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A STUDY ON TECHNOLOGY DRIVEN INNOVATIVE PRACTICES IN BANKING SECTOR IN TIRUCHIRAPPALLI DISTRICT BY USING GARRET RANKING METHOD

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ABSTRACT

Technology is one of the major parts of banking sector which decide the quality and effectiveness of banking services. The topic is related with banking industry which is the backbone of socio-economic development of the country. When the banking services are channelized to all the people in the country, there will be a sustainable development. Inclusive banking services to un banked people will be possible only with the help of innovative business practices. With this view, this study will provide an output to understand the impact of innovative business practices of banking with respect to socio-economic development. With this view, this paper made an attempt to discuss technology driven innovation practices in banking sector in Tiruchirappalli District.

KEYWORDS: Banking Technology, Financial innovation, Financial Services, banking services, technology driven, as PMJDY, KYC

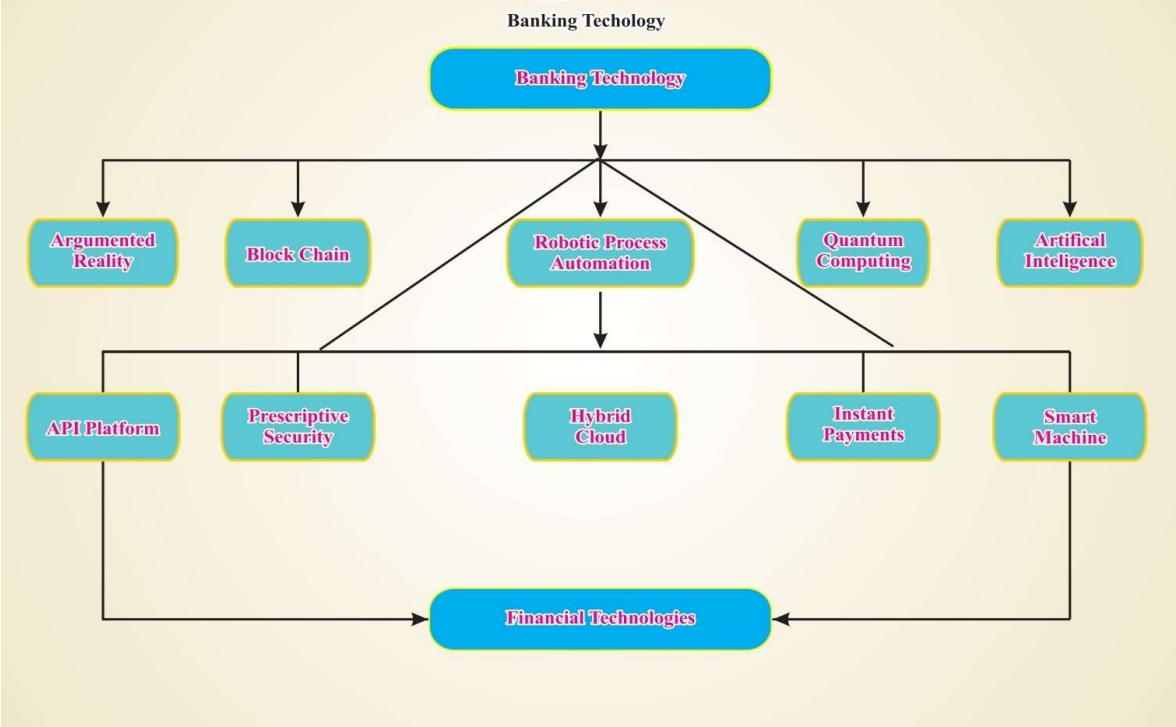
INTRODUCTION

Technology plays a key role not only in financial sector but also in social transformation activities with the help of innovative approaches and system. When the computerization was initiated in 1991 with the effect of new economic policy of the country, banking sector become multidimensional and comprehensive approach of innovative and informative services to all segment of the people. Establishment of ATMs and online banking provisions were made throughout the country to speed up, the banking and financial services to unbanked and unreached people in the country. Financial inclusion policy in 2016, made a remarkable contribution in inclusive financial services at free of cost or affordable cost to unreached people in the country. With this effect, no frill accounts were opened with zero balance and simplified KYC norms. Now it has been renamed in 2014 as PMJDY. In this PMJDY attracts aware than 30 crore bank account with Rs.80,000 crore as balance which is possible only with the help of technology driven innovative practices of banking sector. Now almost all the bank accounts are computerized with digitalized manner which can be operated anywhere in the world. Technology in banking sectors leads to new dimension to the customer with simple and

transparent transaction. In this view, this chapter consists of future of technology driven innovative practices of banking sector in Tiruchirappalli District.

