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Unpacking the Predictors towards Intention to Use Union Digital Center in Bangladesh: A Qualitative Exploration

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Abstract

This study aims to unpacking the drivers influencing the use intention behavior of the Union Digital Center (UDC) in Bangladesh by applying a qualitative technique. Existing research indicates that most existing studies on UDC services are based on the traditional framework that mainly emphasize the service-provider perspective rather than considering end-users views, expectations, and experiences. This gap emphasizes the continuing importance of exploring how users perceive the quality of UDC services and how these perceptions shape their use behavior. This study conducted in-depth interviews with end users of UDC (n = 26) and UDC professionals (n = 16), using purposive and convenience sampling. In-depth interviews offer opportunities to gain detailed insights into end users' experiences and explore their perceptions of user engagement with UDC's digital services. The study employed thematic analysis, followed by grounded theory, to explain the state of use intention among end users of UDC and to establish a theoretical foundation for further inquiries. The findings suggest that the existing predictors may not be sufficient to explain the intention to use UDC services. The study explored two new predictors, 'Service Availability' and 'Information Quality', that play a crucial role in this regard. This study extends the existing knowledge in the e-governance literature by offering two new predictors of digital service use behavior from both user and service provider perspectives in Bangladesh, which could serve as a theoretical framework and be applied in different contexts worldwide.

1. Study Background

The gap in the digital divide between urban and rural populations is becoming increasingly apparent, and current e-government services may not be effective enough in providing effective, transparent, and user-friendly services in rural areas (Nanda, 2022). Nowadays, developing countries around the world are formulating many strategies to enhance public service delivery and bridge the digital divide between urban and rural areas by using information and communication technologies (Kumar et al., 2024; Li & Shang, 2020; Sharma & Mishra, 2017). Developing countries such as Bangladesh, India, the UAE, Saudi Arabia, Pakistan, and some African countries have established common service centers (CSCs) to provide government service in rural areas. These centers play a significant role in ensuring services with accountability and transparency for rural communities (Uthaman & Vasanthagopal, 2023). To address the needs of the general people in rural areas, UDCs are located at the Union Parishad (the lowest administrative unit in Bangladesh's local government system) and were established with support from the UNDP (Mamun et al., 2018). UDC are used as a platform to deliver government services directly to citizens' doorsteps in rural areas so that people are able to access services in a faster and more efficient way (Hossain, 2022; Hoque & Kabir, 2024; Saha, 2022). In response to this evolving e-government, Faulkner et al. (2019), and Venkatesh et al. (2012) re-examined user behavior and found that users' use behavior toward traditional public service systems is changing after the introduction of e-government services. Recently, in the context of rural areas, Hooda et al. (2022), Nzaramyiman & Susanto (2019) and Bayaga (2020) have explored the factors that influence the use behavior of e-government services and also examined how these services impact human behavior. Their findings indicate that identifying the key factors influencing users' usage behavior of these e-services in rural areas remains an unresolved

issue. With the growing adoption of e-services, particularly in developing countries, researchers emphasize the need for further investigation to understand how these service centers are being used from the perspective of end-users. Many researchers have found that common service centers like UDCs are expanding widely to deliver public services (Sharma et al., 2021). It is necessary to rethink the user participation from the early stages of the acceptance process is crucial to accurately evaluate their current knowledge, experiences, and perceptions of e-services (Mou et al., 2017). The behavior of individuals who use UDC services may differ based on factors such as geographical location, economic stability and cultural background. These insights highlight the need for further research into user characteristics and preferences to identify the most effective features and delivery methods. In this regard, qualitative research, through in-depth interviews, offers a valuable approach to exploring users' experiences and gaining comprehensive information on their satisfaction (Song et al., 2021). Consequently, the utilization of services offered by UDCs and the behavioral approach's mechanism to use of UDC is an ongoing debate that requires more research. Ullah (2020) has indicated various barriers to the UDC service delivery process, including inadequate infrastructure, low level of education, cultural and social resistance. Thus, greater citizen participation can improve the quality and delivery of services and in turn, this public support may lead to greater support for government policies. The involvement of citizens in collaboration with government is referred to as co-creation, whereby the citizens play a key role in designing and improving the development of policies and services (de Jong et al., 2019). This research mainly explores the interaction of key factors to illuminate their influence on user behavior in e-government service delivery of UDC in Bangladesh. Uniquely, it highlights post-adoption factors and evaluates how UDC e-government services impact user use behavior. Therefore, this study formulates the following research question: What key factors should be reconsidered when redesigning the service delivery mechanism from the user's perspective to enhance the effective utilization of UDCs? Based on this research question, this study aims to conduct a qualitative analysis to re-conceptualize the key factors influencing the use behavior or actual usage of UDCs in Bangladesh. Consequently, this research proposed key dimensions that influence the user's behavioral intention to use e-government services.

2. Theoretical framework: Grounded Theory

Qualitative research methods generally use an interpretive approach to evaluation based on specific observations to generalized theory from the general statement. The grounded theory technique is a widely known research method that can effectively explore new fields or largely unexplored research areas. Grounded theory was first introduced by Glaser and Strauss (1967). It may be described as a systematic yet flexible method of generating concepts and theories from data without pre-existing Theory, especially when the primary goal is to develop a new theory (Corbin, 1997). It is based on an iterative process of data collection, coding, and comparison, which enables patterns to emerge naturally from participants' lived experiences (Hardesty et al., 2022). This approach challenged the conventional method of evaluating or strengthening theories through a deductive validation process rather than emphasizing an inductive process in which theory is developed directly from data. It has gained widespread acclaim across fields such as information systems research for its ability to formulate

theories grounded in real-world situations (Chun Tie et al., 2019). Grounded theory moves from the specific to the general, questioning the assumption that theories must be based on predetermined hypotheses (Zhang et al., 2021). This makes it a highly effective approach to researching complex and unexplored research areas.

In the context of this research, the grounded theory method is appropriate and suitable for qualitatively exploring users' perceptions of UDC. This study aims to explore these perceptions and add new theory to the body of knowledge, which aligns with the research objectives of this study. The grounded theory method was also deemed appropriate since it emphasizes the search for users' experiences and the formulation of comprehensive explanations through the development of theoretical frameworks based on empirical data. This research followed the structured stages of the grounded theory method (Fig. 1). Another important feature is that Grounded Theory is also consistent with the constructivist paradigm of research, in which knowledge is constructed through the continuous process of engagement between the researcher and the participants (Nelson et al., 2023). Considering the lack of empirical research in the context of Bangladesh, it offers a robust methodology to develop new knowledge with deep roots in the context. By using this approach, service providers of UDC can gain insights into the actual situation and the quality of UDC services based on user's needs, expectations and real experiences.

3. Methods

This study employed a grounded theory approach, combined with thematic analysis to re-conceptualize the current use behavior of UDCs and improve service quality (Kiger & Varpio, 2020). The main goal of qualitative research is to capture the depth and richness of data that are difficult to achieve through quantitative research methods. It is a fundamental method for building a theoretical framework in social science. The qualitative research method reflects the significance of the study's methodological approach. The grounded theory approach (Poth, 2023) was applied to explain the factors influencing the use behavior of UDC services from the end-user's perspective and it also helps to understand the current situation and establish a theoretical foundation for future research. Belgrave and Seide (2019) mentioned that grounded theory is valuable for systematically gathering data to develop mid-level concepts regarding users' behaviors and experiences in social sciences. It was also mentioned by Hasan et al. (2022) that thematic analysis offers flexibility in data interpretation and makes it easier to manage large data by structuring it according to general themes. The guidelines set by the Consolidated Criteria for Reporting Qualitative Research (COREQ) were adopted in this study (Tong et al., 2007). Data collected through quotations and participant observations were coded and organized using the Nvivo 12 software (QSR International).

3.1 Research Design:

This research used an in-depth interview (IDI) method to capture the attitudes, acceptability, perceptions, experiences, and opinions of individual users' regarding service delivery of UDC (Hasan et al., 2022). An inductive approach was applied to develop a theoretical explanation by examining end-users' perception

and expectations of UDCs. The data collection team collected data from direct user of UDC services. IDIs are usually open-ended interviews lasting from 30 minutes to several hours with an individual and they include five to ten targeted questions on a specific topic or issue relevant to the research. This flexible and conversational approach facilitated data analysis by enabling a deeper understanding and explanation for users' behaviors. Therefore, this study was conducted in a single discussion setting by involving both UDC users and service providers to provide a comprehensive perspective on the service delivery quality.

3.2 Research Team, Fieldwork, and Reflexivity:

The Interview process was conducted by the principal investigator and one research assistants, while an additional two independent self-employed Investigators who hold bachelor's degrees in public administration and have solely worked in research for more than three years also assisted the research team during the data collection process. During the research study, the field team regularly visited the UDC to ensure an in-depth understanding of the service delivery process. The interviewer did not have any previous connections to the participants in order to eliminate any form of bias. At the time of data collection, both the interviewer and the participants met for the first time. Therefore, prior to conducting the interview all participants were given information regarding the purpose of the study and each participant signed a consent form that indicated their decision to participate in the study (voluntary participation). As part of a comprehensive scientific investigation, the Investigator provided an atmosphere that promoted participant comfort with openness to provide full disclosure in regard to their experiences, opinions and suggestions. Additionally, the Investigator provided an explanation of the meaning of terms or phrases with which the participant may not have been familiar; this provided clarity and accuracy for participants when responding to each question, thereby enhancing the quality of the answer received from each participant. As a final stage of the interview process, all respondents' answers to each question were transcribed into English from the local language by an experienced and trained professional.

3.3 Sample Selection and Setting of the Context:

This qualitative study used combination of purposive and convenience sampling methods to carefully select the participants of the users of UDC in rural areas of Bangladesh. By selecting only UDC users as participant in the interview process, the researcher aimed to learn more about how those individuals perceive UDCs services in relation to e-government service delivery in a rural area context. In this instance, interviewing non-users of UDCs could create an opportunity for the researcher to misinterpret the findings and lead to an incomplete understanding of the main issues of concern for users of the UDC. Non-users are less likely to realize critical factors such as quality, reliability, acceptability, and accessibility, which are vital to developing the IS conceptual framework using the SERVQUAL model. Participants were included in the study if they had availed of at least one UDC service in the 12 months. The second group (service providers) was included due to their experience in providing a service and their familiarity with the behaviors and expectations of users accessing UDC services. The number of respondents was not predetermined. Therefore, no sample size was chosen and was guided by the

principle of data saturation until no significant new perceptions emerged with the recommendations of Guest, Bunce, and Johnson (2006). Data were collected using a convenience sampling method from December 27, 2023, to January 26, 2024, due to the limited funding opportunities and scheduling limitations of respondents and service providers (entrepreneurs).

