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Government E-Service Delivery with Public-Private Partnership Approach in Rural Bangladesh: A Case Study on Mymensingh District

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Abstract

This article provides a comprehensive examination and assessment of the e-services delivery of government through Union Digital Centres (UDCs). The emergence of electronic governance has resulted in the accelerated delivery of electronic services in different countries, including Bangladesh, with the aim of promoting socio-economic progress. Nonetheless, the notion of the "digital divide" or "digital gap" imposes constraints on its overall efficacy with e- services delivery as it exacerbates the socioeconomic disparity between affluent and impoverished individuals. In relation to the digital divide, existing literature indicates that tele-Centres have predominantly been unsuccessful in reaching the intended demographic of the most impoverished individuals. The present study employed a survey methodology to gather data from a sample of 150 participants situated across 6 distinct Union Digital Centres (UDCs) of Mymensingh District. The results of the study suggest a favorable outcome with regards to the accessibility, affordability, convenience, and provision of services. However, it is imperative to enhance the implementation of Public-Private Partnerships (PPP) in order to achieve the desired outcomes in the field of e-governance.

Keywords: e-governance, e-service delivery, UDC, public-private partnership, Bangladesh.

1. Introduction

The provision of e-services has become a crucial component of governance in the era of digitalization. In recent times, there has been a growing trend among governments worldwide to implement electronic service delivery methods as a means to offer efficient and easily available services to their residents. The utilization of public-private partnerships in the delivery of e-services has garnered significant interest as a feasible strategy for addressing limitations in resources, enhancing the quality of services, and promoting public engagement (Ganim & Kamruzzaman, 2014). The utilization of 'Information and communication Technology' (ICT) on a global scale has had a significant impact on several aspects of our lives, particularly in facilitating personal and social contact and networking. Within the domain of governmental institutions, information and communication technologies (ICTs) are being employed to effectively handle large volumes of data, facilitate both internal and external communication, cultivate a political climate characterized by public transparency and accountability, and enhance individuals' accessibility to government services. Information and Communication Technology (ICT) enables civil society to enhance its effectiveness and supports governments in fulfilling their primary responsibilities of providing services to the public (Misnikov, 2003). Following the context, government offices are actively striving to achieve sustained advancements in the development of information and communication technology (ICT) infrastructure, while simultaneously taking measures to incorporate widely utilized services such as the Internet and the Internet of Things (IoT).

The enhancement of business processes in public sectors and the public services delivery are close proximity to individuals are important concepts in the field of information and communication technology (ICT). In the existing literature, the terms "e-governance" and "e-service delivery system" are frequently employed to describe these strategies. E-governance is characterized as a crucial mechanism that help the government to engage in democratic interactions with their constituents. In a similar vein, proponents assert that the implementation of e-governance facilitates the enhancement of transparency, citizen involvement, and government accountability by enabling broader

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public availability of information. E-service delivery has been a prevalent practice within e-governance systems across countries, irrespective of their socio-economic status (Calista and Melitski, 2007).

The occurrence of a malfunctioning e-governance system gives birth to the notion of a 'digital gap' or 'digital divide'. The concept of the digital gap, also known as social exclusion, refers to the inequalities in information and communication technologies (ICTs) and the utilization of ICTs in daily life across different regions. These discrepancies have significant implications for individuals' ability to acquire livelihood information and consequently affect their possibilities for social and economic advancement. Unequal access to computers and biases in computer abilities can contribute to the promotion of the digital divide (Bélanger and Carter, 2006). Likewise, one may also discover a correlation between the capacity of a government entity to ensure equitable access and advantageous utilization of their digital services (Warschauer, 2004).

