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Exploring The Factors That Influence Adoption of Internet of Things (IOT) Devices at Home and Their Impact on User Experience in Chennai

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Abstract

The Internet of Things (IoT) represents a major technological shift that links everyday objects through digital networks, allowing them to share data, automate functions, and support smarter actions. This study examines the factors influencing the adoption of Internet of Things (IoT) devices at home and their impact on user experience among households in Chennai. The research focuses on four key adoption factors, perceived usefulness, perceived convenience, connectivity and accessibility, and security and privacy, to understand how these perceptions shape users' overall experience with home IoT technologies. A descriptive and quantitative research design was employed, and primary data were collected from 200 home IoT users using a structured questionnaire. Statistical techniques, including correlation and multiple regression analysis, were applied to assess both individual and collective effects of adoption factors on user experience.

The results reveal that perceived usefulness, perceived convenience, and connectivity and accessibility have a significant positive influence on user experience, while security and privacy do not show a significant direct effect in the present context. The findings also indicate a strong positive relationship between overall adoption factors and user experience. The study offers practical insights for technology developers and service providers seeking to enhance user experience and support sustained adoption of home IoT devices in urban settings.

Introduction

The Internet of Things (IoT) has emerged as a transformative technological paradigm that connects everyday physical objects to digital networks, enabling data exchange, automation, and intelligent decision-making (Atzori et al., 2010; Gubbi et al., 2013; Wortmann & Flüchter, 2015). In recent years, IoT has moved beyond industrial and organizational settings into domestic environments, giving rise to smart homes equipped with connected appliances, security systems, energy management tools, and personal assistance devices (Yang et al., 2017; Stojkoska & Trivodaliev, 2017; Nord et al., 2019).

The growing diffusion of home IoT devices is largely attributed to their ability to enhance daily living through improved convenience, real-time connectivity, automation, and personalized control, thereby reshaping how users interact with technology in their private spaces (Weinberg et al., 2015; Hsu & Lin, 2016; Ng & Wakenshaw, 2017). As urban households increasingly adopt smart technologies, understanding the drivers that influence IoT adoption has become an important area of academic and practical inquiry (Porter & Heppelmann, 2014; Saarikko et al., 2017).

Alongside functional benefits, prior research emphasises that user perceptions play a decisive role in shaping IoT adoption and post-adoption experiences. Studies grounded in technology adoption and user acceptance perspectives indicate that perceived usefulness, perceived convenience, connectivity and accessibility, and security and privacy concerns are among the most influential factors affecting users' willingness to adopt and continue using IoT devices (Hsu et al., 2016; Singh et al., 2017; Fatehi et al., 2020). While seamless connectivity and ease of use enhance user experience, concerns related to data privacy, surveillance, and system security can undermine trust and satisfaction if not adequately addressed (Weber, 2015; Balte et al., 2015; Yuchen et al., 2017).

Recent studies further argue that the success of IoT in domestic settings depends not only on technological sophistication but also on how users experience, perceive, and integrate these devices into their everyday routines (Xuequn Wang et al., 2020; Hidalgo et al., 2022; Anurag et al., 2025). In rapidly urbanising cities such as Chennai, where digital infrastructure and smart living initiatives are expanding, examining the factors influencing home IoT adoption and their impact on user experience is both timely and relevant (Savitha, 2021; Hassanain et al., 2024).

Statement Of Research Problem

The increasing availability of Internet of Things (IoT) devices for home use has not translated into uniform or seamless adoption across households. Although smart home technologies promise improved convenience, automation, and efficiency, many users continue to face practical difficulties in understanding the real usefulness of these devices in their daily lives (Atzori et al., 2010; Gubbi et al., 2013; Porter & Heppelmann, 2014). Issues related to perceived usefulness and convenience often arise when IoT devices fail to integrate smoothly with existing household routines or when their functionalities are not fully understood by users (Hsu & Lin, 2016; Yang et al., 2017).

