NAVIGATING THE FUTURE : UNVEILING THE DYNAMICS OF INDUSTRY 5.0

Editors

Dr.A.Mayil Murugan | Dr.S.Selvakumar | Dr.K.Hema Malini
Dr.Y.Natarajan | Dr.S.Chandrasekar | Dr.R.Vennila
Dr.A.Karuppusamy | Dr.S.Ramachandran | Dr.S.Krithika
Mrs.P.Jayalakshmi | Mrs G Sreedevi

PG & RESEARCH DEPARTMENT OF COMMERCE,
THE MADURA COLLEGE,
MADURAI

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Editor's Name:	**Dr.A.Mayil Murugan** **Dr.S.Selvakumar** **Dr.K.Hema Malini** **Dr.Y.Natarajan** **Dr.S.Chandrasekar** **Dr.R.Vennila** **Dr.A.Karuppusamy** **Dr.S.Ramachandran** **Dr.S.Krithika** **Mrs.P.Jayalakshmi** **Mrs G Sreedevi**
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PREFACE

In an era marked by technological revolutions, the concept of Industry 5.0 stands at the forefront, promising a paradigm shift in the way industries operate. As we navigate the ever-evolving landscape unravel the intricacies and possibilities that Industry 5.0 holds. "Navigating the Future" invites all attendees to be active contributors to the ongoing dialogue that shapes the future on industries, fostering a community of forward – thinkers and innovators who are well – equipped to drive positive change in the world of Industry 5.0

Industry 5.0 is regarded as a fifth industrial revolution in which consumers could satisfy their individual requirements as per the tastes and expectations. Although the repetitive tasks are done by robots in Industry 4.0 which is at the mass customization level, Industry 5.0 aims to perform mass personalization with help of Artificial Intelligence.

Industry 5.0 is expected to revolutionize the production process with higher autonomy to collaborative robots. Industry 5.0 is the futuristic industrial revolution which is expected to bring in more creativity and innovation in the products by allowing robots to perform repetitive tasks. It is expected to utilize the creative intellectual capability of human optimally. Moving from mass production to custom manufacturing techniques and production system digitization and intelligentization.

In the lines if above, the PG & Research Department of Commerce has organized two days Conference on the theme "Navigating the Future: Unveiling the Dynamics of Industry 5.0" with the following objectives, to understand and gain knowledge on the functional areas of Industry 5.0; to provide a holistic understanding of the multifaceted dynamics of Industry 5.0 and to enhance the research aptitude among the academicians, scholars towards dynamic changing environment.

To get more insights on the above theme, research articles were invited for presentation and publication. The Department has received fifty (50) articles on various sub-themes from Professors and research scholars of various colleges in Tamil Nadu, Kerala and Karnataka. The Editorial Board has reviewed and edited all the papers scrupulously and meticulously with plagiarism check.

The Editorial Board has recommended and forwarded all the articles in the form of Edited Book with ISBN Publication Number for disseminating the knowledge to all the stakeholders of Higher Education Institutions and Industry concerned.

This book is a comprehensive guide for understanding and utilizing on various themes to generate indepth knowledge on it and suitable for research scholars as well as corporates. We hope that you will find this book informative and inquisitive as much as we learnt it.

Editorial Board.

CONTENTS

A STUDY ON CUSTOMER PREFERENCE TOWARDS INTERNET OF THINGS (IOT) IN BANKING SECTOR WITH SPECIAL REFERENCE TO MADURAI CITY

Ms. K. Anandha Jothi Jeyalakshmi
Assistant Professor, PG & Research Department of Commerce,
The Madura College, Madurai, (Affiliated to Madurai Kamaraj University, Madurai).

Abstract

IoT has the potential to revolutionise the banking sector by providing faster, more efficient, and secure financial services. banks must also consider the challenges and considerations associated with the implementation of IoT, such as cost, data privacy and security, and interoperability. By carefully navigating these challenges, banks can reap the benefits of IoT and stay ahead of the curve in an increasingly competitive marketplace. An analysis of customer preference Internet of Things (IOT) in banking sector is important to overcome the challenges. Now it is also necessary to analyse the factors influencing the customer preference towards Internet of Things (IOT) in banking sector. This study was conducted only in Madurai city. This study samples were interviewed using interview schedule. The relationship between demographic variables and utilization pattern has been analysed using Chi-square distribution. The factors influencing Internet of Things (IOT) are ranked using Likert scaling technique.