According to Cullen (2003), the digital divide refers to the disparity with access to tools, wherein certain individuals possess in convenient, for ICTs, while others neither lack access nor the necessary skills. This phenomenon is particularly evident in the context of developing nations, where a significant portion of the population continues to reside below the poverty threshold. There are four distinct interpretations of the digital divide that can be observed. These include the disparity in access to and utilization of information and communication technologies (ICTs), the discrepancy in individuals' proficiency in using ICTs, the gap in the actual utilization of ICTs, and the variation in the effects and consequences resulting from the usage of ICTs. The utilization of multilayer tele-Centres has garnered considerable interest as a means to mitigate the digital divide, by facilitating e-services delivery provision (Fink and Kenny, 2003).

In accordance with the global inclination towards telecentres, Bangladesh has implemented Union Digital Centres (UDCs) serve as a strategic approach to safeguard communities in rural areas against marginalization and alleviate the digital divide that exists between rural and urban areas. Currently, a Union Digital Centre (UDC) has been established in every Union Parishad, which serves as the most basic level of local governance. The main goals of this initiative are to address the requirements for ICT device and internet connectivity, provide computer related training and workshop, and ensure services. These efforts aim to enhance the rural community’s social and economic well-being. This study investigates the attributes of the Union Digital Centre and its clientele, and investigates the perspectives of service recipients in order to determine if UDCs are effectively mitigating the digital divide in rural areas of Bangladesh. This study explores many aspects related to the services offered at UDCs, including their accessibility, cost implications, ease of access, and quality.

The principal objective of the research is to assess the efficacy of the Public-Private Partnership (PPP) approach in facilitating delivery of government e-services in the rural areas of Bangladesh, with a specific focus on the Mymensingh District. In line with the primary objectives, the general objectives are the following:

a. To investigate the challenges and socio-economic issues.

b. To evaluate the long-term sustainability of UDCs operating under the PPP model.

c. To assess perceptions and satisfaction of visitors regarding the e-services provided by UDC.

2. Literature Review

The use of public-private partnerships in e-service delivery has gained attention as a viable approach to overcome resource constraints, improve service quality, and enhance public participation. Several studies have examined the implementation of e-governance and e-service delivery in various contexts, shedding light on the challenges and opportunities associated with these initiatives. Government of Bangladesh aimed to implement flexible and cost-effective e-service delivery in Bangladesh (Ganim & Kamruzzaman, 2014).

A2i emphasized the importance of providing better information and service delivery to the public, promoting democratic practices through public participation and consultation. In the context of Bangladesh, the government has made significant efforts to deliver public services through e-service centres (Salam, 2017). These centres aim to improve the efficiency and transparency of public administration and promote socio-economic growth through the use of information and communication technology. However, the implementation of e-governance in Bangladesh has faced numerous challenges (Sakib et al., 2016). These challenges include the increasing needs of service, difficulties in fulfilling requirements due to lack of feasibility for citizens, inadequate knowledge and access to computer and internet services in the rural areas.

According to Calista and Melitsk (2007), e-governance pertains to the transformation of the democratic interaction between governments and citizens. There exists a contention that e-governance facilitates the enhancement of transparency, involvement, and government accountability to citizens by means of increased public accessibility to information. The primary expected advantages of e-government encompass enhanced operational effectiveness, enhanced user ease, and enhanced accessibility to public services. Governments at all levels across the globe are facing mounting pressure to enhance the efficiency of public service delivery while simultaneously reducing costs and minimizing time requirements. The expansion of e-governance services has given rise to a significant obstacle known as the 'digital divide'. There is a disparity in digital access and usage between urban and rural areas, as well as between different socioeconomic groups and genders. The increasing prevalence of digitization in both private and public domains in Bangladesh has the potential to exacerbate this gap, which in turn could impede the implementation of e-governance systems and the provision of e-services (Baqir et al., 2007).