Chart No – 1

Banking Technology



BANKING TECHNOLOGIES

1. Augmented Reality

Immersive technologies such as Augmented, virtual, and mixed reality are enhancing customer experience across the board. The possibilities of the implementation of augmented reality technology in banking sector are only limited by imagination, though these are still in a very early stage of development. The end-state is to give customers complete autonomy in action and transactions they could perform at home. Hybrid branches are envisioned by technology experts who believe that bank branches as we know them today are a thing of past.

2. Block chain

Block chain is a catch all axioms used to describe distributed ledger technologies. It allows multiple parties to access the same data simultaneously, and at the same time ensures the integrity and immutability of the records entered in the database. At present, leading banks around the world are exploring proof of concept projects across various aspects of banking and financial services.

3. Robotic Process Automation

The volume of unstructured data that the bank has to process is increasing exponentially with the rise of the digital economy. This is not just banking transaction data, but also other behavioural data that could potentially allow the banks to improve and innovate customer experience. These technologies consist of machine learning, natural language processing, chat

bots, robotic process automation, and intelligent analytics in banking that allow the bots to learn and improve.

4. Quantum Computing

Quantum computing is a way of using quantum mechanics to work out complex data operations. As is common knowledge today, computers use bits that can have two values – 1 or 0. Quantum computing uses "quantum bits" that can instead have three states – 1 or 0 or both. This unlocks exponential computing power over traditional computing – when the right algorithm is used.

5. Artificial Intelligence

The explosive growth that the last decade has seen in the amount of structured and unstructured data available with the banks, combined with the growth of cloud computing and machine learning technologies has created a perfect storm for Artificial Intelligence to be used across the spectrum of banking and financial services landscape.

6. API Platforms

The time when banks could control the whole customer experience through a monolithic system that controlled everything from keeping records to every customer interaction is long gone. Both the regulatory requirements and the revolving customer needs have turned this humongous system into dinosaurs.

7. Prescriptive Security

The nature of cyber risk changes at a great speed. This makes the traditional approaches to risk management obsolete. It is now clear that it is impossible for organizations to eliminate all possible sources of cyber threats and limiting the attack footprint at the earliest is the best way to deal with these. The banks will have to be nimble in the way they approach cyber security.

8. Hybrid Cloud

One of the biggest challenges that the digital age has brought to banking is the need to respond quickly. The constantly evolving market that banks operate in requires them to be as agile as possible. They need to be able to provide resources across the enterprise in a timely manner to address business problems faster.

9. Instant Payments

As the world moves towards a less-cash economy, the customer expectations around payments have changed dramatically. Both customers and business expect payments to happen instantaneously, and this is where instant payment systems step in. Instantaneous payment is a must if online payments need to replace cash transactions.

10. Smart Machines

You must have already seen assistants like Amazon's Alexa and Google Home in action. Can you imagine the impact these could have on banking applications?

Table No – 1

Value of Mobile Banking Payment in India 2014-20

Sl. No	Years	Amount	CAGR
1	2014	224.18	91.75%
2	2015	1035.30	
3	2016	4040.91	

4	2017	13,104.76	
5	2018	14,738.54	
6	2019	16.637.60	
7	2020	21,367.20	

Source: Modor Intelligence

Table No – 1 Indicate that, Value of Mobile Banking Payment in India 2014-20. In the year 2014 was Rs.224.18 Billion which has been increased to Rs.21,367.20 Billion in the year 2020. There is a consistent growth of mobile banking payment during the year 2014-20. CAGR of mobile banking payment during the year amounted to 91.75 percent.

Table No – 2

Start up financing deals in India by Sector – 2018

Sl. No	Sector	Number
1	B2C	32
2	Fintech	23
3	Health Tech	22
4	Edtech	18
5	B2B	16

Source: Modor Intelligence

Table No – 2 Indicates that, there are 32 B2C Start up financing deals in India by sector in 2018. And also 23 Fintech, 22 Health Tech, 18 Edtech and 16 B2B start up financing deals in India by sector in 2018.