Keywords: *Internet of Things (IOT), customer preference, demographic variables, Utilization pattern*

Introduction

IoT in banking refers to the use of connected devices and sensors together data and provide insights into customer behaviour and preferences. By leveraging this data, banks can offer personalised and convenient services, improve operations, and enhance security. IoT devices in banking include ATMs, mobile banking apps, wearable devices, and even smart home systems, etc. The adoptation of Internet of Things (IOT) services by customers, create a competitive environment enabling banks to promote their services. Now, it is essential to analyse the customer preference towards Internet of Things (IOT) services to make them more productive. The main objective of this study is to analyse the preference of the respondents (customers) and study the factors affecting the customer preferences. Recommendations of this study will explore new ideas to get customer preference towards Internet of Things (IOT) in banking sector.

Review of Literature

Fadoua Khanboubi et al (2019) in the article "Impact of digital trends using IoT on banking processes" revealed that despite the banks are digitalizing their services and providing better E- Services to their customers, still there is lack of complete digitalization for illiterate customers. It is not possible to educate all customers however, it is possible to train them by conducting training sessions, if possible.

Fatehi Almugari et al (2020) in the article "An examination of consumers' adoption of internet of things (IoT) in Indian banks" revealed that there is a significant impact of convenience on the adoption of Internet of Things in Indian banks, many researchers also

considered the convenience factor as an essential factor for motivating customers to adopt IoT services of banks. Moreover, there is a significant impact of privacy & safety on the adoption of IoT; there is no risk associated with adoption of such technology that is why privacy & safety is considered as an influential factor. They are affected by the information being shared by the Indian banks through IoT. That means the safety consideration is in depth in case of the bank's customers because financial data is quite personal.

Pooja Mishra, et al (2021) in the article "Role of Artificial Intelligence and Internet of Things in Promoting Banking and Financial Services During COVID-19: Pre and Post Effect" revealed that the successful implementation of AI and IoT in banking and financial institutions. Her study also explores the advantages and opportunities arising by the use of AI and IoT in the financial sector.

Parul Bajaj et al (2023) in the article "Factors Influencing Adoption of IoT and Its Impact on CRM in Banks: Examining the Moderating Role of Gender, Age, and Bank Ownership Type" revealed that that gender plays a significant role in deciding the adoption of innovation and technology. This study also confirmed that gender moderates the impact of performance, effort expectancy, and social influence. They explained that males are more likely to tend toward performance when accepting new technology. On the other hand, females are more inclined towards the effort expectancy in accepting or rejecting a new technology.

Nikhilesh kumar et al (2023) in the article "Impact of IoT on banking and financial services" revealed that the impact of IoT applications on Banking and Financial services by studying the applications cases, benefits, and future scope of IoT technology in the BFSI sector.

Methodology

This study is based on survey method. Due to time constraint, 250 samples were selected using convenient sampling method. This study collected data from different categories of respondents. Using interview scheduled method, primary data has been collected. This study used magazines, journals, reports, books and websites for collecting secondary data. Collected data have been interpreted using simple statistical tools like percentage, Likert scaling technique and Chi-square distribution.

Objectives of the Study

- To analyse the relationship existing between demographic variables and utilization of Internet of Things (IOT) banking services.
- To know the customer preference towards Internet of Things (IOT) in banking sector.
- To know the reasons for preferring Internet of Things (IOT) in banking sector.
- To evaluate the factors influencing customer preference towards Internet of Things (IOT) in banking sector.
- To offer valuable suggestions to get customer preference towards Internet of Things (IOT) in banking sector.

Limitations of the Study

This study concentrated only on customer preference towards Internet of Things (IOT) in banking sector in Madurai city.

Analysis and Interpretation of Data

This study deals with analysis of utilization of Internet of Things (IOT) in banking sector. For that the researcher analysed the data using various statistical tools. Some of the interpretations like analysis of relationship existing between demographic variables and utilization of Internet of Things (IOT) in banking sector are measured using Chi- square test. The factors affecting the customer preference and analyzing the reasons for preferring Internet of Things (IOT) are illustrated in the following tables for better understanding.

Demographic variables associated with utilization of Internet of Things (IOT) in banking sector

The relationship between demographic variables and utilization of Internet of Things (IOT) are listed below.