One potential strategy for addressing these obstacles involves the implementation of shared multipurpose tele-centres through a collaborative effort between public and commercial entities. The concept of partnership is commonly seen as a form of cooperation, joint venture, strategic process, and collaboration (Hancox and Hackney, 1999). As stated by Knowledge Lab (2018), a public-private partnership (PPP) refers to a contractual agreement between a government organization and a private party, wherein the private party assumes substantial risk and management responsibilities in delivering a public asset or service. The compensation for the private party is contingent upon their performance. According to Forrer, Kee, Newcomer, and Boyer (2010), the concept of Public-Private Partnerships (PPP) involves a collaborative arrangement between government and private agencies, wherein the private agency assumes responsibility for risk-taking and profit-sharing.

Similarly, Savas (2000) defines PPP as a cooperative agreement between a public and private sector, wherein they jointly undertake a public planning. Maskin and Tirole (2008) claim that Public-Private Partnerships (PPP) entail an ongoing collaboration wherein the involved parties mutually assume risks, pool resources, pursue shared objectives, and leverage the respective strengths of both sectors. This study provides a definition of Public-Private Partnerships (PPPs) as a collaborative arrangement between public and private entities, wherein they mutually engage in a business contract to pursue a common public goal, while sharing both risks and opportunities.

The viability of public-private partnerships (PPPs) in the realm of ICT-driven innovative services has been evidenced as early as the 1990s (Marschollek et al., 2010). According to Claps (2012), it is anticipated that the rate of adoption of Public-Private Partnerships (PPP) in IT projects undertaken by the government will experience growth in the next years. Public-private partnerships (PPPs) in information and communication technology (ICT)-driven public service delivery have the potential to yield several benefits. Notably, such partnerships can enhance cost-effectiveness for government agencies while simultaneously enabling citizens to access high-quality services in a more efficient manner. This can result in reduced time and costs for citizens, as well as a decrease in corrupt practices. Consequently, the implementation of PPPs in ICT-driven public service delivery has the capacity to significantly enhance citizen satisfaction with the public administration system. According to Ng, Wong, and Wong (2010), the achievement of desired outcomes in a public-private partnership (PPP) project is contingent upon the satisfaction of stakeholders involved. The authors additionally proposed six performance indicators to assess stakeholder satisfaction and the success of public-private partnerships (PPP). These indicators include: i) the timely, consistent, and dependable delivery of services, ii) the provision of services at a reasonable cost, iii) the fulfilment of output requirements outlined in the contract, iv) the implementation of fair, transparent, and open procurement procedures, v) the establishment of a fair competitive environment in the market, and vi) the establishment of an effective communication channel between the community and the service provider.

Currently, tele-centres are widely employed as a prevalent framework in many low- or middle-income nations to provide individuals at the grassroots level with information and communication technologies (ICTs) and their associated services. This is particularly beneficial for those who do not possess ICT resources at their residences and/or lack proficiency in ICT skills and information literacy. Numerous academics have undertaken research to investigate the factors contributing to the widespread acceptance of the tele-centre concept. This notion is widely regarded as a potent instrument for mitigating the substantial disparity in digital access between urban and rural regions, as well as between socioeconomic classes. Tele-centres have become more important in providing information in underserved regions with limited technological infrastructure and high individual expenses of accessing these technologies (McConnell, 2001). The centres additionally offer chances for information access by mitigating the challenges posed by geographical distance and physical location. By allowing this communication, they also contribute to the promotion of social cohesiveness and engagement (Young, Ridley, & Ridley, 2001). In a similar vein, Dixit (2009: 281) posits that tele-centres present avenues for enhancing communication and re-

establishing the connection between citizens and the state, hence granting increased information and technology facilitating group-based discussions.

