

## Integration of TAM in IoT (Internet of Things) adoption: The Mediating Role of Service Quality

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### ABSTRACT

The revolution of the Internet of Things (IoT) has significantly enhanced modern living and intelligent activities. However, the effectiveness of IoT-driven innovative technology relies on users' behavioral evaluations of this new technology. This study investigates users' acceptance of IoT using the widely adopted Technology Acceptance Model (TAM). A structured questionnaire was distributed to elicit responses, and a total of 260 responses were accumulated, resulting in an 86.67% response rate. Structural Equation Modelling (SEM) was employed to assess TAM using SmartPLS 4 and SPSS 28.0. The study's empirical findings indicate that Perceived Ease of Use (PEOU) significantly impacts users' Perceived Usefulness (PU), IoT Service Quality (SQ), and users' Behavioral Intentions (BI). SQ is a mediator in this context, revealing direct and indirect relationships among the TAM antecedents. This study provides a basis for future research, giving useful insights for policymakers, designers, and scholars to create strategies and policies for implementing and promoting IoT in different sectors in Bangladesh.

**KEYWORDS:** IoT, TAM, SEM, Service Quality, Bangladesh.

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## 1. Introduction

Our daily activities are being influenced by the Internet revolution, combined with emerging technologies for many objectives. This system can be viewed as an international network with many devices connecting to conduct tasks. Furthermore, these nodes, which include specialized and embedded devices, connect across multiple hardware and software stands (Kortuem et al., 2010). In this composite varied environment, the Internet of Things (IoT) is typically used as an open standard (Al-Fuqah et al., 2015).

The impression of the Internet of Things is to incorporate all innovative tools into a network, which can be dealt with from the web and, in turn, deliver real-time information with person-to-person interaction (Gómez et al., 2013). The Internet of Things (IoT) embodies a move towards a technologically enabled setting linking brilliant stuff and operators. The technologies of IoT are different from earlier inventions as they are more universal, intellectual, and autonomous (Kahlert, 2016). The quick evolution of IoT has been creating a growing number of topics that produce excitement and anxiety worldwide. Kahlert (2016) presented that in predicting customers' intentions, significant roles are played by Usefulness, compatibility, enjoyment, social influence, and behavioral control. IoT is being used multiply. The adoption starts with home automation and progresses to wearable stuff. Ghazaleh and Zabadi (2020) focused on the application of IoT in Bangladesh to bring considerable insight into the different horizons of Customer Relationship Management (CRM). They further contributed to making using IoT to link customers and businesses more productive. To address issues during COVID-19, Singh et al. (2020) revealed a computerized and transparent approach. Many indications reveal that the IoT will change numerous segments, including higher education institutes, especially universities (Ning and Hu, 2012; Aldowah, 2017). Learning experiences are impacted by technology in several ways. Adopting the Internet of Things can boost learning upshots by enabling enriched learning knowledge, enhanced operational competence, and accessing real-time vision into students' participation (Aldowah, 2017).

Reception and implementation of novel technology are always influenced by the user's attitude and behavior toward the system. Yau et al. (2016) focused on smart mobility, which is becoming more critical in this period of rapid innovation when the technologies of the fourth industrial revolution are all embedded around us. The adoption and maintenance of modern systems such as RFID services in conjunction with portable wallets, is an individual decision influenced mainly by social attitudes and actions (Gao & Bai, 2014).

### 1.1 Significance of the study:

Embracing digital technology requires an innovative mindset and digital skills, which include the ability to understand the technology and a desire to apply it in everyday activities. Convenience, ease of use, and usefulness are key factors that affect user adoption (Verkijika and De Wet, 2018). Numerous studies have been conducted on IoT using technology adoption models. However, more studies need to contribute to identifying the mediation of IoT service quality in the technology adoption model. This research endeavors to close the research breach contributing to exploring the mediating role of IoT service quality in its adoption using the Technology Acceptance Model (TAM). Hence, this paper aims to identify users' attitudes and willingness to implement the Internet of Things (IoT) considering TAM model factors (IoT service quality, users' perceived ease of use, and perceived Usefulness), which will inline, pave the way for policymakers in different sectors of Bangladesh to design and develop strategies for the adoption of this emerging technology.