In addition, inconsistent connectivity, limited interoperability, and accessibility constraints frequently disrupt the performance of home IoT systems, leading to frustration and reduced satisfaction among users (Stojkoska & Trivodaliev, 2017; Nord et al., 2019). These challenges raise concerns about whether IoT technologies genuinely enhance the home experience or merely add technological complexity. Another critical problem associated with home IoT adoption relates to security and privacy. IoT devices continuously collect, store, and transmit personal data, increasing users' exposure to risks such as data breaches, unauthorized access, and surveillance (Weber, 2015; Balte et al., 2015; Yuchen et al., 2017). While some users are willing to overlook these risks in favour of convenience, persistent concerns about data misuse and lack of transparency can undermine trust and negatively affect user experience (Weinberg et al., 2015; Xuequn Wang et al., 2020).

In the Indian urban context, particularly in cities like Chennai, variations in digital literacy, infrastructure reliability, and awareness further intensify these issues (Savitha, 2021; Hassanain et al., 2024). As a result, households often experience uncertainty and mixed satisfaction with IoT devices, highlighting the need to clearly understand the problems surrounding perceived usefulness, convenience, connectivity and accessibility, and security and privacy in shaping user experience with home IoT technologies.

Literature Reviews and Research Gap

1. Literature Reviews

Earlier studies on the Internet of Things (IoT) clearly indicate that adoption decisions are strongly influenced by how users perceive the usefulness and functional value of connected devices. Research on IoT product characteristics shows that features such as connectivity, intelligence, convenience, and security significantly enhance consumers' willingness to adopt IoT solutions by improving their overall experience with the product (YaPing Chang et al., 2014). This line of research highlights that user experience plays a central role in converting technical capabilities into favourable behavioural responses. Supporting this view, studies in service and marketing contexts emphasise that positive user experiences created through digital and connected technologies increase satisfaction, repeat usage, and positive word-of-mouth, thereby contributing to long-term success (Bhattacharjee et al., 2016; Leszek & Jaroslaw, 2017).

Another stream of literature focuses on perceived convenience, accessibility, and connectivity as key motivators of IoT adoption. Studies on smart home technologies reveal that users are particularly attracted to automation, ease of access, and time-saving benefits offered by IoT devices (Xuequn Wang et al., 2020). Empirical evidence from India further confirms that convenience and awareness significantly influence IoT adoption, while demographic characteristics affect the intensity and pattern of usage (Fatehi et al., 2020; Savitha, 2021). Research conducted in sectors such as banking and retail also demonstrates that reliable connectivity and easy accessibility enhance

service efficiency and strengthen user relationships, reinforcing the perceived value of IoT-enabled systems (Parul Bajaj et al., 2023; Meenakshi & Praveen, 2025).

Alongside these benefits, privacy and security concerns are repeatedly identified as major challenges influencing IoT adoption and continued usage. Several studies note that although IoT devices involve continuous data collection, users often focus more on convenience and functional gains than on potential privacy risks (Xuequn Wang et al., 2020).

However, evidence from customer service, facilities management, and digital marketing contexts suggests that weak security mechanisms and lack of data protection can negatively affect trust and user experience (Hebah & Moath, 2019; Masoud, 2021; Hassanain et al., 2024). Recent research on IoT user experience further underlines the importance of transparent data practices, privacy-aware design, and usability standards in shaping positive interactions with connected devices (Hidalgo et al., 2022; Anurag et al., 2025).

2. Research Gap

Although extensive research exists on IoT adoption, most studies focus on organizational or industry-level applications such as banking, healthcare, logistics, and retail, with limited emphasis on household IoT usage (Fatehi et al., 2020; Palm et al., 2025). Existing studies also tend to examine adoption factors or outcomes separately, rather than linking key adoption determinants, perceived usefulness, perceived convenience, connectivity and accessibility, and security and privacy, with user experience in a single framework. Moreover, empirical evidence specific to metropolitan Indian cities remains limited. In particular, there is a lack of focused research examining how home IoT adoption factors influence user experience among urban households in Chennai, indicating a clear need for the present study.

Conceptual Framework And Hypotheses Development

1. Factors influencing IOT Adoption

Internet of Things (IoT) adoption refers to the process by which individuals or households decide to accept, install, and regularly use interconnected smart devices that communicate through the internet to perform automated or data-driven functions (Atzori et al., 2010; Gubbi et al., 2013; Lee & Lee, 2015). In home environments, IoT adoption is not limited to initial purchase decisions but extends to continuous usage and integration of these devices into everyday routines. Prior studies indicate that adoption is influenced by users' perceptions of the value and reliability of IoT technologies rather than technical features alone (Hsu & Lin, 2016; Nord et al., 2019).