Chart No – 2

Start up financing deals in India by Sector – 2018

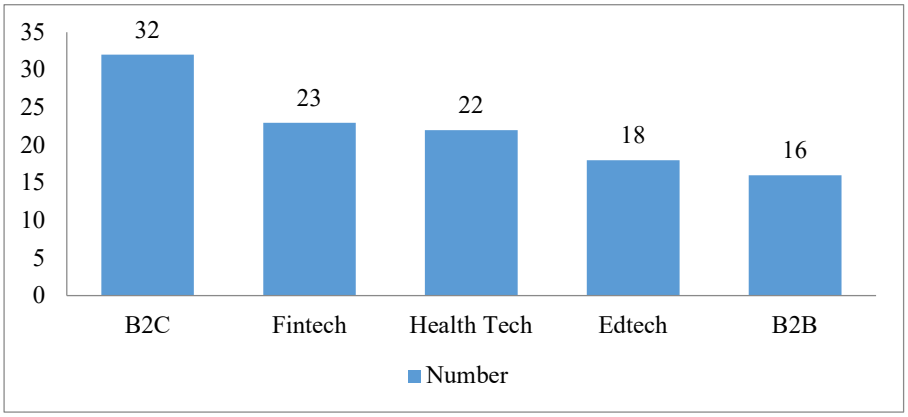


Table No – 3

Total number of digital payments across India from financial year 2018 to 2021 (In billions)

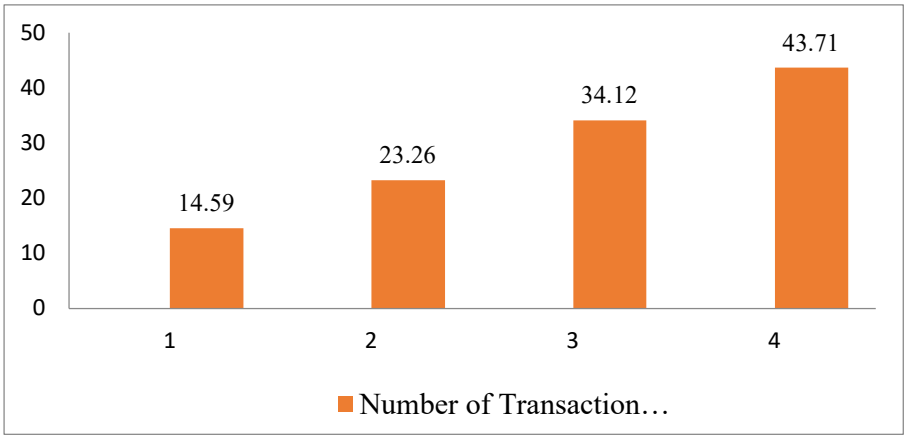
Sl.No	Years	Number of Transaction (billions)
1	2018	14.59
2	2019	23.26
3	2020	34.12
4	2021	43.71

Source: D' Silva et.al 2019

Table No – 3 clearly shows that, In the year 2018, total number of digital payments amounted to Rs.14.59 billion which has increased to Rs.23.26 billion in 2019, in the year 2020 total number of digital payments amounted to Rs.34.12 billion which has increased to Rs.43.71 billion in 2021.

Chart No – 3

Total number of digital payments across India from financial year 2018 to 2021 (in billions)



REVIEW OF LITERATURE

AnkitGoel., & et al. (2016). Financial innovation is the need of the hour, and India is gaining its credibility and global presence with the help of IT. Technology is going to make a big difference in the future in the banking sector.

Malini.A.,&Dileep G Menon. (2017). The goal of the paper is to identify ten important innovative solutions in the banking sector and analyze them in the context of assumptions of the paradigm of relationships and features of product orientation with related to technology. Banking is a rapidly changing industry.

Seema Malik. (2014). Indian banking system touches the lives of millions of people and it is growing at a fast pace. Banking industry in India is facing number of challenges like changing needs and perceptions of customers, new regulations from time to time and great advances in technologies.