A total of 42 in-depth interviews were successfully conducted, including users (n = 26) and service providers (Entrepreneurs) (n = 16), all of whom had direct interactions with the UDCs. Participants were between 15 and 79 years old and had at least three years of experience receiving at least one type of service from a UDC or providing services at a UDC. The main reason for selecting users and entrepreneurs for interviews is that they are the stakeholder groups directly involved in receiving and delivering the services of UDC. User can assess services provided by UDCs from a citizen perspective and the entrepreneurs (who provide services to the citizens) from the service provider perspective because they play a significant role in delivering services to the citizens. Table 1 presents a summary of the participants' characteristics. All interviews were documented using a combination of note-taking and recording and were reviewed later for further analysis. There is a diverse sample of the participants in this study across the genders, age groups, and professions. This diversity enables the research team to gather a wider range of perspectives on the topic of this study. This approach of sampling process allows researchers to get a broader view of the different concepts and variations associated with this topic. The beginning of each interview included an open-ended question inquiring about the participant's background and how they utilized UDC services. By employing this method, participants provided insights on their own personal stories, thus giving deeper insight into users' attitudes towards, emotions regarding, and the contextual aspects influencing how users view UDC services. In addition, the research maintains an ethical and inclusive methodology, as written informed consent was obtained from all participants in which they expressed their willingness to participate. No participant was excluded based on their race, religion or gender.

4. Results and Discussion

4.1 Demographic Profile:

Table 1 provides a summary of the demographic profile of the participants. In this study, male participants outnumbered female's participants, accounting for 59.52% compared to 40.48%. The majority of the participants belonged to the 31-40 age group (35.71%), followed closely by those in the 21-30 age range (33.33%). The combined responses show that 76.20% of the respondents of this study were educated, indicating that they have a good understanding of the UDC service delivery process. In terms of occupation, the study revealed that 16.67% of the participants were students, while both farmers and private employees accounted for to 9.52% of the total sample. Additionally, 7.14% of the participants identified as housewives, businessmen, and teachers. On the other hand, service provider /entrepreneur of the UDC accounted for more than one-third (38.09 %) of the total participants. Regarding monthly income, the majority of participants (user) of this study (80.78 %) earned less than 20000 (BDT) per month whereas all of the service providers/entrepreneurs (100 %) reported monthly

income less than 10,000 BDT. Overall, 57.5 % of the participants mentioned in this study that they know about UDC services through word-of-mouth from the people surrounding them or directly from the UDC entrepreneurs. In terms of duration of service use, all participants had used UDC services for more than six months. Among them, (56.38%) of respondents had used the UDC services for one to three years, and 19.23% of the respondents of this study had used services for more than three years. On the other hand, from the service provider/ entrepreneur perspective, more than two-thirds (64.28%) of the participants had provided services for more than two years that indicating considerable experience with UDC operations and service delivery.

Table 1: Demographic profile of service user and entrepreneur

		User (%)	Service Provider /Entrepreneur	Total n (%)
Gender	Male	15 (57.69)	10 (62.5)	25 (59.52)
	female	11 (42.31)	6 (37.5)	17 (40.48)
Age (years)	≤20	4 (15.38)	---	4 (9.52)
	21~30	9 (34.62)	5 (31.25)	14 (33.33)
	31~40	6 (23.08)	9 (56.25)	15 (35.71)
	41~50	4 (15.38)	2 (12.5)	6 (14.29)
	51~60	3 (11.54)	---	3 (7.14)
	≥61	---	---	--- (0)
Education	no education	2 (7.69)	---	2 (4.74)
	primary	5 (19.23)	---	5 (11.90)
	high school	3 (11.54)	---	3 (7.14)
	college	4 (15.38)	7 (43.75)	11 (26.19)
	bachelor	7 (26.92)	9 (56.25)	16 (38.10)
	masters or above	5 (19.23)	---	5 (11.90)
Occupation	Teacher	3 (11.54)	---	3 (7.14)
	Farmer	4 (15.38)	---	4 (9.52)
	Private employee	4 (15.38)	---	4 (9.52)
		2 (7.69)	---	2 (4.74)
	Business man	3 (11.54)	---	3 (7.14)
	Housewife	3 (11.54)	---	3 (7.14)
	Student	7 (26.92)	---	7 (16.67)
	Retired	---	---	--- (0)
	No job	---	---	--- (0)
	Others	---	16 (100)	16 (38.09)
Income	≤5000	3		3

		(11.54)		(7.14)
	5001~10000	3 (11.54)	16 (100)	19 (45.24)
	10001~20000	7 (26.92)	---	7 (16.67)
	20001~40000	5 (19.23)	---	5 (11.90)
	≥40001	---	---	--- (0)
	No income	8 (30.78)	---	8 (19.05)
know about UDC	People	6 (23.08)	---	6 (14.29)
	Advertisement	3 (11.54)	---	3 (7.14)
	UDC entrepreneurs	9 (34.52)	---	9 (21.43)
	Public Representative/ Govt. Officials		---	--- (0)
		5 (19.23)	---	5 (11.90)
		---	---	--- (0)
	Website	3 (11.54)	---	3 (7.14)
Duration using/providing UDC	<6 months	---	---	--- (0)
	6~12 months	4 (15.38)	1 (6.25)	5 (11.90)
	1~2 years	7 (26.92)	3 (18.75)	10 (23.81)
	2~3 years	10 (38.46)	4 (25.00)	14 (33.33)
	.>3 years	5 (19.23)	8 (50.00)	13 (30.95)

Source: Interview Data (2025)

4.2 Thematic Analysis:

This study identified ten main themes and twenty sub-themes as key drivers influencing users' engagement with UDC services. Open, axial, and selective coding were used to categorize and labeled the themes and sub-themes. Among the various methods adopted, the study utilized the six steps thematic analysis method (Braun & Clarke, 2006), which includes the steps of familiarization with the data, developing the initial codes, searching for themes, reviewing themes, defining and naming themes,

and finally producing the report. Additionally, this research introduced two new citizen-centric themes relevant to the UDC usage behavior: service availability and user value co-creation. The remaining eight themes aligned with the established theoretical framework of service quality and user satisfaction. A summary of these themes and sub-themes is presented in Table 2.

Table 2: Themes and Sub-Themes Distribution

Theme / Supporting Theories	Sub-theme
Information Quality [D&M IS model] Delone and Mclean, 2003	Clarity; Completeness; Accuracy
Service Availability [IDI findings]	Correct functioning of the system; Uninterrupted service availability; Types, levels and number of services offered by UDC
Responsiveness [SERVQUAL MODEL] Parasuraman et al. (1988)	Willingness to help customers in time: Provide immediate feedback; Response time
Reliability [SERVQUAL MODEL] Parasuraman et al. (1988)	Capability to deliver on commitments made to users accurately
Empathy [SERVQUAL MODEL] Parasuraman et al. (1988)	Personalized and attentive care for customers
Tangible [SERVQUAL MODEL] Parasuraman et al. (1988)	UDC infrastructure, equipment resources, and staff support
Assurance [SERVQUAL MODEL] Parasuraman et al. (1988)	Employees' competence and professionalism in building trust.
Satisfaction [D&M IS model] Delone and Mclean, 2003	Level of conformance between service quality and customer expectations
Use Behaviour [UTAUT 2] Venkatesh, Thong and Xu (2012)	Customer readiness to use e-service
Value Co-creation (Public Value Theory)	To express comments and provide feedback after getting any services

Source: Adopted by author

4.2.1 Service Availability

Service availability refers to the ability to which a service can be accessed a service at any given time. The availability of services and multiple delivery channels are crucial factors that impact citizen satisfaction (Islam, 2025). Tsai, Wu, and Chen (2020) found in their study that easy access to medical services, including consultations and treatments, significantly increases patient satisfaction in the healthcare sector. Similarly, Shbeeb (2022) emphasized that the availability of transit services significantly influences customer satisfaction. In the context of UDCs, service availability plays an important role in attracting users' intention to use UDC services. The ability to access most of the

government e-services from a single place like a UDC reflects the availability of services. The existing literature revealed the need for more services at the doorstop to the citizens so that they have the opportunity to conveniently receive more government services through UDC (Bhuiyan & Abrar, 2022).

According to the [CITP3 (26y), CITP5 (27y), CITP9 (32y)]

“The availability of the services at UDC affects my satisfaction. On the other hand, if the service I want is unavailable affects dissatisfaction with UDC services.”

“I feel delighted and comfortable knowing that UDCs provide available and sufficient services with equal access for everyone, including myself, my friends, and my family. It is reassuring to experience the consistency and fairness in their services, making us all feel valued customers.” [CITP11 (28y), CITP15 (24y), CITP21 (25y)]

Simultaneously, the entrepreneur explained,

“When any service is not available due to some circumstances, it impacts me negatively because of user dissatisfaction.” [SP2 (34y), SP7 (33y), SP11 (28y), SP16 (39y)]

In contrast, when considering the availability of e-government services through UDCs in Bangladesh, as explained,

“I have observed the progress over the years as the government continues to introduce new services. However, it still falls short compared to the availability of e-government services in neighboring countries.” [CITP7 33y), CITP13 (23y), CITP24(45y)]

Difficulties experienced by citizen or users with regards to utilizing and understanding the various e-government services that are available. They also highlighted the necessity for a comprehensive one-stop platform that provides all e-government services in a single portal. In addition, citizens' perceptions of the efficiencies gained from using e-government services over traditional paper-based processes indicated have that e-government services simplify the process of applying and obtaining government services compared to traditional government processes. As one participant mentioned,

“UDC is highly efficient; I only need about 30 minutes to an hour to get the services I need, instead of wasting an entire day at other government offices far from the village.”

Community people are able to access UDCs in order to receive services directly without being subject to limitations related to time constraints and avoiding visit other government offices where they often endure unnecessary delays due the bureaucracy and corruption of these offices. One respondent stated,

“Accessing services online through UDC allows us to obtain e-government services quickly. The days of standing in long queues for hours without guarantee of receiving services on the same day are over.” [CITP26 (29y)]

The research supports the findings of this paper that, service availability influences users' satisfaction. Consistency of availability with minimal time leads to increased trust, positive user experience and higher satisfaction. Consistent service availability also provides a user with a seamless experience where users' expectations are met and users perceive the service as reliable. The research supports the findings of this paper that, service availability influences users' satisfaction. Consistency of availability with minimal time leads to increased trust, positive user experience and increased satisfaction. Consistent service availability also provides a user with a seamless experience where users' expectations are met and users perceive the service as reliable. Alternatively, when service becomes unavailable due to frequent interruptions/permanent outages, users may experience frustration and dissatisfaction, especially when these interruptions affect their essential activities. In competitive environments, availability can be a key differentiator, with users favoring services they perceive to be more reliable. Therefore, maintaining high service availability is essential for fostering user satisfaction, customer loyalty, and perceived value.

4.2.2 Information Quality

Information quality is often defined by five factors: accuracy, timeliness, completeness, relevancy and consistency. (DeLone and McLean, 2003). Information quality not only incorporates the availability of information but also includes providing accuracy, correctness and completeness of information. Kim et al., (2021) have also indicated that the quality of service and information influences how users' perceptions of privacy protection, satisfaction and loyalty with respect to e-government transactions. In terms of UDC service delivery, the results of this study indicate that providing users with accurate and reliable information will lead to greater levels of user satisfaction. Service providers are expected to provide accurate information and have their users constantly check the reliability of the service provided by a UDC. The accuracy and clarity of the information provided and based on existing research, information quality was a major determining factor in service user satisfaction with the public's use of a public service delivery (DeLone & McLean, 2003; Kim et al., 2021). In addition, this study provides insight into the user's confidence in using UDC services through delivery of reliable and accessible information, and user expectation, as well as trust. The following findings from this study illustrate how information quality influences user satisfaction with UDC service delivery:

"I was satisfied because I have got proper information regarding the service during the service period and the entrepreneur always provided accurate information regarding my services" [CITP7 (33y), CITP13 (23y), CITP19 (20y)]

"I have received accurate information from the UDC; it was tough for me to get the information from the government website regarding my desired service because in the website the information is not clear and sometimes the provided information is outdated" [CITP3 (26y), CITP17 (20y)]

"As a service receiver, I am delighted with the quality of information UDC provides. The information is always accurate, up-to-date, and presented in a clear and accessible manner. This level of detail and precision ensures I can be well-informed and trust the services offered. The high information quality

standards significantly enhance my overall satisfaction and confidence in using their services". [CITP3 (26y), CITP6 (35y), CITP20 (24y), CITP22 (42y), CITP1 (30y)]

Most participants agreed that the information provided by UDC is accurate, reliable and of high quality that fulfilling their needs. The trustworthiness of the information offered by UDC has boosted their confidence in utilizing its services and strengthened their trust in government-provided public services. We also found the following quotes from the participants regarding further emphasize the significance of information quality and its accuracy.