Prior studies indicate that users' engagement with IoT technologies is shaped by multiple interrelated factors. Functional value in terms of improved efficiency, comfort, and control encourages favourable perceptions, while ease of use, automation, and time-saving features enhance everyday interaction with IoT devices (Porter & Heppelmann, 2014; Weinberg et al., 2015). Reliable connectivity and seamless access further support consistent device performance and usability (Stojkoska & Trivodaliev, 2017), whereas confidence in data security and privacy strengthens trust and supports continued use of IoT technologies in home environments (Weber, 2015; Balte et al., 2015). The study considered the following factors as Adoption factors of IOT devices at home environment:

- ***Perceived Usefulness***

Perceived usefulness reflects users' beliefs that IoT devices meaningfully improve household functioning by enhancing efficiency, control, and decision-making. Prior studies on technology adoption indicate that when users clearly recognise practical benefits, such as automation, monitoring, and improved management of daily activities, their interactions with technology become more positive and purposeful (Davis, 1989; Porter & Heppelmann, 2014; Hsu & Lin, 2016). In smart home settings, IoT devices that demonstrably support everyday needs tend to generate favourable cognitive evaluations and emotional responses, which together shape user experience (Yang et al., 2017; Xuequn Wang et al., 2020). Hence, usefulness is expected to play a central role in determining how users perceive and evaluate their experience with home IoT technologies. Based on the discussion, the following hypothesis is framed:

H1: Perceived usefulness has a significant influence on user experience with home IoT devices.

- ***Perceived Convenience***

Perceived convenience refers to the extent to which IoT devices reduce effort, save time, and integrate smoothly into users' daily routines. Literature on smart technologies consistently shows that ease of operation, intuitive interfaces, and remote accessibility enhance users' comfort and satisfaction (Weinberg et al., 2015; Hsu et al., 2016). In domestic environments, IoT solutions that simplify routine tasks and minimise manual intervention allow users to experience technology as supportive rather than disruptive (Fatehi et al., 2020; Savitha, 2021). When users

perceive IoT devices as convenient and easy to manage, their overall interaction quality improves, leading to a more positive user experience. Hence, the study proposed the following hypothesis:

H2: Perceived convenience has a significant influence on user experience with home IoT devices.

- ***Connectivity and Accessibility***

Connectivity and accessibility represent the technological foundation of IoT systems, encompassing stable network performance, interoperability among devices, and uninterrupted user access. Research on IoT ecosystems emphasises that reliable connectivity and seamless access are essential for ensuring consistent performance and usability (Atzori et al., 2010; Stojkoska & Trivodaliev, 2017). Interruptions in connectivity, delayed responsiveness, or limited device compatibility often result in dissatisfaction and frustration among users (Nord et al., 2019; Saarikko et al., 2017). In contrast, robust connectivity and easy accessibility enable users to fully utilise IoT functionalities, thereby enhancing confidence, satisfaction, and overall user experience. Accordingly, the following hypotheses are formulated for the study:

H3: Connectivity and accessibility have a significant influence on user experience with home IoT devices.

- **Security and Privacy**

Security and privacy concerns relate to users' perceptions of data protection, system safety, and control over personal information within IoT environments. Existing literature highlights that fear of data misuse, unauthorized access, and surveillance can weaken trust and negatively affect users' comfort with connected devices (Weber, 2015; Balte et al., 2015; Yuchen et al., 2017). Although users may initially prioritise functional benefits, long-term positive experiences depend on confidence in security safeguards and privacy assurance (Weinberg et al., 2015; Xuequn Wang et al., 2020). When users feel that their personal data are protected and systems are secure, they are more likely to engage positively and consistently with IoT technologies. Consequently, the study frames the following hypotheses for empirical examination:

H4: Security and privacy have a significant influence on user experience with home IoT devices.

H5: Adoption factors have significant influence on user experience with home IoT devices.