Lech Gąsiorkiewicz.,& et al. (2020). Financial systems worldwide are increasingly experiencing the mounting pressure of the technology-based financial innovations. Some of these developments are generating alternative financial structures existing parallels to the "old" ones, whereas some others are simply replacing the "old" ones.

Asara Yaw Obeng.,& et al. (2018). Banks discretionary devise technology-driven core strategies to leverage trends in information technology to pursue technological innovation in order to improve the productivity of employees.

Johan HenkMaarse., & Marcel Bogers. (2012). It particularly addresses how firms can practically use external technology commercialization, which is a type of open innovation that is not yet fully understood by academics and managers alike.

Mats Holmquist.,& Anna Johansson. (2019). This encouraged employee commitment and participation, and it provided the opportunity for them to innovate their own

work. An experienced-based learning process was used in the stands, not only with respect to the method but also about the organization itself.

Audrey Paul Ndesaulwa., &, JarajiKikula. (2016). Technology in developing countries is challenged by the lack of deep pockets , by the nature of their organization still being innovative and by being in a rapidly changing environment.

Philips Kembaren., & et al. (2014). Design driven innovation has emerged to be an alternative way to generate sustainable competitive products or services. Previous research has recently revealed successful practices of design driven innovation in various industries.

Jatinder Kaur. (2020). technological innovation the entire Indian banking sector it emerged as a very firm banking industry in entire world not only in terms of capital but also in term of making and retaining customers.

STATEMENT OF PROBLEM

Rapid growth of information and communication technology during 2000, banking sectors moving with online banking which facilitate all kinds of services at affordable and easy manner. During 2010, digitalization transformed entire banking services into digitalized models with the help of internet and smart phone penetration in the country. Banking sector become digitalized transformation with the help of business innovation practices which is widely available due to information and communication technology. This research will bring valuable suggestions and recommendations towards new pathways for the commercial banks in the competitive environment. Innovative business practices in banking are one of the booming aspects due to the growth of information and communication technology. This study will help to understand the impact of innovative business practices such as digital banking, AI, cloud computing among the customers and general public. Bankers and other officials may update the latest banking technology based on this study. This study will be very useful to the policy makers for their effective implementation of innovative business practices in banking.

OBJECTIVE OF THE STUDY

To explore Technology driven innovative practices in banking sector in Tiruchirappalli District by using Garret ranking method.

RESEARCH METHODOLOGY

The present research study is descriptive in nature by using both primary and secondary data. Primary data were collected with the help of questionnaire which were distributed to the sample respondents. Secondary data were collected from various sources such as published and unpublished reports, records, documents and periodicals. Stratified random sampling methods will be adopted to identify the sample respondents. The study area was divided into various strata based on the geographical distinction such as zones as well as rural and urban. The Collected data were analyzed with appropriate and advanced statistical tools to scientifically prove the result of the study. The present research study is divided into five chapters such as Introduction and Research Methodology, Review of literature, Conceptual background, Analysis and Discussion and summary of findings, suggestions.

Table No – 4
Demographic Profile of the Respondents

Sl.No	Profile	Variables	Frequency	Percentage
1	**Gender**	Male	495	72.8
		Female	185	27.2
		Total	680	100.0
2	**Age**	Up to 30 years	211	31.0
		31 to 40 years	228	33.5
		41 to 50 years	154	22.6
		Above 50 years	87	12.8
		Total	680	100.0
3	**Marital Status**	Married	525	77.2
		Unmarried	155	22.8
		Total	680	100.0
4	**Family size**	Less than 3	156	22.9
		4 – 5	440	64.7
		More than 5	84	12.4
		Total	680	100.0
5	**Educational Qualification**	Illiterate	57	8.4
		School Level	156	22.9
		College Level	467	68.7
		Total	680	100.0
6	**Occupation**	Agriculture	157	23.1
		Private Job	254	37.4
		Government Job	56	8.2
		Business	171	25.1
		Professional	42	6.2
		Total	680	100.0
7	**Annual Income**	Below 1,00,000	70	10.3
		1,00,000 to 2,00,000	228	33.5
		2,00,000 to 3,00,000	241	35.4
		Above 3,00,000	141	20.7
		Total	680	100.0
8	**Banking Experience**	Less than 2 years	43	6.3
		3-5 years	112	16.5
		More than 5 years	525	77.2
		Total	680	100.0
9	**Area of Residence**	Rural	225	33.1
		Urban	343	50.4
		Semi-Urban	112	16.5
		Total	680	100.0

10	**Type of Account**	Savings	496	72.9
		Current	184	27.1
		Total	680	100.0

Source: Primary Data

The table 4 shows it reveals the demographic profile of the respondents in the study area. Out of 680 respondents, 76.8 per cent are male and 27.8 per cent are female.