## 2. Theoretical background and hypotheses development

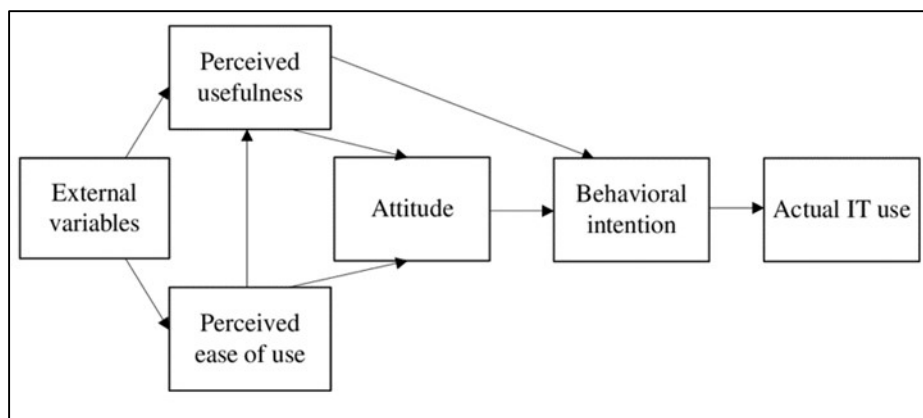
The Internet of Things is a cutting-edge technology that links all intelligent items without involving any human intervention (IoT), which is getting significant conclusive study ground in contemporary years in the industrial and academic disciplines (Mohammed, 2020). Müller (2020) defines the Internet of Things (IoT) as a computer system in which digital and physical machines communicate in a network without the need for human intervention. In other words, it refers to the ability of the objects we use daily to connect via the web and cloud computing (Morpus, 2017). Acceptance and the adoption of newer technology constantly hinge on the perceptions and attitudes of the operator to the system. Industry 4.0, cloud-based services, and the Internet of Things are pervasive in this era of technological innovation (Yau et al., 2016). Sultana and Tamanna (2021) evidenced the benefits and challenges of IoT service use in different sectors of Bangladesh during the pandemic period. They found that the adaptability of these new applications is increasing for this new normal situation.

Banica et al. (2016) revealed that the effect of the Internet of Things is felt in several aspects of education, including customized content, course presentation, activities of learning, and sharing of knowledge and contents. The application of IoT can lead to substantial deviations in the educational sector: restructuring of education, changes in instruction, transformation of learning methods, tentative and real-world transformation, teaching resources changes, and changes in grounds (Tianbo, 2012). With its substantial development, the potential adoption of IoT depends on three things: developing educational middleware, current teaching facilities, and gradually assessing students (Zhiqiang & Junming, 2011). Gómez et al. (2013) proved that adopting the IoT in schooling improves students' learning and eases evocative education as it lets them relate explicit knowledge to the actual context. Ane et al. (2020) showed that in Bangladesh, about 80-90% of instructors agree that IoT greatly influences education; students' perceptions agree with teachers' views in three parameters, i.e., e-learning, research, and hyper-connectivity.

Sultana and Tamanna (2022) evaluated the benefits and challenges of using IoT services in the corporate and service areas and the education sector. The topmost benefits in corporate and service industries include preserving physical remoteness and saving time in the education sector. Challenges in all fields comprise growing public remoteness and falling individual interaction (Sultana & Tamanna, 2022). Singh et al. (2017) mentioned that the IoT revolution is reformation the recent health care arrangement, economics, and other incorporated technology and society prospects. Radanliev and Roure (2021) didn't stress the effects of manifold and relative risks associated with IoT, yet mentioned the update of IoT design and ethics. To lead the framework development of the health establishments, medical practitioners, and governments, IoT conveys higher menace. Newer technology must be aligned with the supply chain with cyber risk consideration (Radanliev, Roure & Carvalho, 2021). Intelligent homes are another trend in the trending industry. IoT has extended professional networks for improving traffic and waste management and features inundation and fire sensors to make the house safer. Besides, the deployment of smart devices such as infrared cameras, fever-detecting devices, and software to

analyze video feeds in large public offices have been speeded up during the COVID-19 situation (Pike et al., 2014).