S.No	Particulars		Utilization				□2 value	Critical value	H_0 accepted/ rejected
			Often	Rarely	Never	Total			
1.	Age	Below 25 years	48 (50%)	15 (11%)	2 (9%)	65	63.42402	12.592 Df=6	H_0 Rejected
		26-35 years	24 (25%)	54 (41%)	4 (18%)	82			
		36-45 years	21 (22%)	42 (32%)	7 (32%)	70			
		Above 45 years	3 (3%)	21 (16%)	9 (41%)	33			
		Total	96 (100%)	132 (100%)	22 (100%)	250			
2.	Marital Status	Married	25 (26%)	39 (30%)	8 (36%)	72	1.005749	5.991 Df=2	H_0 Accepted
		Unmarried	71 (74%)	93 (70%)	14 (64%)	178			
		Total	96 (100%)	132 (100%)	22 (100%)	250			
		School level	32 (33%)	36 (27%)	6 (27%)	74			
		UG Courses	36 (38%)	67 (51%)	4 (18%)	107			
3.	Educational Qualification	PG Courses	20 (21%)	17 (13%)	7 (32%)	44	15.1404	12.592 Df=6	H_0 Rejected

		Others	8 (8%)	12 (9%)	5 (23%)	25			
		Total	96 (100%)	132 (100%)	22 (100%)	250			
4.	Occupation	Self Employed	14 (15%)	26 (20%)	7 (32%)	47	39.17385	12.592 Df=6	H_0 Rejected
		Public sector	13 (14%)	27 (20%)	4 (18%)	44			
		Private sector	58 (60%)	35 (27%)	2 (9%)	95			
		Others	11 (11%)	44 (33%)	9 (41%)	64			
		Total	96 (100%)	132 (100%)	22 (100%)	250			
5.	Monthly Income	Below 20,000	41 (43%)	69 (52%)	5 (23%)	115	15.89351	9.488 Df=4	H_0 Rejected
		20,001 – 40,000	43 (45%)	46 (35%)	8 (36%)	97			
		Above 40,000	12 (12%)	17 (13%)	9 (41%)	38			
		Total	96 (100%)	132 (100%)	22 (100%)	250			
6.	Location	Rural	8 (8%)	28 (21%)	12 (54%)	48	41.18451	9.488 Df=4	H_0 Rejected
		Semi Urban	26 (27%)	58 (44%)	7 (32%)	91			
		Urban	62 (65%)	46 (35%)	3 (14%)	111			
		Total	96 (100%)	132 (100%)	22 (100%)	250			

The above table revealed the relationship between various demographic variables and the utilization pattern of Internet of Things (IOT) in banking sector. Chi-square distribution has been used to test the relationship between demographic variables and utilization pattern of Internet of Things (IOT). The following are the results of the test.

Age: The relationship between different age group of respondents and utilization pattern of Internet of Things (IOT) has been measured.

H_0 – There is no significant relationship between different age group of the respondents and their utilization pattern.

Inference: As per the results of Chi-square test the table value for degrees of freedom 6 at 5% level of significant is 12.592 and the calculated value is 63.42402. As the calculated value is greater than the table value of Chi-square distribution, the null hypothesis is rejected. It was inferred that there is a significant relationship between different age group of the respondents and their utilization.

Marital status: Using Chi-square distribution the relationship between marital status of respondents and utilization pattern of Internet of Things (IOT) has been measured.

H_0 – There is no significant relationship between marital status of the respondents and their utilization pattern.

Inference: It was inferred that the table value for degrees of freedom 2 at 5% level of significant is 5.991 and the calculated value is 1.00575. As the calculated value is greater than the table value of Chi-square distribution, the null hypothesis is rejected. It was inferred that there is no significant relationship between marital status of the respondents and their utilization.

Educational Qualification: The relationship between different educational qualification of respondents and utilization pattern of Internet of Things (IOT) has been measured.

H_0 – There is no significant relationship between educational qualification of the respondents and their utilization pattern.

Inference: It was inferred that the table value for degrees of freedom 6 at 5% level of significant is 12.592 and the calculated value is 15.1404. As the calculated value is greater than the table value, the null hypothesis is rejected. It was inferred that there is a significant relationship between different educational qualification of the respondents and their utilization.

