded their lowest growth rate of -1.65 percent in the year 2019, whereas private sector banks have faced a decreased growth rate of 0.24 percent in the year 2022.Public sector banks have more average number of ATM machines (841097) which is followed by private sector banks with 315050 ATM machines.Public sector banks have more consistency and low variability for installation of ATM machines as compared to the private sector banks.On sector wise analysis of CAGR, private sector banks hold most satisfactory results as compared to the public sector banks.There is a significant difference between growth of ATM services in public and private sector banks.

(b) Growth and Development of POS Machines

The highest growth rate of 69.42 percent has been secured by the public sector banks in 2014 and least in the year 2018 i.e. 2.17 percent. On the other hand private sector banks have also faced a negative growth rate of -6.52 percent in the year 2015.On overall comparison between public and private sector banks, it is revealed that private sector banks have more average number of POS machines (11432764) which is followed by public sector banks with (6580690) POS machines.On the sector wise comparison, it has been found that private sector banks hold high value of coefficient of variation as compared to the public sector banks.On sector wise analysis of CAGR, public sector banks hold most satisfactory results as compared to the public sector banks.There is no significant difference between growth of POS services in Public and Private sector bank.

SUGGESTIONS OF THE STUDY TO THE POLICY MAKERS OF PUBLIC & PRIVATE SECTOR BANKS

➢ For the ATM machines Private sector banks and for POS machines public sector banks should focus on maintaining the more consistency for installation of machines.
➢ And public sector banks are advised to improve their compounded annual growth in context of installation of ATM machines.
➢ The banks form the both sector are needs to focus on spreading the awareness for usage of these e-banking services along with growth and development.

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