Bangladesh has embraced e-governance and e-services delivery based on several factors, including the implementation of similar initiatives in public sectors, insights gained from local and global tele-Centres, suggestions put forth by international development agencies, and the inclusion of relevant objectives in the political manifestos of the current government. The incorporation of e-governance systems and the provision of public services in rural regions, particularly through the utilization of Union Digital Centres (UDCs), aligns with the objectives outlined in Bangladesh's Vision 2021. “In 2007, two pilot Community e-Centres (CeCs) were developed in collaboration with UNDP USAID and local strategic partners with the aim of delivering information and government services to rural populations” (Mahiuddin and Hoque, 2013). The inclusion of CeC as a driver project in early 2008 was facilitated by the Aspire to Innovate(A2I) initiative, which operates under the auspices of the Office of Prime Minister. The initiative, known as A2I, commenced with a total of 30 Community e-Centres (CeCs) at the Union Parishad level. Subsequently, CeCs underwent a name change and were rebranded as Union Information Service Centres (UISCs). The Local Government Division (LGD) then proceeded to systematically create UISCs in each Union Parishad in Bangladesh. The UISCs undergone a name change and rebranding in August 2014, resulting in their new designation as Union Digital Centres (UDCs). The UDCs have undergone a transformation and now function as extensive telecentres with several functions. They serve as a notable example of the public-private partnership (PPP) model for the distribution of technology (Mahiuddin and Hoque, 2013).

2.1 Structure and functions of UDCs

In Bangladesh, an estimated 4,554 Union Digital Centres (UDCs) are operating; they have been located in UP complexes (a2i, 2023). The digital Centres, which are owned and operated under PPP model, offer a comprehensive range of around 102 services to the rural locations throughout the country. Every Union Digital Centre (UDC) is managed by a pair of local entrepreneurs, with the requirement that at least one of them must be a female. A conventional Urban Development Corporation (UDC) is overseen and administered by a pair of local entrepreneurs, with the requirement that at least one of them is female. The selection of entrepreneurs is conducted by the UP Chairman and Upazila Nirbahi Officer (UNO), taking into consideration their expertise in information technology as well as their capacity and willingness to invest in and manage the Centre. The Union Parishad offers the necessary physical area and resources to establish the Centre (a2i, 2023). The Local Government Department (LGD) is responsible for providing the necessary equipment during the initial phase. However, “entrepreneurs are accountable for covering the operational expenses and additional investments needed to maintain the existing equipment, get new equipment for delivering the required services, and enhance their earnings. Entrepreneurs are not obligated to fulfil UP employment, as they do not hold the status of employees within the UP. Instead, they function as partners in the e-service delivery project on the private end” (GoB, 2009). Nevertheless, it is worth noting that a Union Digital Centre (UDC) is situated within a Union Parishad (UP) facility, where entrepreneurs receive guidance and oversight from the designated Chairperson of UP. The structural link between the Union Digital Centre inside the Union Parishad is illustrated in Figure 1.

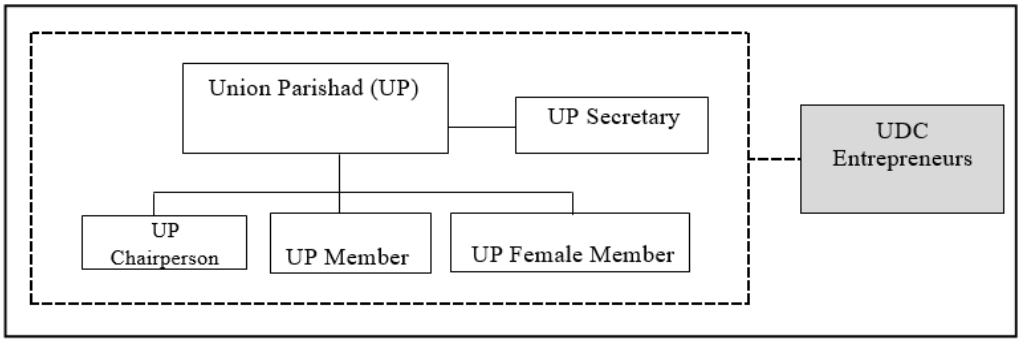

Figure 1: Structural link between the UDC within the Union Parishad.

Source: (GoB, 2009).