Occupation: The relationship between different occupation of respondents and utilization pattern of Internet of Things (IOT) has been measured.

H_0 – There is no significant relationship between occupation of the respondents and their utilization pattern.

Inference: As per the results of Chi-square test the table value for degrees of freedom 6 at 5% level of significant is 12.592 and the calculated value is 39.17385. As the calculated value is greater than the table value, the null hypothesis is rejected. It was inferred that there is a significant relationship between different occupation of the respondents and their utilization.

Monthly income: The relationship between different monthly income of respondents and utilization pattern of Internet of Things (IOT) has been measured.

H_0 – There is no significant relationship between monthly income of the respondents and their utilization pattern.

Inference: As per the results of Chi-square test the table value for degrees of freedom 4 at 5% level of significant is 9.488 and the calculated value is 15.89351. As the calculated value is greater than the table value of Chi-square distribution, the null hypothesis is rejected. It was inferred that there is a significant relationship between different monthly income of the respondents and their utilization.

Location: The relationship between different location of respondents and utilization pattern of Internet of Things (IOT) has been measured.

H_0 – There is no significant relationship between location of the respondents and their utilization pattern.

Inference: As per the results of Chi-square test the table value for degrees of freedom 4

at 5% level of significant is 9.488 and the calculated value is 41.18451 As the calculated value is greater than the table value of Chi-square distribution, the null hypothesis is rejected. It was inferred that there is a significant relationship between different location of the respondents and their utilization.

An Analysis of customer preferences towards Internet of Things (IOT) in banking sector Preferences of Internet of Things (IOT) banking services are listed in the following table.

Internet of Things (IOT) banking services	No. of Respondents	Percentage (%)
ATM / Debit card services	95	38%
Wearable device payments	28	11%
Smart terminals	61	24%
Smart transaction verification	22	9%
Wi-fi connectivity solutions in branches	24	10%
Automated Queuing system	12	5%
Advanced security system	8	3%
Total	250	100%

The above table revealed the customer preference of utilizing Internet of Things (IOT). Majority (38%) of respondents prefer 'ATM/ Debit card services', 24% of respondents prefer Smart terminals, 11% of respondents prefer 'Wearable device payments', 10% of respondents prefer 'Wi-fi connectivity solutions in branches', 9% of respondents prefer 'Smart transaction verification', 5% of respondents prefer 'Automated Queuing system', 3% of respondents prefer 'Advanced security system'.

An analysis of reasons for preferring Internet of Things (IOT) in banking sector

Reasons for preferring Internet of Things (IOT) bank services are listed in the following table.

Reasons	No. of Respondents	Percentage (%)
It saves precious time.	72	29%
It reduces transportation and other cost.	34	14%
It is more convenient to everyone.	38	15%
Quick processing of transactions.	36	14%
Transactions can be made at any places.	24	10%
Transactions can be done with accuracy.	28	11%
Safety transactions can be carried out.	18	7%
Total	250	100%

The above table reveals that 29% of respondents are using Internet of Things (IOT) for saving time, 15% of respondents are using Internet of Things (IOT) for their convenience, 14% of respondents are using Internet of Things (IOT) for reducing cost and for quick processing, 11% of respondents are using Internet of Things (IOT) for accuracy, 10% of respondents are using Internet of Things (IOT) for doing transaction at any places, 7% of

respondents are using Internet of Things (IOT) for safety transactions.

Factors influencing customer preference towards Internet of Things (IOT) in banking sector

The factors that are influencing the customer preference towards Internet of Things (IOT) are listed in the following table.

S. No	Factors	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Total score	Mean score	Rank
1.	Demographic variables	490 (98)	336 (84)	15 (5)	64 (32)	31 (31)	936 (250)	3.74	I
2.	Technical knowledge	410 (82)	292 (73)	8 (24)	61 (122)	26 (26)	874 (250)	3.50	II
3.	Unawareness of services available	285 (57)	308 (77)	66 (22)	96 (48)	46 (46)	801	3.21	III
4.	Fear of Internet	320 (64)	208 (52)	36 (12)	152 (76)	46 (46)	762 (250)	3.05	IV
5.	Need of the customer	190 (38)	196 (49)	84 (28)	118 (59)	76 (76)	664	2.7	V
6.	Trust of conventional method	220 (44)	128 (32)	48 (16)	192 (96)	62 (62)	650 (250)	2.6	VI

Using Likert scaling technique, the researcher interpreted the collected data. It was observed that the factor "Demographic variable" has secured 936 score and got first rank. The factor "Technical Knowledge" has secured 874 score and got second rank. The factor

"Unawareness of services available" has secured 801 score and ranked third. The factor

"Fear of Internet" has secured 762 score and got fourth rank. The factor "Need of the customer" has secured 664 score and got fifth rank. The factor "Trust of conventional method" has secured 650 score and got sixth rank.