"There is a significant development regarding the information quality provided by UDC. Its accuracy is trustable, and we therefore found it is reliable. That's why we are satisfied with the information quality of UDC" [CITP7 (33y), CITP10 (48y), CITP14 (38y), CITP21 (25y)]

The service provider/ entrepreneur of UDC also recognized that the proper information plays a vital role in providing efficient service. Moreover, according to *[SP2 (34y), SP5 (28y), SP9 (40y), SP16 (39y)]*

"We provided proper information during the service period that helped the users to get the service in time and hassle-free."

According to *[SP3 (37y), SP8 (30y)], "We consistently recognize the importance of having accurate information; therefore, we always try to produce and deliver quality information to fulfill the needs of the user's expectations."*

Sufficient information is essential to getting any effective service from the UDC, which helps to minimize delays.

"Sufficient information helps to get the services effectively and quickly" [CTTP12(28y)]

The findings of this study suggest that information quality has an impactful effect on the intent of a user to use UDC services. Users will trust UDC services more when they have access to accurate, appropriate, organized and contemporary information as this will allow them to make more informed decisions which encourages them to continue or begin using the services. When the information provided to users is of good quality, they will feel more confident in the reliability and capacity of UDC services, so that users will feel confirmed that they can make informed decisions. Conversely, poor-quality information like outdated, ambiguous, or incomplete creates uncertainty and erodes trust, ultimately diminishing users' willingness to continue using the service. Thus, the perceived clarity, reliability, and value of information play a pivotal role in shaping a user's intention to use the UDC services.

4.2.3 Responsiveness

Responsiveness includes the willingness of service personnel to support customers as well as the capacity of personnel to provide quick responses to customer requests (Hui et al., 2024). Responsiveness has a major impact on overall service quality, as it impacts user satisfaction; in

particular, users who receive a timely response from qualified service personnel tend to have higher levels of overall satisfaction with that service provider than those who do not receive a timely response. Furthermore, responsiveness represents the commitment and capability of service organizations to effectively meet the needs and requests of users in a timely manner (Balaji, 2025). This is also demonstrated by the ability of employees within a service organization to respond quickly and accurately to the requests of users. Users experience greater levels of satisfaction with the services provided by UDC when their employees are motivated to address the problems encountered by their users during delivery of the service (Phan et al., 2024). The ability for an employee to respond promptly to and address a customer's concern is a direct contributor to overall user satisfaction with the service they receive. As in this study, "responsiveness" refers not only to the timeliness of service delivery from UDC providers but also how quickly UDC's staff respond to inquiries, provide feedback to customers, and resolve service-related issues. Users expect the service provider to meet their needs, respond promptly, and address their concerns without unnecessary delays, ensure positive service experiences, and enhance the perceived quality of UDC services.

In the sharing of ideas about responsiveness, according to the [CITP3 (26y), CITP5 (27y), CITP10 (48y), CITP18 (28y)]

"Despite the available services of UDC, the timeline (Response) of service is crucial to receiving any services from the service provider side. I received a quick response that met my expectations, which significantly enhanced my satisfaction"

One of the service providers explained,

"In my opinion, after providing the UDC service for the last five years, If I respond quickly based on the service receivers, then that affects the service quality of UDC and also positively influences the user's satisfaction." [SP10 (33y]

In a longitudinal study on customer experience in relation to public sector service delivery in the UK, Andrews and Turner (2017) stated that responsiveness and promptness of employees, together with their competence affect the quality of performance of employees. All three of these factors enhance the ability to improve customer satisfaction. These three factors are fundamental to creating positive experiences for customers, as well as to establishing a positive perception of the reliability and efficiency of public sector providers. A key factor from the customer viewpoint is the speed of response between applying for a service and receiving a response from the provider or the service itself. This emphasis on timeliness is reflected in the user experience shared by participants:

"I was satisfied because the service I wanted from the UDC was provided very fast." [CITP5 (27y), CITP15 (24y)]

Timely service delivery or response is directly linked to customer satisfaction. For instance, if a user expects a service within seven days [from the time of application] and receives a response on the tenth

day, it will likely lead to dissatisfaction. The user will complain about poor or inefficient services by the eighth day. Conversely, if the service is delivered within five days, the user is far more likely to perceive it as efficient and satisfactory. In such cases, the speed of response often matters more than the content of the reaction itself. Users are generally satisfied as long as the service is provided on time. Therefore, responsiveness strongly predicts a user's intention to use a product or service. Quick, efficient, and helpful response enhances the overall user experience. If the users feel the service provider effectively values and supports their needs; in that case, the users perceive the service quality as reliable and user-centric that helps to develop users' trust and satisfaction. The responsiveness and positive perception create a sense of reliability and inclined the user to continue service over time. Conversely, delayed or inadequate responses can lead to frustration, reduce user's confidence, and diminish their willingness to continue using the service. So, responsiveness influences satisfaction and is key in determining users' long-term engagement and loyalty toward the service.

4.2.4 Reliability

Reliability is providing promised services accurately and consistently. The reliability of an organization can therefore be evaluated according to its ability to provide services accurately and effectively (Alzaydi et al., 2018). Users of rural services are more likely to trust organizations that are able to consistently deliver the promised service. Trust is particularly important to users of rural public services since they often experience an increased number of challenges associated with limited access to public services and inadequate infrastructure compared to users in urban areas (Song et al., 2025). Users' perceptions of e-government depend on how consistently and dependably public services are delivered. Reliability in e-services can be measured in three ways: (a) accuracy of the information that is provided by the public service; (b) timeliness of the delivery of the e-service; and (c) efficiency with which user requests for service are acknowledged and resolved. The reliability of a public service thus helps to build users' confidence in using future e-services and increases users' perceptions of the overall quality of public services. The following participates of users [CITP4 (50y), CITP12 (22y), CITP10 (48y), CITP25 (34y)] described as

"I believe that the services of UDC are not hassle-free to some extent because of the lack of proper facilities and unskilled staff, which makes me confused about whether I can trust the service system, which leads to my dissatisfaction in the end."

Similarly, according to [*SP1 (33y), SP12 (27y), SP15 (35y)],*

"*User satisfaction is a key aspect of e-service delivery. Users expect standard services that are responsive, trustworthy, and quick, which are the pillars on which their trust and satisfaction are built."*

In addition, one of the key factors contributing to the reliability of services is the provision of relevant and timely information to rural users. The availability of clear, relevant, and actionable information to the end user will greatly enhance governance, and provide better service delivery in rural areas. In relation to public services, rural users experience many barriers to their ability to access and use information, have

low levels of digital literacy, and have poor infrastructure. According to [CITP3 (26y), CITP5 (27y), CITP14 (38y), CITP23 (40y), CITP26 (29y)],

“I am highly satisfied with the dependability of the e-services offered by UDCs. The services are consistently dependable, ensuring I can access the information without interruptions. This reliability gives me confidence to use the services of UDC.”

In summary, reliability in e-service delivery in rural areas is a key determinant of user satisfaction that enhances public service delivery performance. To provide reliable service, organizations must have the dedication and capability to provide reliable services to the users in rural communities with accuracy, consistency and reliability. Providing reliable service means providing services to the user with as few errors possible and whose service will provide trustworthy results to users of the service. When users believe that the system has been working as intended and that they are getting what they expected from the service without experiencing any unexpected problems, they will gain confidence in the reliability of that service and continue to use that service. On the contrary, unreliable services, with frequent **technical failures,** errors, or inconsistencies, disrupt the user experience and discourage further use. **Reliability** is the foundation **for continuous user engagement, positive word-of-mouth, and long-term loyalty to e-government services.**

4.2.5 Empathy

Empathy's primary concern is to provide a personalized experience for customers by developing a supportive and encouraging culture within an e-service provider, in order to achieve this objective (Parasuraman et al., 1988; Ocampo et al., 2019). The ability of the service provider to recognize the unique needs of each individual customer and provide a compassionate response will result in increased levels of customer satisfaction (Sakyi, 2020). The establishment of an enduring relationship of trust between the service provider and their customers plays a key role, particularly when e-services are being delivered via UDCs in rural Bangladesh. In rural area, many of the challenges faced by customers in accessing new technology and developing digital literacy are the result of limited knowledge and awareness of the available technology and the complexities associated with using it. The knowledge of these contextual issues will allow for adjustments to be made to the way that e-services are delivered in order to support the customer's needs, and to make them more accessible and user friendly to customers throughout the rural regions of Bangladesh. It can ensure that rural users receive their directions accurately and that their questions are prompt. Moreover, former research has shown that accuracy in service delivery and timely responses to users is essential for ensuring the long-term sustainability of UDCs. This user-centric and empathetic approach significantly enhances users’ trust in the system and strengthens their overall experience and satisfaction that encourage the user to use UDC services. The following participates [SP1 (29y), SP5 (28y), SP6 (35y), SP10 (33y), SP13 (27y)] described as

“When I, as a service provider, treat the customer with good behavior, they feel good, which makes them easy to collaborate with us, and we always try to maintain this empathetic conduct with our customers.”

Similarly, [CITP1 (30y), CITP5 (27y), CITP19 (20y), CITP22 (42y), CTTP 25 (34y), CITP26 (29y)] also explain that

“I am deeply satisfied with the good behavior shown by the UDC staff. They genuinely understand my needs and concerns, making me feel valued and respected. This empathetic approach addresses my issues effectively and enhances my overall experience and satisfaction with their services.”

approach addresses my issues effectively and enhances my overall experience and satisfaction with their services.”

An empathy-based e-service delivery approach in rural areas emphasizes valuing and understanding the customer experience when providing services as opposed to just delivering them. Taking into account rural users' specific needs, expectations, and obstacles allow service providers to develop an inclusive, user-friendly and satisfying digital environment that encourages increased user participation, trust, long-term use, and loyalty to e-services. According to Hwang et al. (2026), providing a higher quality service that uses a human-centric approach leads to significantly higher levels of user satisfaction. On the contrary, users are likely to be dissatisfied with service quality when the company does not practice empathy. Consistent with this, Ilieva et al. (2024) noted that empathy plays a significant role in users' perceptions of service quality and satisfaction. On the other hand, the participants [CITP3 (26y), CITP9 (32y), CITP13 (23y), CITP15 (24y), CITP21 (25y), CITP26 (29y)] described

“I found the service providers less caring about our needs and demands, which hurt me a lot and made me dissatisfied about UDCs because they are supposed to take care of our needs and aspirations as we are the common beneficiaries of UDCs.”