In 1986, Fred Davis developed Technology Acceptance Model (TAM) as a development of management information systems (MIS). Since its creation, the model in Figure 1 has made significant advancements in the field of research by examining the aspects that influence operators' receiving or denial of information technology (Davis, 1985). Due to the TAM model's flexibility and reliability in various scenarios, it has become the most often used model in the information system (Giovanis et al., 2012; Mercurio et al., 2020). TAM has also been updated to work with the most recent technology, for example, online, WWW, and e-commerce (Ha, 2009; Kaewwit & Kaewwit, 2010).



**Figure 1: Technology Acceptance Model (Davis, 1989)**

According to Castiblanco Jimenez et al. (2021), there is proof that external factors influence two personal beliefs in different ways than Davis (1985) predicted in the TAM. Perceived Ease of Use (PEOU), followed by perceived enjoyment, system, and information quality, and perceived Usefulness (PU) were shown to be the main determinants of perceived Usefulness (PU) by Castiblanco Jimenez et al. in 2021. Self-efficacy substantially predicted the PEOU, with perceived satisfaction and experience coming in second and third. Another study by Farahat (2012) that looked at 153 undergraduate Egyptian university students revealed that the PEOU, PU, ATU (Attitude Towards Using), and social influence of the students substantially impacted their desire to participate in digital classrooms.

The TAM model was further expanded by Sanchez et al. (2013). In the context of virtual education, they looked at six dimensions: technical services (TS), computer self-efficacy (CSE), perceived ease of use (PEOU), perceived Usefulness (PU), attitude to Use (ATU), and system usage (SU). The findings showed that TS had a significant impact on students' PEOU and PU, and that PU has a significant influence on students' acceptance of technology. Finally, in the setting of the learning management systems (LMSs) utilized by university academic staff in the USA, Fathema, Shannon, and Ross (2015) explained an extended TAM. The findings supported the hypothesis that all of the TAM's essential characteristics,

system quality, perceived self-efficacy, and enabling conditions, had a substantial impact on behavioral intentions to utilize LMS in university education.

There are strong correlations between user-related variables such as service quality, perceived Usefulness (PU), user contentment, and system usage performance when using electronic services. According to Alsamydai, Yousif, and Al-Khasawneh (2012), the utility of a service is substantially influenced by its quality, which in turn affects how consumers behave. Service quality models assessing numerous modern services, such as the Service quality model, can be used to determine service quality for IoT services (Parasuraman, Valarie, and Leonard, 1988).

Sultana and Tamanna (2022) evidenced that 55% of people have positive intention toward using IoT in the academic segment, and 52% have positive behavioral intention toward using IoT in the business and service industries; these intentions are derived from their perceived benefits from IoT services during the pandemic situation. There are justifications for many studies about Perceived Usefulness (PU) as the most influential item in the TAM model as it describes the insight of users into the significance of information technology (Pfoser, Schauer & Costa, 2018). The extent to which a user perceives using technology will be easy is perceived as ease of use (PEOU) (Davis, 1989). It is a strong determinant in shaping users' attitudes through improving system usefulness that, in the end, affects the users' behavioral intention (Davis, Bagozzi, and Warshaw, 1989).

The researcher has formulated subsequent hypotheses grounded on the previous works. The model with established hypotheses is shown in Figure 2.

H1: PEOU posits a positive association with BI.

H2: PEOU posits a positive association with SQ.

H3: PEOU posits a positive association with PU.