As regards the age group of the respondents, 31.0 per cent of the respondents belong to the age group of up to 30 years, 33.5 per cent of the respondents belong to the age group of 31 to 40 years, 22.6 per cent of the respondents belong to the age group of 41 to 50 years and 12.8 per cent of the respondents belong to the age group above 50 years. A maximum number of respondents (33.5%) belong to the age group of 31 to 40 years, and a minimum number of respondents (12.8%) belong to the age group of above 50 years.

The table shows the marital status of the respondents, 77.2 per cent of the respondents belong to the marital status of married, and 22.8 per cent of the respondents belong to the marital status of unmarried.

The table shows the family size of the respondents, 22.9 per cent of the respondents belong to the less than 3, 64.7 per cent of the respondents belong to the 4 – 5 and 12.4 per cent of the respondents belong to the more than 5. A maximum number of respondents (64.7%) belong to the 4 – 5 and a minimum number of respondents (12.4%) belong to the more than 5.

The table shows the educational qualification of the respondents, 8.4 per cent of the respondents belong to the illiterate, 22.9 per cent of the respondents belong to the school level, and 68.7 per cent of the respondents belong to the college level. A maximum number of respondents (68.7%) belong to the college level and a minimum number of respondents (8.4%) belong to the illiterate.

The table shows the occupation of the respondents, 23.1 per cent of the respondents belong to the agricultural, 37.4 per cent of the respondents belong to the private job, 8.2 per cent of the respondents belong to the government job, 25.1 per cent of the respondents belong to the business and 6.2 per cent of the respondents belong to the professional. A maximum number of respondents (37.4%) belong to the private job and a minimum number of respondents (6.2%) belong to the professional.

The table shows the annual income of the respondents, 10.3 per cent of the respondents belong to the below 1,00,000, 33.5 per cent of the respondents belong to the 1,00,000 to 2,00,000, 35.4 per cent of the respondents belong to the 2,00,000 – 3,00,000, 20.7 per cent of the respondents belong to the above 3,00,000. A maximum number of respondents (35.4%) belong to the 2, 00,000 – 3, 00,000 and a minimum number of respondents (10.3%) belong to the below 1, 00,000.

The table shows the banking experience of the respondents, 6.3 per cent of the respondents belong to the less than 2 years, 16.5 per cent of the respondents belong to the 3 – 5 years, 77.2 per cent of the respondents belong to the more than 5 years. Therefore, a maximum number of (77.2%) respondents belong to up to more than 5 years and a minimum number of (6.3%) respondents belong to less than 2 years.

The table indicates that out of 680 respondents, as per area of residence, 33.1 per cent respondents are from rural area, 50.4 per cent respondents are from urban area and 16.5 per

cent respondents are from semi - urban Therefore, a maximum number of (50.4%) respondents belong to urban area and a minimum number of (16.5%) respondents belong to semi – urban.

The table shows the type of account of the respondents, 72.9 per cent of the respondents belong to the savings account, and 27.1 per cent of the respondents belong to the current account.

Table No – 5

Garret ranking method on Technology driven innovative practices

The garret ranks are calculated by using appropriate Garret ranking method using the formula as given below. Based on the Garret ranking table the value is obtained.