According to Alzaydi et al. (2018), empathy involves demonstrating compassion while providing individualized attention to users, which includes communicating effectively, being user-centered and being friendly. Numerous studies have shown that service providers’ politeness and consideration for clients and the individualized attention they give users create a positive emotional response toward the client and, therefore, improve user satisfaction. Similarly, in the context of **public service delivery,** Andrews and Turner (2017) found that employee performance quality and empathy created emotional experiences for customers that significantly enhanced their satisfaction.

“The empathy demonstrated by the service providers at UDC has greatly contributed to my satisfaction. Their ability to listen and respond with genuine care and understanding makes a significant difference. It feels reassuring to interact with a team that prioritizes my well-being and consistently strives to exceed my expectations.” [CITP2 (34y), CITP11 (28y), CITP17 (20y), CITP20 (24y), CITP22 (42y), CITP24 (45y)]

Empathetic interactions create a positive emotional connection between customer and provider influencing customer return to purchase products or services from company. Customers develop a strong trust, loyalty and commitment to their service provider when those service providers understand and cater to their individual needs, minor concerns, worries and feelings toward a service. A service

provider can demonstrate empathy through a variety of means that ultimately give the service provider and their customer an opportunity to create an ongoing professional relationship with each other. Examples of how service providers may show empathy would include; personalized communication with their customers, appropriate responses to customer service inquiries, and services created with the end-user in mind. When a service provider actively listens to users, addresses their frustrations, and provides solutions tailored to their specific needs, they create a sense of being appreciated and supported. This emotional **connection** can hold importance to performance service quality in shaping overall user satisfaction and long-term engagement.

4.2.6 Tangible

Tangibility refers to the physical elements of a service, including **the physical environment,** the appearance of service provider employees, **the condition of** equipment, and the materials used to **help with service delivery.** The tangible aspects of e-service delivery are significant for promoting trust and satisfaction among users (Ong et al., 2024). Rural areas may not have equal access to the required technological infrastructure or digital devices required to access e-service delivery. Additionally, providing sufficient supporting infrastructure (e.g., a sufficient supply of reliable high-speed internet) will facilitate effective and user-friendly e-service delivery. Finally, increasing the physical evidence of UDC services increases user confidence, thereby strengthening their perception of the quality of service offered.

“We take great pride in the tangible elements of our UDC services. By maintaining state-of-the-art facilities and ensuring our equipment is always in excellent condition, we aim to demonstrate our dedication to providing top-notch services, which contributes to the satisfaction and trust of our clients.” [SP2 (34y), SP5 (28y), SP8 (30y), SP12 (27y), SP16 (39y)]

The establishment of UDC has been instrumental in enhancing rural residents' digital skills, empowering them to engage with e-services. The tangible presence of e-service components, coupled with the training provided by UDC, has significantly improved the adoption and satisfaction of public services. This study found the following:

“The modern, well-maintained facilities and up-to-date equipment reflect a commitment to quality and professionalism, enhancing my overall experience and trust in their services.” [CITP8 (25y), CITP12 (22y), CITP18 (28y), CITP20 (24y), CITP23 (40y), CITP26 (29y)]

Additionally, the tangibility as well as human and community resources are providing an effective framework for the delivery of e-services which is an important part of the e-service delivery model's focus on creating opportunities for customer engagement and satisfaction in rural areas. Physical infrastructure, such as computers and telecommunication networks allow for improved access to and usage of e-services. In addition, it is becoming increasingly important that employees have an increased ability to respond quickly to the needs of customers. Improved organizational physical infrastructure will result in higher-quality service delivery (Fathulloh & Purnama, 2024). Evidence suggests that

“I am extremely pleased with the tangible elements of the UDC services. The clean and well-organized facilities, along with the advanced technology they use, make the entire process smooth and efficient, significantly boosting my confidence and satisfaction in their services.” [CITP3 (34y), CITP6 (35y), CITP11 (28y), CITP20 (24y), CITP24 (45y), CITP25 (34y)]

Tangibility is without doubt one of the most important factors influencing a user's intention to continue utilizing a particular service. It refers to all of the physical items and environments that can be seen and touched, as well as the equipment and services used to provide that particular service. Tangible elements that are associated with high-quality service (high-quality surroundings, up-to-date technological equipment, and professionally designed services) create an initial impression of being dependable and professional, thereby increasing the user's trust and confidence in the organization's ability to provide a quality service. These **contemporary and well-organized facilities' commitment to service quality strengthens user satisfaction and engagement.** Conversely, **poorly maintained infrastructure, outdated equipment, or unappealing physical attributes** may **diminish user confidence** and **negatively impact service perceptions** of continued use**.**

4.2.7 Assurance

Assurance in the services provided by an e-service provider is an important factor that determine satisfaction of a person in e-services. While many different aspects of e-service delivery can impact how confident a consumer feels about using e-services, such as trust, security, and overall service quality, the area that seems to have the greatest impact on consumer confidence is the service provider's competence and reliability (Ilieva et al., 2024). Consumers who perceive a service provider as being capable, knowledgeable and professional are more likely to view their interaction with the service provider as safe and secure; thus, increased likelihood of positive word-of-mouth about the service provider. In the context of UDC assurance is the services that the service providers provide are being delivered with reliability, security, and consistency to meet the needs of rural customers. *The assurance of e-services is related to the reliability and security of the technology platform, which is essential for building the trust of rural users with limited digital literacy or experience with online services. When e-services reliably fulfill their promises by providing accurate and consistent results while maintaining high security standards, it develops a strong trust in the system, enhancing their willingness to continue engaging with UDC services.*

“I have always found the UDC staff highly knowledgeable and professional. Their ability to answer all my queries and provide detailed explanations about the development plans instills confidence in their capabilities. I feel assured that I am in good hands when dealing with them"[CITP7(33y), CITP15 (24y), CITP17 (20y), CITP20 (24y), CITP26 (29y)]

In addition to this, another important element of assurance is the responsiveness of e-service providers to their customers by providing quick resolution of problems and requests for help. *In a rural area setting, the user may not have access to a number of support services, and therefore, it is of critical*

importance to have a responsive user experience, which has a great effect on the perception of the quality of the service as well as the level of satisfaction of the user.

“Working with UDC, I feel a sense of security and trust. Their transparent communication and adherence to ethical standards make me believe in their credibility. I do not doubt that they prioritize our interests and ensure the safety of our investments” "[CITP3(26y), CITP5 (27y), CITP9 (32y)]

Similarly, the participants "[CITP1(30y), CITP4 (50y), CITP22 (42y), CITP25 (34y)] explained

“The courteous and reassuring demeanor of the UDC team is commendable. They are always patient and respectful, which makes me feel valued as a service recipient. Their calm and composed approach in handling issues assures me that they are competent and reliable.”

Studies have shown that e-service quality dimensions such as reliability and security can have a huge impact on both how users view the overall e-service experience as well as their actual experience (Ighomereho et al., 2022; Taherdoost, 2017). In developing countries, rural communities are often more hesitant to engage in e-services because they experience higher levels of distrust. Users in these rural communities have been shown to develop trust towards e-services based on the level of e-service quality perceived by them. In rural areas, where technological and infrastructure availability may be limited, trust becomes an important determinant of e-service adoption and engagement. Due to the higher vulnerability of rural users, ensuring security, dependability, and transparency in service delivery is essential. Evidence shows that:

“As service providers, we consistently emphasize our expertise and professionalism to build trust with our clients. We ensure that our staff is well-trained and knowledgeable about urban development processes. This commitment to assurance leads to higher customer satisfaction and encourages clients to regularly use our services, knowing they can rely on us for accurate and expert guidance.” [SP3 (37y), SP4 (30y), SP10 (33y), SP15 (35y)]

Similarly, some of the respondents of service providers described that.

“We prioritize maintaining transparency and trust in all our interactions. We foster a sense of reliability by openly sharing information and being honest about project timelines and potential challenges. Clients who trust our integrity and transparency are more likely to return for future services, as they feel secure and confident in our ability to deliver on our promises.” [SP1 (29y), SP5 (28y), SP13 (27y), SP16 (39y)]

“Our approach to service is centered around being reassuring and courteous. We ensure clients feel respected and valued, addressing their concerns with patience and clarity. This positive and reassuring experience enhances their trust in our organization, increasing their intention to use our services for their urban development needs regularly.” [SP2 (34y), SP7 (33y), SP9 (40y), SP14 (31y)]

Assurance in e-service pertains to the multi-dimensional perspective. It consists of three components; technical reliability, data security and the trustworthiness of the service provider's ability to satisfy the

needs of users (Alkraiji & Ameen, 2022). In rural areas, where a more pronounced digital divide exists, these components will play a large part in the continued usage of eGovernment services. A model that delivers services in a secure, reliable and user-friendly manner will build user confidence in using these services and lead to participation in digital governance initiatives.

4.2.8 User Satisfaction

User satisfaction is an important factor in determining the level of engagement with electronic services (e-services). The user satisfaction experienced by rural e-service users is a complicated and multidimensional construct based on multiple aspects of online service quality experienced. The quality of service delivery through UDCs will play a large role in the level of user satisfaction because of the technological disparity and lack of digital literacy that many individuals in rural areas face. To enhance the level of user satisfaction, UDCs or platforms must offer ease of use for their clients, quick access to customer support, and offer services that have been altered in order to better meet the unique requirements of the rural user's community. Moreover, key service quality dimensions, including efficiency, reliability, assurance, tangibility, information quality, and service availability, influence user perceptions and satisfaction with e-service quality in rural areas. Addressing these factors can enhance the overall e-service experience and create greater trust and satisfaction, increasing the long-term involvement of rural users in digital services. Participants [CITP20 (24y), CITP23 (40y),] said

“Working with UDC gives me peace of mind. They are transparent, professional, and always deliver on their promises. Knowing that I can trust UDC to manage my projects effectively and ethically gives me immense satisfaction, and I intend to keep using their services regularly because of this trust."

Similarly, service provider [SP6 (35y), SP8 (30y), SP9 (40y), SP12 (27y)] explains that

“Our focus on enhancing the user experience is a key factor in achieving high levels of client satisfaction. We ensure that our services are user-friendly, accessible, and tailored to meet individual client needs. When users find our services to be efficient and enjoyable, their satisfaction naturally leads to a greater intention to engage with us continuously for all their urban development needs.”

There are many different types of customer satisfaction models that can be used to evaluate citizens' satisfaction. However, it is about meeting an individual's needs or expectations. The academic literature, in terms of user satisfaction, considers a user's satisfaction to be a form of evaluative judgment, which starts after an individual interacts with a given service/product. The first conceptualization of user satisfaction/experience occurred in the expectancy-disconfirmation model (Oliver & Linda, 1981). This model indicated that user satisfaction results from comparing the user's subjective expectations with the user's actual experience (Saut & Bie, 2024). In public service delivery, citizen satisfaction is the overall assessment of public institutions’ service delivery quality and its general performance in meeting user expectations. Researchers have applied various theoretical frameworks, methodologies, approaches, and factors to explore the relationship between satisfaction and performance and evaluate and improve public service delivery.

One of the service users said that,

“My experience with UDC has been nothing short of excellent. Their reliable service and consistent quality in handling UDC ensure that my needs are always met efficiently. This high level of satisfaction with their services makes me confident in continuously choosing UDC for all my future service needs.” [CITP11 (28y)]

Participants emphasized the satisfaction they experienced and the expectations met through the use of the information provided by the UDC. Users of the UDC confirmed that the information used as provided was beneficial for easily obtaining public services.