2. User Experience

User experience in the context of home-based Internet of Things (IoT) devices represents users' overall perceptions formed through continuous interaction with connected technologies in everyday living environments. It encompasses functional responses such as ease of operation and system reliability, as well as emotional responses such as comfort, confidence, and satisfaction derived from regular use (Leszek & Jaroslaw, 2017; Yang et al., 2017a; Hidalgo et al., 2022). In smart homes, user experience is shaped by how effectively IoT devices support routine household activities, respond promptly to user commands, and adapt to changing user needs. When IoT systems function smoothly and align well with daily lifestyles, users tend to perceive the technology as supportive and value-adding rather than intrusive or complex (Xuequn Wang et al., 2020; Nord et al., 2019).

Prior studies further indicate that user experience plays a crucial role in determining sustained usage and long-term acceptance of IoT technologies. Positive experiences strengthen trust, increase satisfaction, and encourage habitual engagement with connected devices, while negative experiences, arising from usability issues, connectivity failures, or privacy concerns, can lead to frustration and eventual disengagement (Bhattacharjee et al., 2016; Weinberg et al., 2015). In urban household settings, user experience reflects the combined influence of multiple adoption-related perceptions and serves as an important indicator of the overall success of IoT implementation (Savitha, 2021; Anurag et al., 2025). Understanding user experience is therefore essential for evaluating how effectively IoT devices deliver meaningful value to home users beyond their technical capabilities. On the basis of the theoretical and empirical insights discussed, the following hypotheses are developed:

H6: Adoption factors have significant relationship with user experience with home IoT devices.

The Conceptual Model

The conceptual framework of the present study, depicted in Figure 1, explains how selected adoption factors of Internet of Things (IoT) devices used at home influence users' overall experience. The framework identifies Perceived Usefulness, Perceived Convenience, Connectivity & Accessibility, and Security & Privacy as the key adoption-related factors that shape user experience in a home IoT environment. Each of these factors is proposed to exert a direct influence on user experience (H1 to H4), reflecting users' evaluations of functional benefits, ease of interaction, reliability of access,

and confidence in data protection while engaging with IoT devices in domestic settings.

In addition to these direct relationships, the model also includes an overall effect of IoT adoption factors on user experience (H5), representing the combined influence of adoption perceptions on experiential outcomes. This path captures the cumulative impact of multiple adoption dimensions rather than a feedback or reciprocal relationship. The framework further acknowledges an extended association (H6) to reflect the broader influence of adoption-related perceptions at the aggregate level.

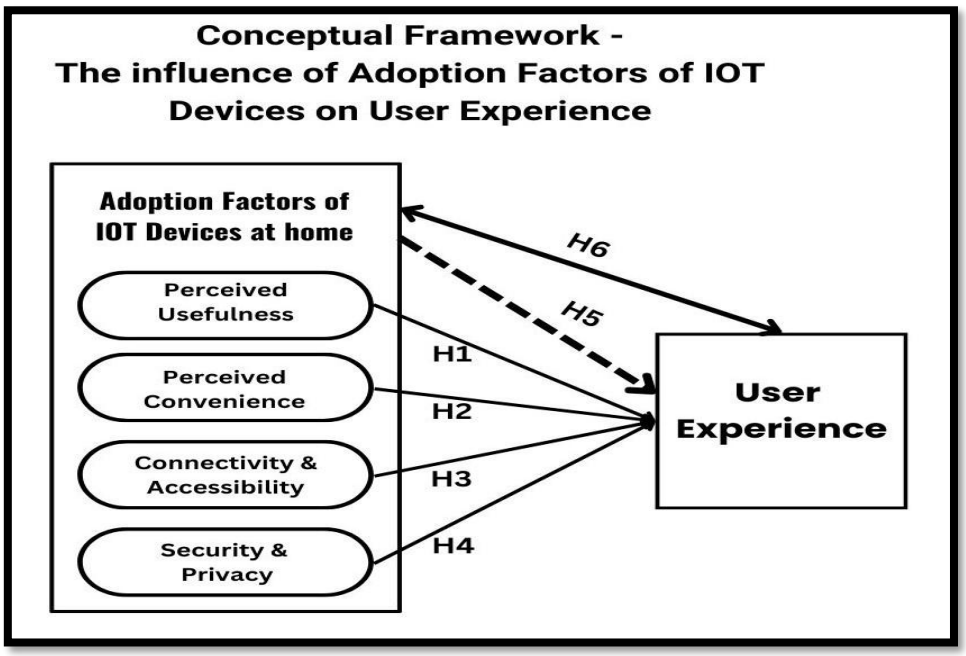

Figure 1. Conceptual Framework – Influence of Adoption Factors of IoT Devices on User Experience.
Source: The Author.