Percent position = $100 (R_{ij} – 0.5)/N_j$

Where, R_{ij} is the rank given for i^{th} item by the j^{th} sample respondents and N_j is the total rank given by the j^{th} sample respondents

S.No.	Factors	Ranks										
		1	2	3	4	5	6	7	8	9	10	Total
1	IT in Banking	99	57	43	84	85	86	99	71	-	56	680
2	Electronic Payment Services - E Cheques	71	100	84	58	44	42	70	84	71	56	680
3	Real Time Gross Settlement (RTGS)	72	57	115	112	113	56	42	43	28	42	680
4	Electronic Funds Transfer (EFT)	70	84	128	117	71	56	42	28	42	42	680
5	Electronic Clearing Service (ECS)	70	28	42	98	99	114	86	57	42	44	680
6	Automatic Teller Machine (ATM)	128	71	56	56	84	56	58	58	57	56	680
7	Point of Sale Terminal	56	70	58	42	56	58	85	99	85	71	680
8	Tele Banking	56	57	42	42	86	114	128	42	56	57	680
9	Artificial Intelligence	56	42	42	58	58	56	70	100	99	99	680
10	Block chain management	58	57	42	56	42	42	71	85	114	113	680

Source: Survey data

Table 5 shows the ranks given by sample respondents on the various items related to the Technology driven innovative practices. It reveals that most of the Technology driven innovative practices were favour to the items 1, 2, 3, 4, 5, 6, 7, 8, 9 and 10.

Table No – 3

Percentage position and Garret value

S.No.	Percent position	Garret value
1	100(1-0.5)/10 = 5	81
2	100(2-0.5)/10=15	74

3	100(3-0.5)/10= 25	63
4	100(4-0.5)/10= 35	58
5	100(5-0.5)/10= 45	52
6	100(6-0.5)/10 = 55	47
7	100(7-0.5)/10 = 65	42
8	100(8-0.5)/10= 75	40
9	100(9-0.5)/10= 85	29
10	100(10-0.5)/10= 95	18

Table 3 shows the percent position obtained using the Garret ranking formula as mentioned above and based on the percent position the Garret value is obtained from the Garret ranking table**.** The Garret ranking scores were shown in table.

Table No – 6

Garret ranking scores of factors of Technology driven innovative practices

S.No.	Factors	Ranks										
		1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**Total**
1	IT in Banking	8019	4218	2709	4872	4420	4042	4158	2840	-	1008	**36286**
2	Electronic Payment Services - E Cheques	5751	7400	5292	3364	2288	1974	2940	3360	2059	1008	**35436**
3	Real Time Gross Settlement (RTGS)	5832	4218	7245	6496	5876	2632	1764	1720	812	756	**37351**
4	Electronic Funds Transfer (EFT)	5670	6216	8064	6786	3692	2632	1764	1120	1218	756	**37918**
5	Electronic Clearing Service (ECS)	5670	2072	2646	5684	5148	5358	3612	2280	1218	792	**34480**
6	Automatic Teller Machine (ATM)	10368	5254	3528	3248	4368	2632	2436	2320	1653	1008	**36815**
7	Point of Sale Terminal	4536	5180	3654	2436	2912	2726	3570	3960	2465	1278	**32717**
8	Tele Banking	4536	4218	2646	2436	4472	5358	5376	1680	1624	1026	**33372**

9	Artificial Intelligence	4536	3108	2646	3364	3016	2632	2940	4000	2871	990	**30103**
10	Block chain management	4698	4218	2646	3248	2184	1974	2840	3400	3306	2034	**30548**

Source: Survey data

Table No – 7

Final Garret Ranks of factors of Technology driven innovative practices

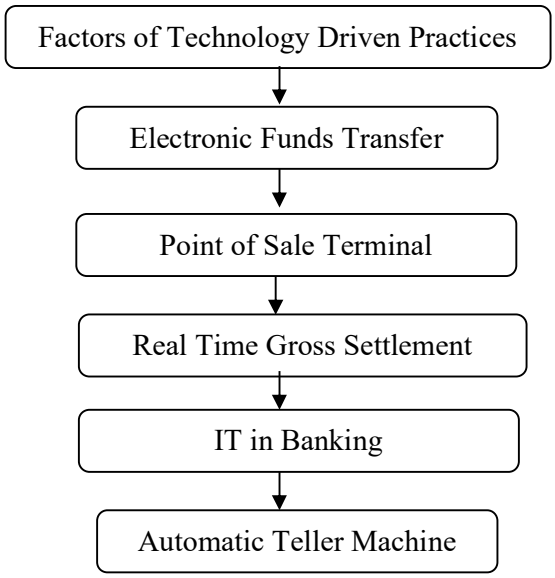
S.No.	Factors	Total	Average score	Rank
1	IT in Banking	36286	3629	4
2	Electronic Payment Services - E Cheques	35436	3544	6
3	Real Time Gross Settlement (RTGS)	37351	3735	3
4	Electronic Funds Transfer (EFT)	37918	3792	1
5	Electronic Clearing Service (ECS)	34480	3448	7
6	Automatic Teller Machine (ATM)	36815	3618	5
7	Point of Sale Terminal	32717	3772	2
8	Tele Banking	33372	3337	8
9	Artificial Intelligence	30103	3010	10
10	Block chain management	30548	3055	9