“We are satisfied with UDC services with the quality of the information because it meets our expectations” *[CITP8 (25y), CITP14(38y), CITP18 (28y)]*

Most of the participants also agree that providing added-value information not only increases the use of UDC but also improves customer satisfaction.

“We do believe that service quality is essential to customer satisfaction. It also improves communication with our user. Providing quality service will be of enormous advantage not only to our users but also to our organization” [CITP3 (26y), CITP6(35y), CITP10 (48y), CITP23(40y)].

In conclusion, user satisfaction is pivotal in influencing an individual’s intention to continue using a product or service. When users experience a service that not only meets but exceeds their expectations, their level of satisfaction increases, thus strengthening their commitment to the service. User satisfaction has many dimensions, including service quality, product effectiveness, quality of customer care, ease of use, and overall user experience. Users are more likely to return to the service, recommend it to others and trust when they are significantly satisfied with product or service. However, their level of dissatisfaction caused by unmet expectations, poor quality of service and bad experiences with service can lead them to discontinue using it altogether. Consequently, it is very important that continually endeavor for improving user satisfaction to increase their likelihood of returning to service and developing loyalty.

4.2.9 Use Behaviour

Users' continuous intention to use UDC services is greatly shaped by their behavioral experiences with UDC. In particular with regard to the utility and satisfaction derived from the service. Users' positive behavioral experiences with UDC will create a desire to continue using UDC services when users engage with the UDC services in such a manner that they view UDC as being both convenient and efficient and user-friendly. Users' behavioral intention to continue to use the UDC services is reinforced by the service's ability to meet or exceed the user's expectations, as well as by the service's reliability and security, and the quality of customer service provided by the UDC services. In addition to the above-mentioned factors, users' perception of the relevance of public e-services to their own needs, the ability to access public e-services, and ongoing improvement and updates to public e-services to meet

users' ongoing needs are also factors in shaping users' desire to continue using public e-services. In this regard, users play a crucial role by providing feedback and suggestions based on the service that makes them empowered and part of the service's growth. Thus, in the context of UDCs, use behavior refers to the present and future utilization of UDC services by users' experiences, expectations, and perceived value.

"*Instead of generalized the UDC services, I often try to visit UDC to receive the service provider's benefit, and expect to get better UDC services next time." [CITP1 (30y), CITP4(50y), CITP11(28y), CITP17 (20y), CITP19(20y), CITP23(40y), CITP26 (29y)]*

"UDC services enhance my interaction with government officials. I feel at ease receiving government services quickly. Using these services helps me save time, money, and unnecessary visits." [CITP3 (26y), CITP19 (20y), CITP24(45y].

Users need an intuitive and user-friendly UDC service that is easy to use and provides a significant benefit. Users' decision to continuously use the services is based on multiple primary influences determined. One of which includes the service quality as it affects to system reliability, security and access to the service. Users will build more trust in their UDC services if they are considered to be efficient and secure. Conversely, users will use the service more consistently if they receive a higher perception of value from the service. The higher value of the service is achieved when the user feels their expectations are met in terms of the convenience, relevance and personalization of the service. User participation in designing and continuously improving e-services enhances user behavior because users feel a sense of ownership and satisfaction when they participate in designing and developing the services they will ultimately use. The design of e-government services should also be based on the public value perspective, ensuring that the e-government services are designed to be user-friendly and meet the needs and expectations of the public. This includes considerations for privacy protection, which is a significant concern for many users and can influence their decision to trust and continue using a service. In summary, the behavior of using UDC is a multifaceted issue that can be influenced by service quality, perceived value, citizen participation, and design elements that demonstrate public value. If these factors are handled appropriately by public e-services they will create a customer base that is satisfied and will continue to use them over time. Some service provider [SP5 (28y), SP7 (33y), SP9 (40y), SP13 (27y), SP15 (35y)] also agreed that

"Our unwavering commitment to delivering high-quality services ensures that our clients are satisfied with every interaction. When users experience the exceptional quality of UDC and the meticulous attention to detail we provide, their satisfaction drives their intention to continuously use our services for future services."

Similarly, service provider [SP2 (34y), SP3 (37y), SP5 (28y), SP10 (33y), SP16 (39y)] described

"We strive to build long-term relationships with service receiver by consistently exceeding their expectations. By addressing their needs promptly and effectively, we foster a high level of satisfaction.

Satisfied user is more likely to develop loyalty towards UDC, resulting in their repeated use of the services provided by UDC."

4.2.10 Value Co-creation

The co-creation of value in a public service involves an interpersonal relationship between providers of a service and those who receive services through the exchange of value between them (Manoharan et al., 2023). This is an emerging trend in the delivery of e-service, due to the availability of electronic or digital methods to facilitate the process of delivering and receiving a service. In addition to value exchanged, the other main elements of the co-creation process are elements related to use, dynamic cycling or interaction between the two parties, as well as openness, innovation of services, governance of the service delivery process and resources that allow for two-way communication between providers and users (Manoharan et al., 2023). Collectively, the elements discussed previously create the framework or structure for how users interact with, create, access and use services. The innovative approach of using technology to develop service innovation (i.e., incorporating co-created content) is also an effective way to foster user engagement and increase user satisfaction. By applying user feedback, suggestions and criticisms to assist in the development and delivery of public services. Value co-creation is created more effective and responsive through collaboration between the public sector and users. Theoretical and practical implications for public service delivery through value co-creation are important for understanding how UDCs operate within developing nations and the need for further research into their effectiveness. User-driven co-creation has the capability of improving service delivery, building trust in users, their engagement, and developing greater public value. By implementing co-creation, UDCs change obstacles (whether they be structural or operational) into opportunities, resulting in the delivery of digital public services that are sustainable, citizen-centric, and efficient.

Both of the service provider [SP3(37y), SP6(35y), SP8(30y, SP11(28y)] and users [CITP2 (34y), CITP4(50y), CITP7 (33y), CITP8 (25y), CITP14(38y), CITP17 (20y), CITP19(20y)] agreed to described that

"Working closely with UDC in the planning stages of our project allowed us to co-create solutions that perfectly fit our needs. This collaborative approach ensured that every detail was meticulously handled, significantly enhancing the quality of the services. The high service quality achieved through this partnership ensures that we are delighted and intend to continue using UDC for future projects."

Service-Dominant (S-D) logic maintains that businesses are not able to create value alone. In order for a business to create value, it must work with the user or service recipient to accomplish this. As such, a user is not merely a recipient of value, but a collaborator or joint creator with a business (Lusch et al. 2007). Payne et al. (2009) have developed a process-based view of understanding user in value creation through three components that make up user participation in value co-creation: customer value creation process, supplier value creation process and an encounter process. Together, these three components create a process-based framework that helps companies develop specialized competencies by providing a vehicle for discovering new opportunities to create value and to benefit both the user and the firm. On the other hand, from the participant's perspective, Grönroos (2008) distinguishes two dimensions of

service logic: one related to consumption and the other to the service provider's logic. According to the value-in-use concept, the customer is always the primary value creator, while the supplier plays two roles: value facilitator and co-creator (Grönroos, 2008; Grönroos & Voima, 2013). The value facilitator component supplies to an end user the resources needed to enable the user to create a value proposition for themselves. As a value co-creator, the value facilitator works collaboratively with the user to better understand the user's unique needs, wants, and experiences in order to continue to improve the user's experience in service delivery. Our study finds the following results based on the above statement

"UDC encourages active involvement from their clients throughout the project lifecycle. We felt our opinions were valued and integrated into the project by participating in regular feedback sessions and decision-making processes. This co-creation process improved the outcome and heightened our satisfaction with the overall service. As a result, we are more inclined to choose UDC for our upcoming development needs." [CITP3 (26y), CITP7 (33y), CITP10 (48y), CITP15 (24y), CITP23 (40y)]

"The value co-creation approach taken by UDC means that services are tailored to our specific requirements. Being part of the development process ensures that the final deliverables are exactly what we envisioned, if not better. This level of customization and the positive experience of co-creating value with UDC significantly boosts our satisfaction and solidifies our intention to use their services continually." [CITP5 (27y), CITP9 (32y), CITP10 (48y), CITP19 (20y)]

"As service providers at UDC, we believe that involving our clients in the planning and execution phases of projects significantly enhances the quality of our services. By co-creating solutions, we ensure our services align with clients' needs and expectations. This collaborative approach improves service quality and fosters a deeper connection with our clients." [SP1(29y), SP4(30y), SP10(33y), SP13(27y)]

"We prioritize active engagement with our clients, inviting them to share their input and feedback at every stage. This value co-creation process allows us to address their concerns and adapt our services to meet their evolving needs. By making clients feel valued and heard, we enhance their satisfaction with our services, leading to stronger loyalty and repeat business." [SP2(34y), SP7(33y), SP12(27y), SP15(35y)]

"At UDC, we see value co-creation as a key strategy for building long-term relationships with our clients. When clients actively shape the services they receive, they develop a sense of ownership and commitment. This positive experience increases their satisfaction and reinforces their intention to continue using our services for future urban development projects." [SP5(28y), SP6(35y), SP8(30y), SP11(28y), SP16(39y)]

Value Co-Creation explains how service providers and Users collaborate to produce mutual value and deliver an improved or enhanced experience when using services. In the context of UDCs, the idea of co-creation goes beyond just being a consumer of a service and includes being actively engaged in the development, application, and use of services by providing support, feedback, and assistance throughout the creation, development, and delivery of the service. The greater level of connection that users achieve

when participating in the co-creation process through feedback, design, or delivery allows them to feel a higher degree of involvement and commitment to the results generated from services provided to them. This collaborative interaction increases satisfaction, strengthens loyalty, and enhances service quality. Conversely, a lack of involvement can lead to feelings of disconnection and reduce both satisfaction and the intention to continue service use. Ultimately, fostering value co-creation enhances user engagement and solidifies long-term commitment. Participatory processes that foster value co-creation enhance users' involvement and increase their level of commitment to continued use of a service. Supported with user perspectives, service providers can improve the performance of services through e-government and develop sustainable digital governance models consistent with rural users' requirements, and meet the unique needs of rural users.

4.3 Research Propositions Based on Thematic Findings

In-depth qualitative interviews (thematic analysis) provide insights into user's personal experiences and involvements with UDCs, which determine user perceptions about e-services based on both functional and relational quality dimensions grounded in well-established theoretical models. For instance, drawing on the SERVQUAL model, key dimensions such as responsiveness, reliability, empathy, assurance, and tangibles were identified as playing an important role in user satisfaction (Parasuraman et al., 1988). For example, responsiveness refers to the service provider's capability to assist users by providing timely feedback, reduced response time, and delivering accurate services that raises satisfaction and encourages repeated use of services of UDC. Reliability is the accuracy and dependability of the services provided by UDCs. It is a measure of the extent to which UDCs provide accurate services as agreed, without delays, to meet the expectations of their users without error (Song et al., 2024). Empathy denotes personalized care which reflects the service providers ability to realize users and support them respectfully which contributes to positive user emotions and satisfaction. Tangibility refers to equipment, setting**, infrastructure, and overall environment of the UDC** that enhances the credibility of the services, while assurance reflects users' trust and confidence in the service provider's expertise and ethical behavior such as the time, distance, staff's knowledge and skills, and their ability to provide services of UDC accordingly (Ong et al., 2025).