By structuring both individual and combined effects without assuming reciprocity, the model provides a clear and logical basis for examining how adoption factors shape user experience. The framework thus offers a systematic approach for analysing the experiential consequences of home IoT adoption among users in Chennai.

Methodology Adopted

The present study adopted a descriptive and quantitative research design to examine how selected adoption factors influence user experience with Internet of Things (IoT) devices used at home. The target population comprised home users of IoT devices residing in Chennai who actively use smart devices such as connected appliances, security systems, or home automation tools. As no official database of home IoT users was available, a combination of purposive and convenience sampling techniques was employed. Purposive sampling ensured the inclusion of respondents with actual experience in using IoT devices at home, while convenience sampling enabled practical access to participants through residential contacts and informal networks. To ensure adequate representation and statistical suitability, a total of 200 home IoT users were selected for the study, which is considered appropriate for behavioural and technology adoption research (Aliaga, 2002; Muijs, 2004).

Data were collected using a structured questionnaire developed in alignment with the study's conceptual framework. The instrument measured four adoption-related factors, Perceived Usefulness, Perceived Convenience, Connectivity & Accessibility, and Security & Privacy, along with User Experience as the outcome variable. Each construct was operationalised through multiple statements refined from established literature on technology adoption and IoT usage. Responses for the adoption factors were captured using a five-point Likert scale ranging from "Strongly Disagree" (1) to "Strongly Agree" (5). For User Experience, respondents evaluated their overall experience with home IoT devices using a five-point scale ranging from Very Poor (VP) to Very Good (VG), reflecting their actual interaction and satisfaction levels.

The questionnaire included sections on demographic details and perception-based statements related to IoT adoption and user experience. Expert review was undertaken to

ensure clarity and content adequacy. Participation was voluntary, and informed consent was obtained from all respondents. The collected data were analysed using appropriate descriptive and inferential statistical techniques to examine the influence of IoT adoption factors on user experience, with conclusions drawn solely from the primary data.

Data Analysis and Results

1. Demographic and Usage Profile of Consumers with respect to IOT Devices

The demographic distribution of the respondents shows that male users (56%, n = 112) slightly outnumber female users (44%, n = 88) among home IoT users in Chennai. In terms of age, a clear majority belong to the 19–30 years group (57%, n = 114), followed by users aged 31–50 years (27%, n = 54), while those above 50 years (16%, n = 32) form a smaller proportion, indicating that younger users are more actively engaged with IoT technologies at home. Regarding educational qualification, UG/PG holders constitute the largest segment (53.5%, n = 107), followed by School/Diploma holders (32%, n = 64) and professionally qualified users (14.5%, n = 29), suggesting that higher educational attainment is more common among IoT users.

With respect to the type of IoT devices currently used, smart home appliances account for the highest share (40.5%, n = 81), followed by wearable devices (27.5%, n = 55) and smart energy meters (16%, n = 32), while smart home security devices (9.5%, n = 19) and smart healthcare devices (6.5%, n = 13) are less frequently used. In terms of experience, a majority of respondents have been using IoT devices for 1–5 years (63.5%, n = 127), compared to 36.5% (n = 73) who reported usage for more than five years. Finally, the number of IoT devices used at home indicates limited penetration, as 59% (n = 118) use only one device, 24% (n = 48) use two to three devices, and only 17% (n = 34) use more than three devices, reflecting an early but growing stage of IoT adoption among households.

2. Impact of Adoption Factors on User Experience with IOT devices at home

The multiple regression results explain the influence of IoT adoption factors on User Experience with IoT devices at home and provide clear support for the proposed hypotheses. The model summary shows a strong relationship between the independent variables and user experience (R = 0.823), with an R^2 value of 0.677, indicating that 67.7% of the variation in user experience is explained by perceived usefulness, perceived convenience, connectivity & accessibility, and security & privacy. The adjusted R^2 value of 0.671 confirms the robustness of the model. The F-statistic is significant (F = 102.300, p < 0.001), demonstrating that the overall regression model is statistically valid.