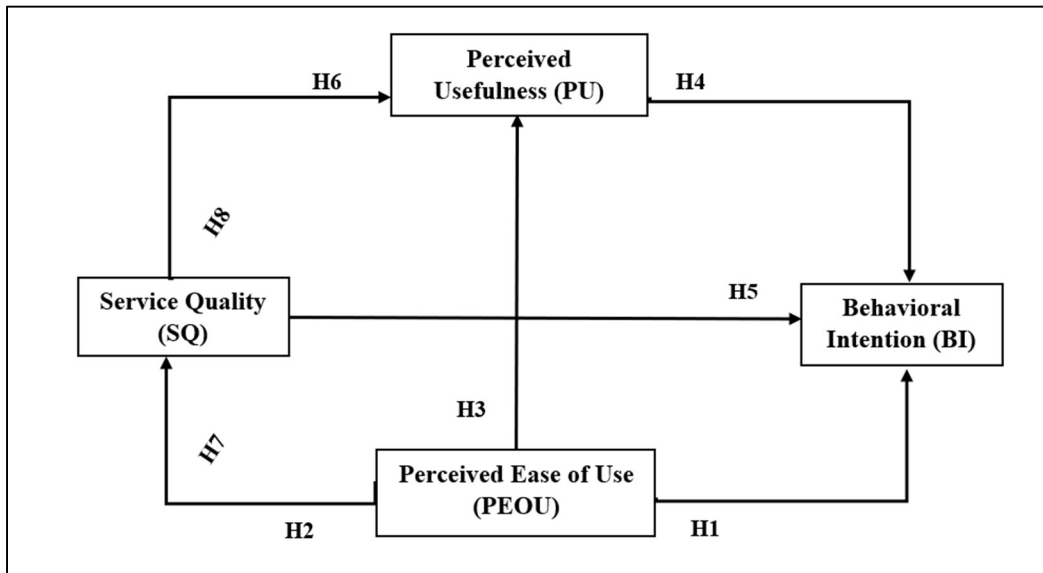
H4: PU posits a positive association with BI.

H5: SQ posits a positive association with BI.

H6: SQ posits a positive association with PU.

H7: SQ mediates the link between PU and PEOU.

H8: SQ mediates the link between PEOU and BI.



**Figure 2: IoT TAM Model with moderating role**

### 3. Methodology

#### 3.1 Constructs for measurement:

The comprehensive measurement items and their relative sources are presented in Table 1 to support the validity of all observed variables for the latent constructs in the study model that was created from earlier data.

**Table 1: Summary of variables with sources for measurement**

Latent variables	Corresponding variables	Item sources
Perceived Usefulness	PU1: IoT services are available at anytime PU2: IoT reduces my manual job PU3: IoT facilitates location-based service PU4: Allows contactless work during Covid PU5: Helps to maintain physical distance	Castiblanco Jimenez et al. (2021), Sánchez et. al. (2013), Farahat (2012).
Perceived ease of use	PEOU1: IoT saves time PEOU2: Use of IoT saves my cost. PEOU3: IoT services are convenient PEOU4: It is easy to use PEOU5: IoT facilitates communication	Castiblanco Jimenez et. al. (2021), Sánchez et. al. (2013), Farahat (2012).
Service quality	SQ1: I find IoT flexible SQ2: IoT ensures security in data protection SQ3: IoT provides easy access to information	Fathema, Shannon, and Ross, 2015; Sánchez et al., 2013.
Behavioral intention	BI1: I have a positive attitude toward using IoT BI2: I will continue using IoT in the future	Fathima, Shannon & Ross (2015), Farahat (2012).

### **3.2 Questionnaire design and data collection:**

The data for this analysis was collected through a structured questionnaire survey. The questionnaire was divided into two sections, Parts A and B. Part A included questions about the respondents' age, gender, educational background, profession, areas where they use IoT, and the types of IoT technologies they use. Fifteen questions in Part B related to the four variables in the study framework shown in Figure 1 were included. The construct items were assessed using a 5-point Likert-scale ranging from (1) "Strongly Disagree" to (5) "Strongly Agree."

The literature on the choice of sample size for various types of data analytics revealed a substantial difference in viewpoints (Hair et al., 1998). 200 is considered a decent sample size, and 300 is considered adequate for data examination using structural equation modeling (SEM) (Kline, 2015). Hair et al. (1998) endorsed using a sample size of 200 to evaluate a framework with SEM. Mandeville and Roscoe (1971) assert that to do multivariate research, the sample must be at least ten times the quantity of items in the constructs of the study. The total number of study constructs in our study is 18. For data analysis utilizing SEM, a sample size of 300 has been chosen based on Roscoe (1971) and other earlier works.