In line with the D&M IS Model (DeLone & McLean, 2003), information quality, encompassing precise, trustworthy, relevant, and easily available information to users that is essential as a user to relay on e-services through UDC platform. Users expressed greater satisfaction when information is clear, accurate, and accessible, which also supported their perception of service competence. Additionally, service availability states from in-depth interview findings (IDIs), how uninterrupted and diversified services are accessible when needed, including both physical presence and digital accessibility, and are delivered within the promised time, and without unexpected delays can influence user satisfaction. The UTAUT2 framework (Venkatesh et al., 2012) supported perceptions on use behavior, indicating that users' preference, likelihood or willingness to use the digital services from UDC when satisfaction and perceived service quality converge. Finally, according to Public Value Theory, the idea of value co-creation was emphasized by the direct feedback of users and their participation in improving the service.

This participatory process resulted in increased levels of satisfaction and increased intentions of reusing the service by users. Collectively, the various major themes and sub-themes provide strong qualitative support that perceived service quality of the users impacts their satisfaction with the service. Value co-creation serves as a contributor to enhancing the relationship between service quality and customer satisfaction by ensuring that the experiences of users are incorporated into the service process. Based on the above discussion, we may propose the following proposition:

Proposition 1: In triggering user use behavior of UDC services. *Users' perceived service quality (i.e.,* ***responsiveness, reliability, empathy, assurance, tangibility, service availability, and information quality)*** *may significantly and positively* ***influences on user satisfaction.***

Proposition 2: User satisfaction (*attitudinal factor) may have a positive and significant impact on user use behavior of UDC services.*

Proposition 3: User *value co-creation behavior may enhance or strengthen the relationship between perceived service quality and user satisfaction regarding the UDC services.*

4.4 Proposed Theoretical Model

The findings from Study 1 derived through a rigorously conducted qualitative thematic exploration have provided a conceptually robust and empirically grounded basis for developing a theoretical model that can guide the next phases of research. The identification of Perceived Service Quality (PSQ) dimensions has highlighted the multidimensional nature of PSQ in the context of e-government services delivered through Union Digital Centers (UDCs) in rural Bangladesh. These dimensions are not just theoretical constructs; rather, they are rooted in the experiences and narratives of stakeholders to effectively measure PSQ. The SOR and ABC model lead the research explaining how dimensions of PSQ and user attitudinal factor **satisfaction together trigger the use behavior of user of UDC services. Hence this study proposes an integrated model (see Figure 2). Many previous studies extended the ABC and SOR model in various aspects. For example,** Yang et al., (2022) examined the aesthetics and tourist involvement in heritage tourism. However, no studies have shown how dimensions of PSQ influence the user satisfaction followed by user use behavior by using SOR and ABC model in the field of public sector specially in e- government services. This study confirms the novelty by integrating two complementary theories, SOR and ABC to create a holistic framework to explore how PSQ dimensions influence internal states (user satisfaction) leading to responses (use behavior) by considering both individual attitudes and contextual factors in the public sector through grounded theory approach. While SOR explains the stimulus-response relationship and ABC contextualizes and justifies the moderating role of value co-creation where, the ABC theory explains how value co-creation as a contextual factor enhances the relationship between PSQ dimensions and satisfaction. The identifying concepts are systematically and coherently arranged to show a core concept defining the study's original essence. Given this strong theoretical foundation, developing a comprehensive theoretical model is not only appropriate but also crucial for advancing the field of research. Figure (2) illustrates the theoretical integration of PSQ dimensions, satisfaction and outcome-based model to describe user use behavior.

5. Research Implications and Future Direction

The results of this qualitative theme analysis have a number of theoretical and practical ramifications for enhancing and sustaining e-government services, especially those offered by Union Digital Centers (UDCs) in Bangladesh. This study offers evidence-based insights that can guide organizational strategies and policy decisions by delving into the detailed narratives and perspectives of service providers and users. A more citizen-responsive approach to e-service development is required, as evidenced by the themes that emerged from participant stories. The institutions, like UDCs, may find that the analysis's recommendations help them improve operational processes, strengthen service delivery mechanisms, and match service design to users' expectations and lived experiences. These enhancements can lead to better public service results, increased user happiness, and general improvements in the standard of living for citizens. According to the study, value co-creation; which is defined as the cooperative process between service providers and users influences service satisfaction and effectiveness in a great way. Therefore, it is recommended that policymakers and service managers think about instituting participatory procedures that facilitate shared decision-making, co-design processes, and iterative feedback. By using these techniques, deficiencies in information quality, responsiveness, empathy, and service tangibility can be filled. The foundation for additional qualitative research on the dynamics of citizen engagement and the use of digital services is laid by this study. Future research might examine how local contextual elements, such trust, digital literacy, and community involvement, influence the development of e-governance, as well as longitudinal changes in user satisfaction. In addition to promoting more flexible and successful service models, these findings will advance the conversation around inclusive and sustainable digital governance in developing nations.

6. Conclusion

UDC is recommended as an ideal solution for expanding access to public services, delivering them to citizens at their doorstep regardless of time or location (Panday & Chowdhury, 2023). It is an emerging public service delivery platform in rural areas of Bangladesh. Using a qualitative methodology based on a combination of SERVQUAL, the DeLone and McLean IS Success Model, and the Value Co-Creation Theory, this study has analyzed and reconceptualized the major drivers of UDC usage behaviors in Bangladesh. influence customer perceptions of overall satisfaction and usage behavior. Service availability is the major quality factor which demonstrates that the importance of consistently providing a wide range of services and ensuring uninterrupted access at the community level. In addition, by providing users with good-quality information, information providers help them to make decisions based on complete, accurate, and easily comprehensively available information (Kim et al., 2021). Responsiveness was identified as the timeliness of service delivery and the ability to respond quickly (Phan et al., 2024). Reliability reflects the consistent and accurate service delivery (Song et al., 2025). Tangibility of UDCs is defined by the ability of end users to interact with available up-to-date technology, and the systematic and structured service delivery process that leads to enhanced perceptions of service quality and reliability (Ong et al., 2024). Assurance is the direct connection between a professional and competent service provider to the user's perception that they are receiving service from

a company that is secure, trustworthy, and provides credible services (Alkraiji & Ameen, 2022). User satisfaction is the central mediator connecting all service quality dimensions to actual use behavior and the long-term commitment or engagement of users with the UDC service. The service delivery process of UDC emphasizes value co-creation by allowing users to become engaged participants in the delivery of services. Users who provide input to UDC through feedback, design of services, and interaction with UDC entrepreneurs tend to express a much higher degree of satisfaction with their experiences and demonstrate more sustained usage behavior than users who did not engage in these ways. Together, these elements form an environment favorable to continued user engagement and digital inclusion within the community. This research contributes to understanding the new service approaches required for future UDC usage by citizens that can improve UDC service quality and strengthen the government service delivery process at the local level in Bangladesh. Practical results will comprise service improvements impacting user and service provider attitudes. Consequently, it is essential to reconceptualize the fundamental motivations of users of UDC to improve their daily lives. This research was to better reconceptualize the drivers of user perceptions of UDC from both the user and provider perspectives through a new approach to utilizing UDC. In doing so, this study provided a new viewpoint for establishing the use of UDC, engaged providers of UDC services, and explored citizens' perspectives of UDC. Overall, this study indicates that the intention of a user to continue using UDC services is not only determined by service quality but also by how empowered, valued, and co-responsible they feel for the success of those services. This chapter bridges service quality theory, information systems success theory, and public value co-creation into a cohesive framework that offer more holistic understanding of the factors influencing rural e-service adoption in Bangladesh.

Declarations

This research was conducted in accordance with the highest ethical standards to ensure integrity, transparency, and academic honesty. Ethical approval (Issue No.: NSTU/EA/2023/653) was obtained from the Research and Ethics Committee, Department of Educational Administration, Noakhali Science and Technology University, and all necessary permissions were secured before data collection.

References

1. Almaiah, M. A., & Nasereddin, Y. (2020). Factors influencing the adoption of e-government services among Jordanian citizens. *Electronic Government, an International Journal*, *16*(3), 236-259.
2. AlBalushi, T. H. (2021). E-services quality: A perspective of service providers and service users. In *Digital Service Platforms*. IntechOpen.
3. Ali, H. (2019). Measurement of e-services quality: an empirical study of University of Bahrain. *Education and Information Technologies*, *24*(3), 1907-1924.
4. Alkraiji, A., & Ameen, N. (2022). The impact of service quality, trust and satisfaction on young citizen loyalty towards government e-services. *Information Technology & People*, *35*(4), 1239-1270.

5. Andrews, D., & Turner, S. (2017). Improving the customer experience through consistency and effective service delivery in the United Kingdom public house sector. *British Food Journal*, *119*(3), 587-599.
6. Anwer Anwer, M., Esichaikul, V., Rehman, M., & Anjum, M. (2016). E-government services evaluation from citizen satisfaction perspective: A case of Afghanistan. *Transforming Government: People, Process and Policy*, *10*(1), 139-167.
7. Alzaydi, Z. M., Al-Hajla, A., Nguyen, B., & Jayawardhena, C. (2018). A review of service quality and service delivery: Towards a customer co-production and customer-integration approach. *Business Process Management Journal*, *24*(1), 295-328.
8. Baker, C., Wuest, J., & Stern, P. N. (1992). Method slurring: The grounded theory/phenomenology example. Journal of advanced nursing, 17(11), 1355-1360.
9. Balaji, K. (2025). E-Government and E-Governance: Driving Digital Transformation in Public Administration. *Public Governance Practices in the Age of AI*, 23-44.
10. Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. Qualitative research in psychology, 3(2), 77-101
11. Bhuiyan, A. R., & Abrar, M. (2022). Role of One Stop Shop for e-service delivery: Case Study on Union Digital Center in Bangladesh. *Social Science Review*, *39*(1).
12. Bayaga, A. (2020, March). Appropriate e-government service support and influences on end-users. In *2020 Conference on Information Communications Technology and Society (ICTAS)* (pp. 1-5). IEEE.
13. Belgrave, L. L., & Seide, K. (2019). Grounded theory methodology: Principles and practices. In Handbook of research methods in health social sciences (pp. 299-316). Springer, Singapore.
14. Biswas B, Nur Ullah M, Rahman MM, Al Masud A (2024) Service quality, satisfaction, and intention to use Pourasava Digital Center in Bangladesh: The moderating effect of citizen participation. PLoS ONE 19(6): e0304178. https://doi.org/10.1371/journal.pone.0304178.
15. Bryant, A., & Charmaz, K. (2007). Grounded theory in historical perspective: An epistemological account. *The SAGE handbook of grounded theory*, 31-57.
16. Chang, L. W., Njie-Carr, V., Kalenge, S., Kelly, J. F., Bollinger, R. C., & Alamo-Talisuna, S. (2013). Perceptions and acceptability of mHealth interventions for improving patient care at a community-based HIV/AIDS clinic in Uganda: a mixed methods study. AIDS care, 25(7), 874-880.
17. Creswell, J. W., & Clark, V. L. P. (2017). *Designing and conducting mixed methods research*. Sage publications.
18. de Jong, M. D., Neulen, S., & Jansma, S. R. (2019). Citizens' intentions to participate in governmental co-creation initiatives: Comparing three co-creation configurations. *Government information quarterly*, *36*(3), 490-500.
19. DeLone, W. H., & McLean, E. R. (2003). The DeLone and McLean model of information systems success: a ten-year update. *Journal of management information systems*, *19*(4), 9-30.