Table 1: Multiple Regression Analysis

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	SE	Beta			Tolerance	VIF
1	(Constant)	1.085	.832		1.305	.194		
	Perceived Usefulness	.544	.105	.334	5.204	.000**	.402	2.485
	Perceived Convenience	.538	.092	.350	5.877	.000**	.466	2.145
	Connectivity & Accessibility	.447	.127	.242	3.522	.001**	.349	2.861
	Security & Privacy	.038	.087	.025	.435	.664	.489	2.045

Dependent Variable: User Experience with IOT devices at home
Note: **1% level of Significance

Collinearity statistics indicate acceptable tolerance (Above 0.10) and VIF (lesser than 5 or 10) values for all predictors, confirming the absence of multicollinearity issues (higher Tolerance and lower VIF). Overall, the findings suggest that functional value, convenience, and reliable connectivity play a decisive role in shaping user experience with home IoT devices, while security and privacy concerns do not significantly influence experiential outcomes in the present context.

An examination of the regression coefficients reveals that Perceived Usefulness has a significant and positive influence on user experience (B = 0.544, β = 0.334, t = 5.204, p < 0.001), supporting H1. Similarly, Perceived Convenience emerges as the strongest predictor of user experience (B = 0.538, β = 0.350, t = 5.877, p < 0.001), leading to the acceptance of H2. Connectivity & Accessibility also shows a significant positive effect on user experience (B = 0.447, β = 0.242, t = 3.522, p = 0.001), thereby

supporting H3. However, Security & Privacy does not exhibit a statistically significant influence on user experience (B = 0.038, β = 0.025, t = 0.435, p = 0.664), resulting in the rejection of H4. Hence, H5, which proposes that IoT adoption factors collectively influence user experience, is accepted.

3. Relationship between Adoption Factors and User Experience with IOT devices at home

H6: Adoption factors have significant relationship with user experience with home IoT devices.

Pearson's product–moment correlation analysis was employed to examine the relationship between adoption factors and user experience with home IoT devices.

Table 2: Correlation Analysis

VARIABLE	N	*'r'* VALUE	*P* - VALUE	RELATIONSHIP	RESULT	
Adoption Factors and User Experience with IOT devices	**200**	**0.805****	**0.000**	**Positive**	**Significant**	**H6: Supported**

****. Correlation is significant at the 0.01 level (2-tailed).**

The results reveal a strong and positive correlation between the two variables, with a correlation coefficient of r = 0.805, which is statistically significant at the 1% level (p = 0.000). This indicates that higher levels of favourable adoption-related perceptions, covering perceived usefulness, perceived convenience, connectivity & accessibility, and security & privacy, are closely associated with better user experience among home IoT users in Chennai. Since the p-value is well below the 0.01 significance threshold, H6 is supported. The finding confirms that adoption factors are significantly related to user experience, suggesting that improvements in adoption-related perceptions are likely to enhance users' overall interaction, satisfaction, and engagement with IoT devices in home environments.

The following Table 3 presents the results of the hypotheses test in summarised way:

Table 3: Summary of Hypotheses Testing

Hypothesis	Variables	P Value	Decision
H1	Perceived Usefulness h User Experience with IOT devices	0.000	Supported
H2	Perceived Convenience h User Experience with IOT devices	0. 000	Supported
H3	Connectivity & Accessibility h User Experience with IOT devices	0.001	Supported
H4	Security & Privacy h User Experience with IOT devices	0.664	Not Supported
H5	Adoption Factors h User Experience with IOT devices	0.000	Supported
H6	Adoption Factors Q User Experience with IOT devices *(r = 0.805)*	0.000	Supported

Table 3 provides a concise summary of the hypothesis testing results related to the influence of IoT adoption factors on user experience with home IoT devices. The findings show that Perceived Usefulness (H1) and Perceived Convenience (H2) have a statistically significant impact on user experience, with p-values of 0.000, indicating strong support for these hypotheses. Connectivity & Accessibility (H3) also demonstrates a significant positive influence on user experience (p = 0.001), confirming its relevance in shaping users' interaction with IoT devices at home. In contrast, Security & Privacy (H4) does not exhibit a significant effect (p = 0.664), leading to the non-support of this hypothesis.