This study was collected during the period of 3 months – May, June, and July 2022. The sampling method used for data collection was convenient random sampling, where IoT users of different sectors were selected conveniently and randomly. Three hundred questionnaires were distributed; 260 (response rate of 86.67%) completed questionnaires have been returned and found to be valid for further analysis. The participation of the respondents was voluntary, and no compensation was given to the participants.

### **3.3 Analytical method:**

This study uses the Partial Least Square (PLS) approach, a statistical analysis method based on structural equation modeling (SEM), to examine and confirm the study framework and the relationships between the predicted constructs. A well-known model to assess the rationality of a hypothesis using empirical data is the structural equation model (SEM) (Gotz, Liehr-Gobbers, & Krafft, 2010). One of the well-known PLS-SEM data analysis software programs is SmartPLS (Hair, Hult, Ringle, & Sarstedt, 2013). To do the necessary statistical analysis, such as building a research model and computing a measurement model, data is first loaded into Microsoft Excel (.csv) and then imported into the SmartPLS program. Following that, data are entered into the IBM SPSS 20.0 program to do a linear regression analysis and assess the hypotheses.

## **4. Results**

### **4.1 Demographic traits of participants:**

Table 2 lists the demographic details of the respondents. 99 participants were female and 161 (62%) were male for the surveys examined. Male participants (31%) and female participants (19%) were between the ages of 26 and 34 respectively. In addition, most of the respondents (49%) had mastered educational qualifications. Furthermore, the field of IoT use shows that most participants were from the education sector (40%) and workplaces (36%).

**Table 2: Demographic Details of Participants**

Variable		Description	Frequency (n=260)	Percentage (%)
<b>Gender</b>		Male	161	62%
		Female	99	38%
<b>Age</b>	Male	Below 25	55	21%
		Below 35	81	31%
		Below 45	13	5%
		Below 55	7	3%
		55 or above	5	2%
	Female	Below 25	31	12%
		Below 35	50	19%
		Below 45	10	4%
		Below 55	5	2%
		55 or above	3	1%
<b>Education</b>		Bachelors	118	45%
		Masters	127	49%
		PhD	15	6%
<b>Fields of IoT use</b>		Education	106	40%
		Medical	39	15%
		Wearables	32	12%
		Workplaces	95	36%
		Merchandise	24	9%
		Bank	74	28%
		Smart Home	41	15%

#### **4.2 Measurement model:**

The internal consistency, convergent validity, and composite reliability are the metrics to closely investigate the measurement model (Ketchen, 2013). Cronbach's alpha ( $\alpha$ ), which identifies the reliability of the scale items inside the construct, is used to assess the internal reliability (DeVellis, 2021; Hinkin, 1995). Internal uniformity is calculated by Cronbach's alpha and composite reliability, with a level of 0.70 indicating satisfactory internal dependability (Joe, 1993). Using the Average Variance Extracted (AVE) and item loadings with at least 0.50 of AVE for item validity, the convergent validity is evaluated. The estimated loadings, AVE, Composite Reliability (CR), and Cronbach's alpha ( $\alpha$ ) for each component are displayed in