20. DiCicco-Bloom, B., & Crabtree, B. F. (2006). The qualitative research interview. Medical education, 40(4), 314-321.
21. Eggert, A., & Ulaga, W. (2002). Customer perceived value: a substitute for satisfaction in business markets?. *Journal of Business & industrial marketing*, *17*(2/3), 107-118.
22. Farooq, M. S., Salam, M., Fayolle, A., Jaafar, N., & Ayupp, K. (2018). Impact of service quality on customer satisfaction in Malaysia airlines: A PLS-SEM approach. *Journal of Air Transport Management*, *67*, 169-180.
23. Fathulloh, M. A., & Purnama, N. B. (2024). Assessing Customer Satisfaction in Automotive After-sales Service: A SERVQUAL Analysis. *Asian Journal of Economics, Business and Accounting*, *24*(9), 98-110.
24. Faulkner, N., Jorgensen, B., & Koufariotis, G. (2019). Can behavioural interventions increase citizens' use of e-government? Evidence from a quasi-experimental trial. *Government Information Quarterly*, *36*(1), 61-68.
25. Gill, P., Stewart, K., Treasure, E., & Chadwick, B. (2008). Methods of data collection in qualitative research: Interviews and focus groups. British dental journal, 204, 291-295
26. Glaser, B., & Strauss, A. (2017). *Discovery of grounded theory: Strategies for qualitative research*. Routledge.
27. Glaser, B. G., & Strauss, A. L. (1967). The discovery of grounded theory: strategies for qualitative research. New York: Aldine de Gruyter
28. Grönroos, C., & Voima, P. (2013). Critical service logic: making sense of value creation and co-creation. *Journal of the academy of marketing science*, *41*, 133-150.
29. Grönroos, C. (2008). Service logic revisited: who creates value? And who co-creates?. *European business review*, *20*(4), 298-314.
30. Granqvist, K., Ahlstrom, L., Karlsson, J., Lytsy, B., & Andersson, A. E. (2022). Learning to interact with new technology: Health care workers' experiences of using a monitoring system for assessing hand hygiene–a grounded theory study. *American Journal of Infection Control*, *50*(6), 651-656.
31. Hasan, N., Sultana, R., & Bao, Y. (2022). Re-conceptualizing the drivers toward mHealth adoption in a least developing country: A qualitative exploration. *SAGE Open*, *12*(2), 21582440221091719.
32. Hoque, S. M. S., & Kabir, M. A. A. (2024). Assessing ICT and e-government service through UDC in Bangladesh: rural dwellers' economic benefits. *Electronic Government, an International Journal*, *20*(2), 161-174.
33. Hooda, A., Gupta, P., Jeyaraj, A., Giannakis, M., & Dwivedi, Y. K. (2022). The effects of trust on behavioral intention and use behavior within e-government contexts. *International Journal of Information Management*, *67*, 102553.
34. Hossain M (2022) Access, awareness, and perceived demand for ICT services in rural areas: Household level analysis. Digital Transformation and Economic Development in Bangladesh (6). Palgrave Macmillan, Singapore: 105–127.

35. Hoque, S. M. S., & Kabir, M. A. A. (2024). Assessing ICT and e-government service through UDC in Bangladesh: rural dwellers' economic benefits. *Electronic Government, an International Journal*, *20*(2), 161-174.
36. Hui, Z., Khan, A. N., Chenglong, Z., & Khan, N. A. (2024). When service quality is enhanced by human–artificial intelligence interaction: an examination of anthropomorphism, responsiveness from the perspectives of employees and customers. *International Journal of Human–Computer Interaction*, *40*(22), 7546-7561.
37. Hwang, B. N., Puntha, P., & Jitanugoon, S. (2026). Human-centric AI: transforming service ecosystems for inclusivity and excellence in resource-constrained contexts. *Journal of Service Theory and Practice*, 1-55.
38. Ighomereho, S. O., Ojo, A. A., Omoyele, S. O., & Olabode, S. O. (2022). From service quality to e-service quality: Measurement, dimensions and model. *arXiv preprint arXiv:2205.00055*.
39. Ilieva, G., Yankova, T., Ruseva, M., Dzhabarova, Y., Zhekova, V., Klisarova-Belcheva, S., ... & Dimitrov, A. (2024). Factors influencing user perception and adoption of E-Government services. *Administrative Sciences*, *14*(3), 54.
40. Islam, M. A. (2025). Factors Affecting Citizen Satisfaction of Urban Local Government Service in Bangladesh: The Case of Pabna Municipality. *Public Organization Review*, *25*(1), 253-270.
41. Johnson, E. H. I. G. I. E., & Karley, J. (2018). Impact of service quality on customer satisfaction.
42. Kiger, M. E., & Varpio, L. (2020). Thematic analysis of qualitative data: AMEE Guide No. 131. Medical teacher, 42(8), 846-854.
43. Kim, Y., Wang, Q., & Roh, T. (2021). Do information and service quality affect perceived privacy protection, satisfaction, and loyalty? Evidence from a Chinese O2O-based mobile shopping application. *Telematics and informatics*, *56*, 101483.
44. Kumar, R., Sachan, A., & Mukherjee, A. (2017). Qualitative approach to determine user experience of e-government services. *Computers in Human Behavior*, *71*, 299-306.
45. Kumar, S., Goel, U., Joshi, P., & Johri, A. (2024). Factors affecting Information & Communication Technology (ICT) adoption among MSMEs. *Journal of Open Innovation: Technology, Market, and Complexity*, *10*(1), 100205.
46. Legramante, D., Azevedo, A., & Azevedo, J. M. (2023). Integration of the technology acceptance model and the information systems success model in the analysis of Moodle's satisfaction and continuity of use. *The International Journal of Information and Learning Technology*, 40(5), 467-484.
47. Li, Y., & Shang, H. (2020). Service quality, perceived value, and citizens' continuous-use intention regarding e-government: Empirical evidence from China. *Information & Management*, *57*(3), 103197.
48. Lusch, R. F., Vargo, S. L., & O'brien, M. (2007). Competing through service: Insights from service-dominant logic. *Journal of retailing*, *83*(1), 5-18.
49. Mao, Z., Biswas, B., Nur Ullah, M., Rahman, M. M., & Rahman, F. (2025). The Role of User Value Co-Creation Behavior on Service Delivery Performance of Union Digital Center in Bangladesh. *SAGE Open*, *15*(2), 21582440251339460.

50. Mamun MA, Ulfat M and Begum A (2018) Sustainability of Union Digital Centre in Bangladesh: Has It Got Institutional Roots? European Journal of Social Sciences Studies 3(2). 10–21.
51. Manoharan, A. P., Melitski, J., & Holzer, M. (2023). Digital governance: an assessment of performance and best practices. *Public Organization Review*, *23*(1), 265-283.
52. Moon, M. J. (2018). Evolution of co-production in the information age: Crowdsourcing as a model of web-based co-production in Korea. *Policy and Society, 37*(3), 294–309.
53. Mou, J., Shin, D. H., & Cohen, J. F. (2017). Trust and risk in consumer acceptance of e-services. *Electronic Commerce Research*, *17*, 255-288.
54. Musteen, M. (2016). Behavioral factors in offshoring decisions: A qualitative analysis. *Journal of Business Research*, *69*(9), 3439-3446.
55. Nanda, S. (2022). India's E-Governance Journey: Looking Through Common Service Centres. *Indian Journal of Public Administration*, *68*(4), 599-609.
56. Nelson, H. J., Bally, J. M., Spurr, S., Foulds, H., & de Padua, A. (2023). Integrating constructivist grounded theory with a patient-oriented research approach to enhance health promotion research. *International Journal of Qualitative Methods*, *22*, 16094069231218657.
57. Nzaramyimana, L., & Susanto, T. D. (2019). Analysis of factors affecting behavioural intention to use e-government services in Rwanda. *Procedia Computer Science*, *161*, 350-358.
58. Ocampo, L., Alinsub, J., Casul, R., Enquig, G., Luar, M., Panuncillon, N., et al. (2019). Public service quality evaluation with SERVQUAL and AHP-TOPSIS: A case of philippine government agencies. *Socio-Economic Planning Sciences, 68*, 100604.
59. Oliver, R. L., & Linda, G. (1981). Effect of Satisfaction and its Antecedents on Consumer Preference and Intention. *Advances in consumer research*, *8*(1).
60. O'Hagan, A. O., & O'Connor, R. V. (2015). Towards an understanding of game software development processes: A case study. In *Systems, Software and Services Process Improvement: 22nd European Conference, EuroSPI 2015, Ankara, Turkey, September 30--October 2, 2015. Proceedings 22* (pp. 3-16). Springer International Publishing.
61. Ong, A. K. S., Prasetyo, Y. T., Lagura, F. C., Ramos, R. N., Sigua, K. M., Villas, J. A., ... & Diaz, J. F. T. (2023). Determining tricycle service quality and satisfaction in the Philippine urban areas: A SERVQUAL approach. *Cities*, *137*, 104339.
62. Ong, A. K. S., German, J. D., Dangaran, P. C., Paz, J. J. B., & Macatangay, R. R. G. (2024). Service quality and customer satisfaction analysis among motorcycle taxi transportation in the Philippines through SERVQUAL dimensions and social exchange theory. *Case Studies on Transport Policy*, *15*, 101139.
63. Paul, J., Mittal, A., & Srivastav, G. (2016). Impact of service quality on customer satisfaction in private and public sector banks. *International journal of bank marketing*, *34*(5), 606-622.
64. Panday, P. K., & Chowdhury, S. (2023). *Citizen charter and local service delivery in Bangladesh*. Springer Nature.

65. Payne, A., Storbacka, K., Frow, P., & Knox, S. (2009). Co-creating brands: Diagnosing and designing the relationship experience. *Journal of business research*, *62*(3), 379-389.
66. Poth, C. N. (2023). The Sage handbook of mixed methods research design.
67. Phan Thi Hang, N., & Kim Quoc Trung, N. (2024). Service quality, customer satisfaction and loyalty: a case study in Vietnamese SMEs. *Cogent Business & Management*, *11*(1), 2377769.
68. Parasuraman, A., Zeithaml, V. A., & Berry, L. L. (1988). SERVQUAL: A multiple-item scale for measuring consumer perceptions of service quality. *Journal of Retailing*, 64(1), 12-40.
69. Presbury, R. (2009). *Service quality in Sydney hotels: a perspective from managers, staff and customers* (Doctoral dissertation, University of Western Sydney (Australia).
70. Qatawneh, N., Al-Okaily, M., Alkhasawneh, R., Althonayan, A., & Tarawneh, A. (2024). The mediating role of e-trust and e-satisfaction in the relationship between e-service quality and e-loyalty toward e-government services. *Global Knowledge, Memory and Communication*.
71. Saha, A. (2022). Knowledge attitude and practice toward union digital center (UDC): Strategies and recommendations regarding building self-efficacy for rural females of Bangladesh. *Journal of Social Service Research*, *48*(4), 545-560.
72. Sakyi, D. (2020). A comparative analysis of service quality among ECOWAS seaports. *Transportation Research Interdisciplinary Perspectives, 6*, Article 100152. https://doi.org/10.1016/j.trip.2020.100152
73. Saut, M., & Bie, S. (2024). Impact of service expectation, experiential quality, and perceived value on hotel customer satisfaction. *Journal of Quality Assurance in Hospitality & Tourism*, *25*(4), 781-809.
74. Shbeeb, L. (2022). The relation between transit service availability and productivity with customers satisfaction. *Transportation Research Interdisciplinary Perspectives*, *16*, 100716.
75. Sharma, S. K., Metri, B., Dwivedi, Y. K., & Rana, N. P. (2021). Challenges common service centers (CSCs) face in delivering e-government services in rural India. *Government Information Quarterly*, *38*(2), 101573.
76. Sharma, R., & Mishra, R. (2017). Investigating the role of intermediaries in adoption of public access outlets for delivery of e-government services in developing countries: An empirical study. Government Information Quarterly, 34(4), 658–679.
77. Sim, J., & Waterfield, J. (2019). Focus group methodology: some ethical challenges. *Quality & quantity*, *53*(6), 3003-3022.
78. Song, T., Liu, F., Deng, N., Qian, S., Cui, T., Guan, Y., ... & Yu, P. (2021). A comprehensive 6A framework for improving patient self-management of hypertension using mHealth services: Qualitative thematic analysis. *Journal of Medical Internet Research*, *23*(6), e25522.
79. Song, H. J., Shin, N., Koo, H. M., & Shin, W. S. (2025). The impact of functional and service quality on perceived security in manufacturing and telecommunication services. *International Journal of Quality & Reliability Management*, *42*(2), 504-526.