At an aggregate level, the regression results confirm that overall adoption factors significantly influence user experience (H5, p = 0.000). Further, the correlation analysis reveals a strong and positive association between adoption factors and user experience (r = 0.805, p = 0.000), thereby supporting H6. Collectively, these results underline that functional value, convenience, and reliable connectivity are the dominant drivers of positive user experience with home IoT devices, while security and

privacy concerns appear to play a comparatively limited role in the present study context.

Discussion on Findings

The findings indicate that user experience with home IoT devices is primarily shaped by functional value, ease of use, and reliable connectivity. The significant roles of perceived usefulness and convenience are consistent with earlier studies showing that users develop positive experiences when IoT technologies simplify daily activities and enhance efficiency (YaPing Chang et al., 2014; Hsu & Lin, 2016). The influence of connectivity and accessibility also aligns with prior research highlighting the importance of seamless access and system reliability in smart home environments (Stojkoska & Trivodaliev, 2017; Nord et al., 2019). In contrast, the non-significant role of security and privacy reflects observations in some recent studies that users tend to prioritise immediate benefits over perceived risks once IoT devices become part of routine use (Weinberg et al., 2015; Xuequn Wang et al., 2020). Overall, the strong association between adoption factors and user experience supports existing evidence that favourable adoption-related perceptions collectively enhance experiential outcomes and continued engagement with IoT technologies (Bhattacharjee et al., 2016; Anurag et al., 2025).

Suggestions and Recommendations

Based on the findings, several practical suggestions can be offered to enhance user experience with home IoT devices. Manufacturers and service providers should prioritise improving the functional usefulness of IoT devices by focusing on features that clearly support everyday household needs and deliver visible benefits. Simplifying device operation and enhancing convenience through intuitive interfaces, automation, and seamless integration with existing home systems can further strengthen user engagement. Efforts should also be directed toward improving connectivity and accessibility by ensuring stable network performance, better interoperability across devices, and reliable after-sales technical support. Although security and privacy did not show a direct influence on user experience in the present study, strengthening data protection mechanisms, increasing transparency, and educating users about privacy safeguards remain important for building long-term trust. Policymakers and technology developers may also consider awareness initiatives and user training programmes to help households maximise the effective use of IoT devices and encourage broader adoption in urban settings like Chennai.

Conclusion

1. Contribution and Implications

The study contributes to the growing body of knowledge on Internet of Things (IoT) adoption by offering a user-centric perspective that links adoption factors directly with user experience in a home setting. By empirically examining perceived usefulness, perceived convenience, connectivity and accessibility, and security and privacy within an urban Indian context, the study extends existing IoT literature that has largely focused on organizational or industry-level applications. The findings provide practical implications for IoT manufacturers, service providers, and designers by highlighting the importance of functional value, ease of use, and reliable connectivity in shaping positive user experiences. For policymakers and urban planners, the results offer insights into how smart home initiatives can be better aligned with user expectations to promote meaningful and sustained adoption of IoT technologies.

2. Limitations and Direction for further Research

Despite its contributions, the study has certain limitations that should be acknowledged. The sample was restricted to home IoT users in Chennai, which may limit the generalisability of the findings to other cities or rural contexts. The cross-sectional design captures user perceptions at a single point in time and does not account for changes in experience as users gain longer exposure to IoT devices. Future research may adopt longitudinal approaches to examine how user experience evolves over time and how security and privacy concerns influence sustained usage. Further studies could also incorporate additional variables such as trust, digital literacy, or socio-economic factors, and extend the analysis to comparative regional or national samples to strengthen external validity.

3. Conclusion

The study concludes that user experience with home IoT devices is largely shaped by perceived usefulness, perceived convenience, and reliable connectivity and accessibility. These factors play a decisive role in determining how users interact with and evaluate IoT technologies in domestic environments. While security and privacy concerns remain relevant, they did not significantly influence user experience in the present context, suggesting a benefit-driven usage pattern among urban users. Overall, the findings underline the importance of designing

IoT solutions that deliver clear functional value, ease of use, and consistent performance to enhance user experience and support the continued integration of IoT technologies in urban households such as those in Chennai.

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