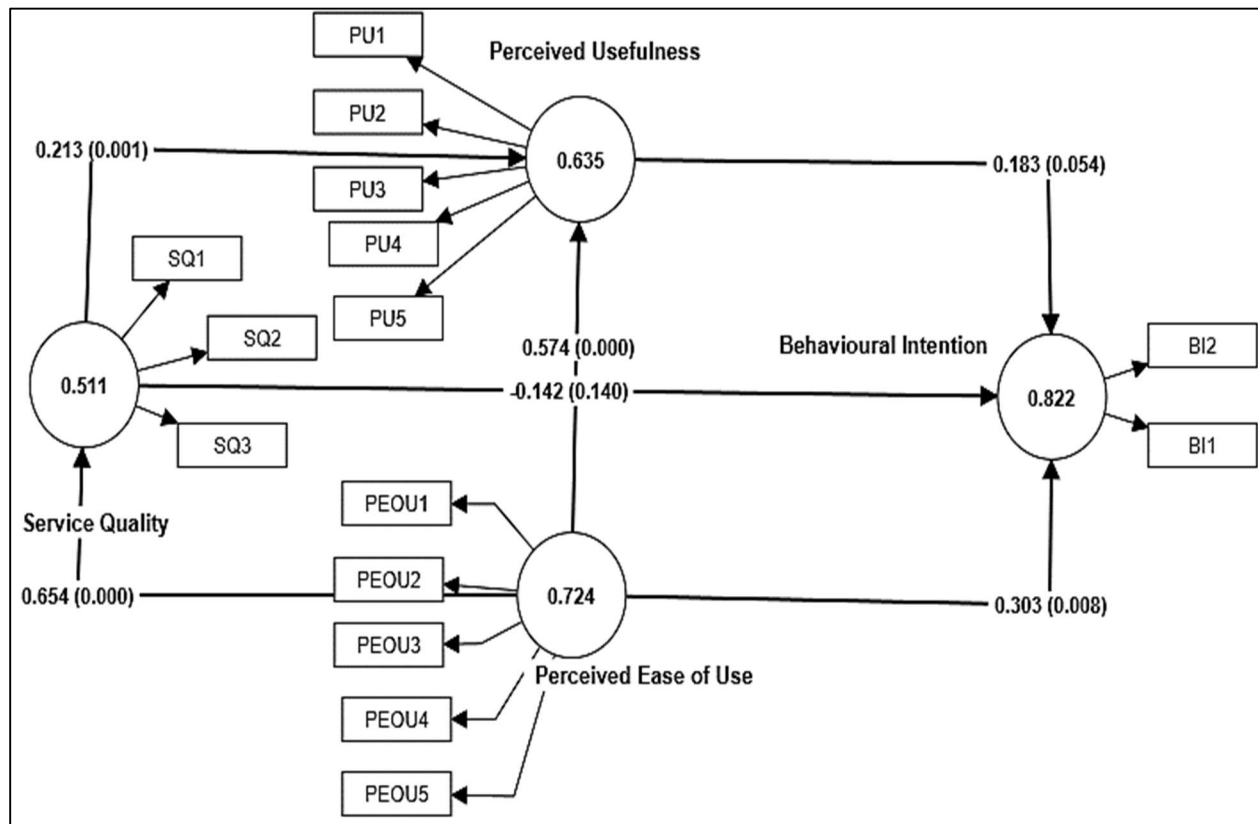
Table 3. The values of Average Variance Extracted range from 0.537 to 0.862, and loadings range from 0.501 to 0.809 are above the standard suggested level. Therefore, the convergent validity of the study is satisfactory.

**Table 3: Values of Factor Loading, Cronbach’s Alpha, Composite Reliability, and Average Variance Extracted.**

Constructs	Items	Loadings	Average Variance Extracted (AVE)	Composite Reliability (CR)	Cronbach’s Alpha ( $\alpha$ )
Behavioral intention	BI1	0.539	0.862	0.933	0.882
	BI2	0.525			
Perceived Usefulness	PU1	0.635	0.537	0.864	0.705
	PU2	0.501			
	PU3	0.569			
	PU4	0.510			
	PU5	0.662			
Perceived ease of use	PEOU1	0.631	0.621	0.792	0.718
	PEOU2	0.565			
	PEOU3	0.712			
	PEOU4	0.623			
	PEOU5	0.633			
Service Quality	SQ1	0.602	0.681	0.726	0.726
	SQ2	0.541			
	SQ3	0.696			

#### **4.3 Structural Model Evaluation:**

This study assessed the correlations between dependent and independent variables using the path coefficient ( $\beta$ ) and p-value (Figure 3).



**Figure 3: Path Diagram with P-Values and Path Co-efficient.**

The PLS outcomes for the structural model are shown in Table 4. The findings display that there is a significant association between the variables PEOU and BI ( $\beta = 0.303$ ,  $P = 0.008$ ), PEOU and SQ ( $\beta = 0.654$ ,  $P = 0.000$ ), PEOU and PU ( $\beta = 0.574$ ,  $P = 0.000$ ), PU and BI ( $\beta = 0.183$ ,  $P = 0.054$ ), SQ and PU ( $\beta = 0.213$ ,  $P = 0.001$ ), and SQ and BI ( $\beta = -0.142$ ,  $P = 0.140$ ).