Inference:

It was inferred that the factor "Demographic variable" influenced the customer preference towards Internet of Things (IOT) at greater level and got first rank.

Suggestions to get customer preference towards Internet of Things (IOT) in banking sector

Respondents' suggestions to get customer preference towards Internet of Things (IOT) are listed below.

S. No	Suggestions	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Total score	Mean score	Rank
1.	Availability of Internet of Things (IOT) banking services should be informed and new gadgets should be introduced	485 (97)	360 (90)	36 (12)	58 (29)	22 (22)	961 (250)	3.84	I
2.	Quality of services should be increased	435 (87)	272 (68)	39 (13)	132 (66)	16 (16)	894 (250)	3.58	II
3.	Transactions should be carried out securely	360 (72)	192 (48)	24 (8)	168 (84)	38 (38)	782 (250)	3.13	III
4.	Operating methods should be instructed	230 (46)	352 (88)	48 (16)	84 (42)	58 (58)	772 (250)	3.10	IV
5.	Network problems should be reduced	210 (42)	136 (34)	72 (24)	192 (96)	54 (54)	664 (250)	2.66	V
6.	Need based services should be offered	160 (32)	220 (55)	66 (22)	150 (75)	66 (66)	662 (250)	2.65	VI

The researcher analysed and interpreted the collected data using Likert scaling technique. It was observed that the suggestion "Availability of Internet of Things (IOT) banking services should be informed and new gadgets should be introduced" has secured 961 score and got first rank. The suggestion "Quality of services should be increased" has secured 894 score and got second rank. The suggestion "Transactions should be carried out securely" has secured 782 score and got third rank. The suggestion "Operating methods should be instructed" has secured 772 score and got fourth rank. The suggestion

"Network problems should be reduced" has secured 664 score and got fifth rank. The suggestion "Need based services should be offered" has secured 662 score and got sixth rank. Inference:

It was inferred that the suggestion "Availability of Internet of Things (IOT) banking services should be informed and new gadgets should be introduced" got first rank so the respondents want to be informed.

Findings

The researcher interpreted the collected data and summarized the following findings.

- Null hypothesis formed to evaluate the relationship between demographic variables like age, educational qualification, occupation, monthly income, location of the respondents and the utilization of Internet of Things (IOT) banking services are rejected.
- Null hypothesis formed to evaluate the relationship between marital status and the

utilization of Internet of Things (IOT) banking services is accepted.

- Majority (38%) of respondents prefers ATM/ Debit card services.
- Majority (29%) of respondents accepted that they use the Internet of Things (IOT) services for saving time.
- Demographic variable factor, which is mainly influenced the utilization of Internet of Things (IOT) services secured 936 score and got first rank.
- The suggestion "Availability of Internet of Things (IOT) banking services should be informed and new gadgets should be introduced" secured 961 score and got first rank.

Suggestion

Banks introduce various types of Internet of Things (IOT) services to attract and satisfy the need of the customers. There are various factors which are influencing customer preference towards Internet of Things (IOT) Banking services. Demographic variables like age, marital status, educational qualification, occupation, monthly income and location of the respondents have mainly affected the effective utilization. To overcome and improve the customer preference towards Internet of Things (IOT) services, the bank should periodically notify the customers with the up-to-date availability of Internet of Things (IOT) services to its customer and give instructions to use the particular service. It is important that the bank should keep transactions very safe because security has become one of the major concerns for banks. In every developed country despite the advent of new technologies large group of customers still refuses to opt for Internet of Things (IOT) facilities due to uncertainty and security concerns.

Conclusion

This study analysed the utilization pattern, customer preference, usage, reasons and the influencing factors of Internet of Things (IOT) bank services. It also revealed the respondents' suggestion. Suggestion of this study will attract the customers and increase the preference towards Internet of Things (IOT) banking services.

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