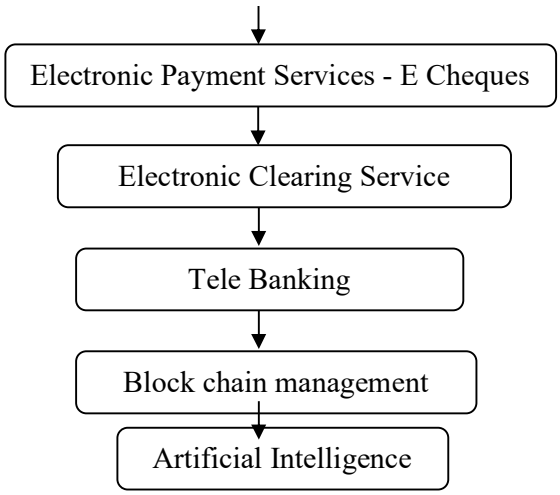
Source: Survey data

The final Garret ranks of factors Technology driven innovative practices were depicted in table. It shows that, the first rank is the "Electronic Funds Transfer" facility, followed by "Point of Sale Terminal" as second rank, "Real Time Gross Settlement " as third rank, "IT in Banking" as fourth rank, "Automatic Teller Machine" as fifth rank. "Electronic Payment Services - E Cheques" as sixth rank, "Electronic Clearing Service" as seventh rank, "Tele Banking" as eighth rank, "Block chain management" as ninth rank and "Artificial Intelligence" as tenth rank.

Chart No – 4

Factors of Technology Driven Practices





Customers are the kinds of any kind of business who should satisfy with our products, services and treatment. If the customers are satisfied with a particular products or services, they inform to other also to avoid that products or services. Therefore, banks should concentrate more on customer satisfaction through business innovation practices and updated technologies practices. The present chapter highlighted customer satisfaction towards business innovation practices with respect to service satisfaction and technology satisfaction.

SUGGESTIONS

Technology driven innovative practices of public sector banks in Tiruchirappalli District is one of the significant contributions of the study. There are many factors considering the technology driven innovative practices such as IT in Banking, Electronic Payment Services - E Cheques, Real Time Gross Settlement (RTGS), Electronic Funds Transfer (EFT), Electronic Clearing Service (ECS), Automatic Teller Machine (ATM), Point of Sale Terminal, Tele Banking, Artificial Intelligence, Block chain management. Among these factors, "Electronic Funds Transfer" is placed first followed by "Point of Sale Terminal" second, "Real Time Gross Settlement " third, "IT in Banking" fourth, "Automatic Teller Machine" fifth. "Electronic Payment Services - E Cheques" sixth, "Electronic Clearing Service" seventh, "Tele Banking" eighth, "Block chain management" ninth and "Artificial Intelligence" tenth. Therefore it is suggested that, technology driven innovative practices are inevitable in public sector banks in Tiruchirappalli District which influence the operational efficiencies, reputation and customer satisfaction.

CONCLUSION

Today is the technology oriented banking in the country with innovative and multidimensional services which are speedy and simple manner. When computerization process was initiated in our country, it involve lot of criticism and negative propaganda against computerization whereas now, became mandatory not only in banking but also in personnel life. During 2000, emerge of internet, revolution, banking sector were fully updated with information and communication technology for their business and services. Now banking sector is under fin-tech revolution stage with innovative technologies such as artificial intelligence, block chain technology, cloud based operation and virtual technology.

Technology based services provided by public sector banks in the study area is consistently motivating customer to update digital banking practices. Now, it is also possible with the help of available infrastructure and internet penetration. India is one of the fast growing technologies driven innovation in banking sector with global competition. This is the need of the hour which facilitates the emerging of business innovation in banking practices in public sector banks in the study area.

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