H1, H2, H3, and H6 were therefore supported at a significance level of 0.05 ( $p < 0.05$ ).

Variance Inflation Factor (VIF) has been calculated for every relation to test the collinearity. The presence of a VIF more significant than 3.3 is suggested as an indicator of pathological collinearity, as well as an indicator that common method bias (CMB) may affect a model; hence, if all VIF values in the inner model are equal to or less than 3.3, the model can be regarded free of common method bias (Kock, 2015). The presented values in Table 4 show that all values are below 3.3, hence it concludes that the model is free of common method bias. The structural model with a series of regression equations determined the association between the components in the research model. Collinearity must be examined to confirm that the regression findings were not influenced. The Variance Inflation Factor (VIF) measures collinearity (Hair et al., 2019). Hair et al. (2019) recommended a cut-off value 5 for VIF. In this study, VIF values (Table 4) of each construct are lower than the cut-off value five, which indicates that collinearity matters between the factors were vague.

Further,  $f^2$  specifies the effect size, and values more than 0.35, 0.15, and 0.02 signify upper, average, and lower effect sizes, respectively (Cohen, 1988). Following Cohen, the study found that the relationships between PEOU > SQ (H2:  $f^2 > 0.35$ ) and PEOU > PU (H3:  $f^2 > 0.35$ ) have a higher significant effect size.

**Table 4: Structural Model Evaluation for Direct Associations**

H	Relation	T-values	P-values	BCL LL	BCL UL	$f^2$	VIF	Decision
H1	PEOU > BI	2.64	0.008	0.081	0.508	0.043	2.454	S
H2	PEOU > SQ	16.586	0.000	0.561	0.719	0.746	1.000	S
H3	PEOU > PU	10.517	0.000	0.449	0.668	0.405	1.746	S
H4	PU > BI	1.928	0.054	-0.017	0.356	0.018	2.148	NS
H5	SQ > BI	1.477	0.14	-0.323	0.045	0.013	1.844	NS
H6	SQ > PU	3.431	0.001	0.093	0.338	0.056	1.746	S

**Abbreviations:**

BCL LL – Confidence Interval bias-corrected at the lower limit; BCL UL – Confidence Interval bias-corrected at the upper limit; VIF – Variance Inflation Factor; S – Supported; NS – Not Supported.

The mediating effect of service quality (SQ) was inspected in Table 5 to find whether it mediated the relationship between PU, PEOU, and BI. SQ (H7:  $t = 3.3$ ,  $p < 0.01$ ) mediated the relationship between PU and PEOU, while SQ (H8:  $t = 1.484$ ,  $p > 0.01$ ) didn't mediate the relationship between PEOU and BI.

**Table 5: Structural Model Evaluation for Indirect Associations**

H	Relation	T Statistics	P values	BCI LL	BCI UL	Decision
H7	PEOU -> SQ-> PU	3.3	0.001	0.061	0.228	S
H8	PEOU -> SQ-> BI	1.484	0.138	-0.212	0.031	NS

**Abbreviations:**

BCL LL – Confidence Interval bias-corrected at the lower limit; BCL UL – Confidence Interval bias-corrected at the upper limit; VIF – Variance Inflation Factor; S – Supported; NS – Not Supported.

## 5. Discussion

The TAM model is employed in the study to determine the determinants influencing the implementation of the Internet of Things (IoT) in diverse sectors of Bangladesh. In the current research, four variables, including Perceived Usefulness (PU), Perceived Ease of Use (PEOU), and Service Quality (extrinsic moderating factor), are identified to discern the behavioral intentions toward using IoT services. Perceived Usefulness is evaluated based on the five statements labeled PU1, PU2, PU3, PU4, and PU5. Similarly, Perceived Ease of Use is measured based on five statements labeled from PEOU1 to PEOU5, Service Quality is evaluated based on four statements labeled from SQ1 to SQ3, and Behavioral Intention is calculated based on two statements labeled BI1 and BI2. The reliability of the four items (Cronbach's alpha and Composite Reliability) is above the standard level of 0.70. In addition, the items' convergent validity (Average Variance Extracted and factor loadings) is well above the reasonable range of 0.50. Thus, this research's constructs' reliability and convergent validity are satisfactory.