80. Spreng, R. A., & Olshavsky, R. W. (1992). A desires-as-standard model of consumer satisfaction: Implications for measuring satisfaction. *Journal of Consumer Satisfaction, Dissatisfaction and Complaining Behavior*, *5*, 45-54.
81. Strauss, A., & Corbin, J. M. (1997). Grounded theory in practice. Sage
82. Strauss, A. L., & Corbin, J. (2008). Pesquisa qualitativa: técnicas e procedimentos para o desenvolvimento de teoria fundamentada (2nd ed.). Porto Alegre: Artmed.
83. Taherdoost, H. (2017). Understanding of e-service security dimensions and its effect on quality and intention to use. *Information & Computer Security*, *25*(5), 535-559.
84. Tajudeen, F. P., Bahar, N., Maw Pin, T., & Saedon, N. I. (2022). Mobile technologies and healthy ageing: A bibliometric analysis on publication trends and knowledge structure of mHealth research for older adults. *International Journal of Human–Computer Interaction*, *38*(2), 118-130.
85. Tong, A., Sainsbury, P., & Craig, J. (2007). Consolidated criteria for reporting qualitative research (COREQ): a 32-item checklist for interviews and focus groups. International Journal for Quality in Health Care, 19(6), 349-357.
86. Tsai, Y., Wu, S., & Chen, J. (2020). Service Availability and Patient Satisfaction in Hospital: Mediating Role of Service Quality. *Healthcare*, *8*(4), 491.
87. Ullah, M. S. (2020). ICTs, power prejudice and empowerment: Digital exclusion of the poor in rural Bangladesh. *Digital inequalities in the global south*, 103-133.
88. Uthaman, V. S., & Vasanthagopal, R. (2023). Key Success Factors for the e-Governance Initiatives Through Common Service Centres in India: An Empirical Study with Special Reference to Akshaya e-Kendras in Kerala. *Indian Journal of Public Administration*, *69*(1), 87-103.
89. Venkatesh, V., Chan, F. K., & Thong, J. Y. (2012). Designing e-government services: Key service attributes and citizens' preference structures. *Journal of operations management*, *30*(1-2), 116-133.
90. Wisniewski, M. (2001). Using SERVQUAL to assess customer satisfaction with public sector services. *Managing Service Quality: An International Journal*, *11*(6), 380-388.
91. Zavareh, F. B., Ariff, M. S. M., Jusoh, A., Zakuan, N., Bahari, A. Z., & Ashourian, M. (2012). E-service quality dimensions and their effects on e-customer satisfaction in internet banking services. *Procedia-social and behavioral sciences*, *40*, 441-445.
92. Zhang, H., Leung, X. Y., Bai, B., & Li, Y. (2021). Uncovering crowdsourcing in tourism apps: A grounded theory study. Tourism Management, 87, 104389.

Figures

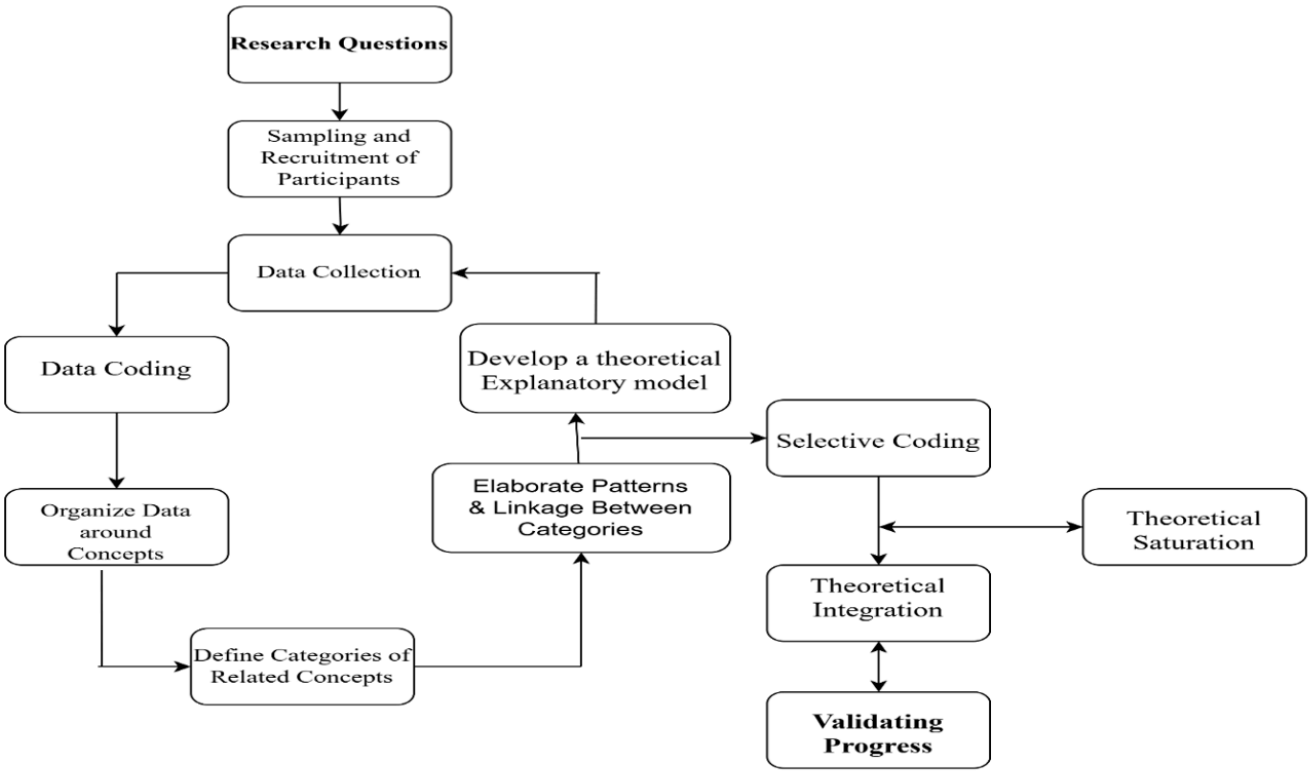


Figure 1

Stages of Grounded Theory

Sources: Derived from Strauss and Corbin (2008) and Hasan et al., (2022)

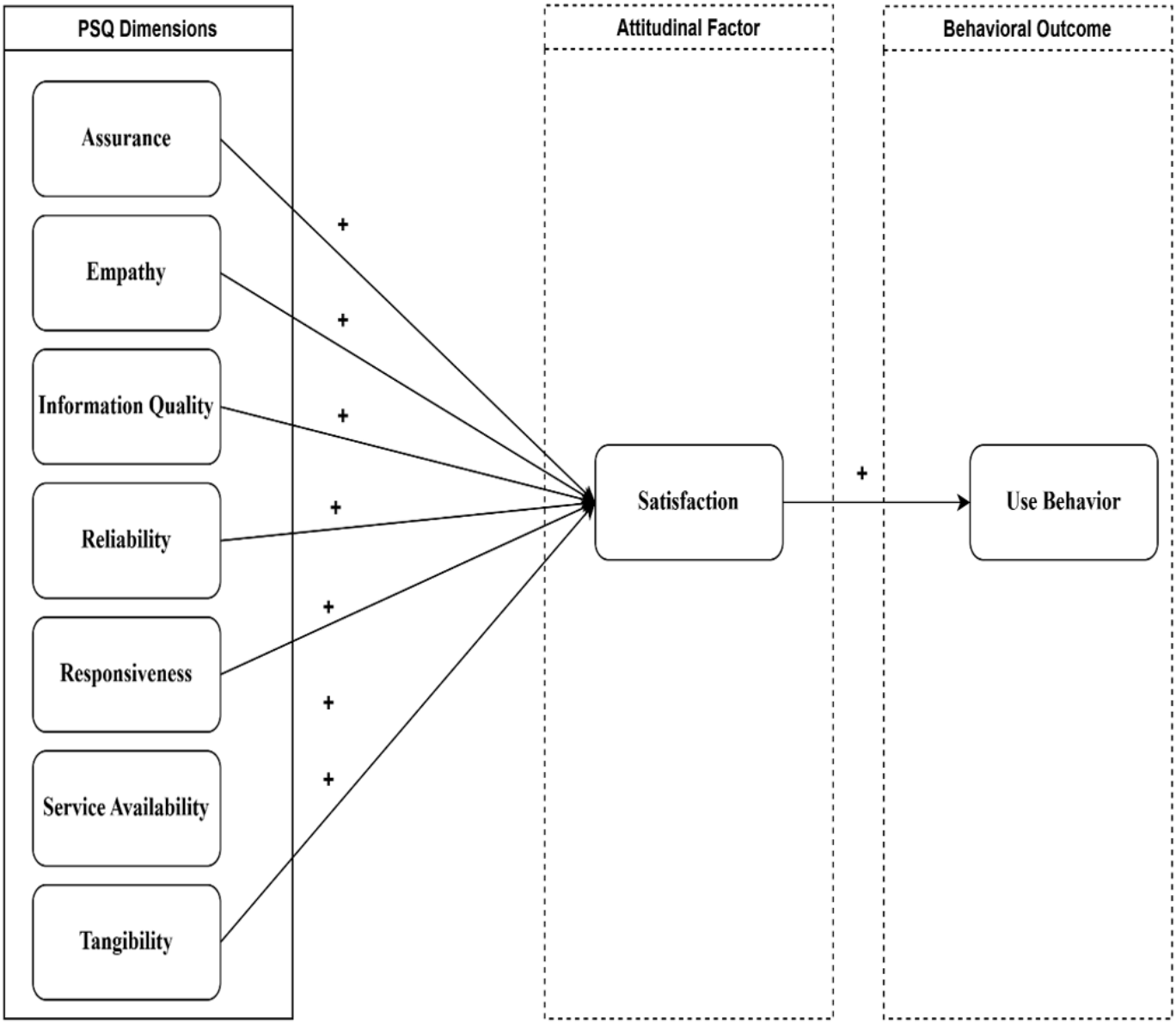


Figure 2

Figure 5-1 The Proposed Conceptual Framework for Sub-study 2

(Source: Author)