The demographic features of participants of this study demonstrate that young people aged (26 – 34 years) are prone to use IoT services. The fields of IoT use ensign that most of the usage incurred in the education sector (40%). This is not surprising. During the pandemic time of covid-19, the educational sectors of Bangladesh have been impacted immensely. As a result, the students and educators started using IoT services such as intelligent meeting apps, classroom activities through digital platforms, etc. The following frequently used fields are workplace, banks, medicals, smart home, wearable, and merchandise, respectively.

In the hypotheses analyses, Perceived Ease of Use (IoT saves time, Use of IoT saves cost, IoT services are convenient, It is easy to use, and IoT facilitates communication) presents a positive relationship with users' Behavioral Intention (they have a positive attitude toward IoT, and they will continue using it) and Service Quality (IoT is flexible, secured, and easier access to information). Similarly, PEOU and SQ show a positive relationship with users' Perceived Usefulness (IoT services are available anytime, reduce manual jobs, facilitate location-based service, contactless work during covid-19, and help maintain physical distance). Hence, H1, H2, H3, and H6 are accepted. These outcomes are in convergence with the findings of Gao & Bai, 2014 Liew et al., 2017 Mital et al., 2017 Park et al., 2017 Lu, Y., 2021 Liu et al., 2022) but in difference with (Bao et al., 2014). Moreover, SQ mediates the relationship between PU and PEOU – thus, H7 is accepted.

On the contrary, three alternative hypotheses are rejected. First, users' Perceived Usefulness doesn't have any positive relationship with their Behavioral Intention. Consequently, H4 is not stayed. This effect opposes the findings of Hsu and Lin (2018) and supports Prayoga and Abraham (2016). Likewise, IoT Service Quality does not significantly influence users' behavioral intention to use IoT – thus, H5 is not supported. Finally, the indirect moderating relationship between SQ, PEOU, and BI was found to be insignificant – hence, H8 is not supported.

## 6. Conclusion, and Implications of the Study

### 6.1 Conclusion

The study aimed to inspect the variables prompting the acceptance of the Internet of Things (IoT) grounded on the widely used Technology Acceptance Model (TAM). The application of this emerging technology is new in Bangladesh. So, to explore their acceptance and adoption, the TAM is used to comprehend the factors that affect their intention. Since many sectors became greatly affected by the Covid-19 outbreak, the use of IoT emerged as an incredible tool to expedite the activities of diverse fields. This study investigated several factors driving users' behavioral intentions toward IoT. Perceived Usefulness and Perceived ease of use are one of the important factors shaping users' intention and acceptance (Abu-Khadra & Ziadat, 2012), and service quality is one of the influential factors in identifying users' acceptance (Parasuraman et al., 1988). The empirical findings of this research identify that Perceived Ease of Use (PEOU) significantly affects users' Perceived Usefulness (PU), Service Quality (SQ), and Behavioral Intentions (BI), respectively. The mediating factor measures the indirect relationships – IoT Service Quality (SQ), where SQ mediates the relationship between PU and PEOU.

### 6.2 Implication

#### **Theoretical implications:**

There needs to be more pieces of literature about the Internet of Things (IoT) in the context of Bangladesh. As technology is new, more and more studies should be conducted regarding this. The current study will contribute to the academic aspect by disseminating knowledge about the adoption of IoT among the people in Bangladesh. Moreover, the intervening effect of IoT service quality on its adoption will enrich the existing literature. Hence, this will form the foundation for IoT research based on the mediator role in Bangladesh.

#### **Practical implications:**

The findings present a novel outcome that might benefit the managers and policymakers. As the result shows the intervening role of IoT service quality in adopting IoT, the managers and policymakers may improve the quality of IoT service so that not only the tech-savvy people can use it, but also the general people can adopt IoT in their regular activities. Thus, these findings will deliver fruitful results for policymakers, planners, and scholars to make strategies and policies for the positive application and enhancement of the Internet of Things (IoT) in diverse sectors of Bangladesh.

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### Conflicts of Interest

The authors declare no conflict of interest.

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