Each Union Digital Centre (UDC) is equipped with essential devices, “including a desktop computer, laptop computer, printer, scanner, digital camera, mobile phone with wireless modem, photocopier, laminating machine, and multimedia projector” (a2i, 2018). Uninterruptible Power Supplies (UPS) and solar panels are installed in circumstances where electricity is unavailable to ensure a continuous power supply. The findings of the study

revealed that all UDC sites were equipped with a comprehensive range of technological devices, including desktop computers, laptops, printers, scanners, digital cameras, mobile phones with modems, and uninterruptible power supplies (UPS) (GoB, 2009). Nevertheless, "the presence of the projector, photocopier, and laminating machine was not seen at the majority of locations. The operators asserted that they own all essential core equipment, with the exception of a multimedia projector. Additionally, it was indicated that certain equipment was unavailable at the time due to ongoing repairs" (Mahiuddin and Hoque, 2013).

Based on Table 1, the services provided by UDC can be classified into two distinct classifications: services for government and commercial offerings.

Table 1. Key services offered by UDC.

Government Service	Commercial Service
Education / Admission / exam results	Typing / Data Entry
Government forms download	Printing & Photocopying
Birth and death registration	E-mail and Internet browsing
Overseas employment	CV and Job application
Passport / TIN (tax) certificate	ICT / English training
Health	Phone / Video conferencing
Livelihood information	Mobile Banking / Bank statement
Land	Scanning & Laminating
VGD/VGF card database	Photography
Agricultural Information	Online visa application/visa form

Souce: Illustrated by Author.

The targeting of government services is widely regarded to be more explicit, while users also actively pursue commercial services. In order to enhance and bolster service delivery capabilities, Urban Development Corporations (UDCs) have established strategic alliances with other groups to provide expanded services to the general population. The entities encompassed in the list are "Dutch Bangla Bank, Mercantile Bank, Trust Bank Limited, One Bank Limited, Bkash Ltd, BRAC, Jibonbima (a life insurance company), Robi and Banglalink (mobile network operators), Dhaka Ahsania Mission and Practical Action (non-governmental organizations), Bangladesh Computer Council, Infrastructure Development Company Limited (an organization focused on solar energy), and Cyber Cafe Owners' Association of Bangladesh (CCOAB), Ankur, Practical Action, Bangladesh Computer Samity (BCS), and Technology Today (a publication specializing in technology-related news)" (Mahiuddin and Hoque, 2013).

According to A2I, a total of 4,554 UDCs have reported providing almost 605 million services across a range of 102 distinct service categories (TBS, 2021). Every month, UDCs receive a total of 3.2 million visitors who come to avail themselves of various services. According to a2i, from 2010 to 2018, "UDCs have successfully completed a total of 75 million birth registrations, 433.4 million mobile banking transactions, 12.7 million life insurance applications, 12 million registrations for overseas employment, 1.45 million land records, as well as provided 65,783 telemedicine sessions and computer literacy training sessions to 87,670 individuals residing in rural areas belonging to relatively disadvantaged clusters" (a2i, 2018).

Table 2. Charges of Particular Services Provided by UDCs.

Government Service	Price (BDT)	Commercial Service	Price (BDT)
Online Birth registration	50	Document composition	30
Online Passport application	50	Document printing	20
Online Hajj registration	50	E-mailing	50
Online overseas employment registration	50	Internet browsing for specific items	50
Agriculture/Education/Health related e-service	50	Videoconference/call	100
Online application for school/college/university	100	Scanning	30
Public examinations results	30	Visa check	100
Government form download and print	50	Online job application	100

Source: Illustrated by Author (Information collected from Field Survey).

The outlets employ a combination of online and offline activities for service delivery. According to the method of providing service, it is necessary for the service receiver to physically present in the Centre. As a result, a significant

portion of individuals living in rural areas maintain the belief that accessing necessary services at the UDCs has significantly reduced their financial resources and time, in comparison to obtaining the same things at remote area or neighborhood offices through conventional methods.

3. Research Method

This study has been conducted using quantitative as well as qualitative methodologies. The researcher performed a study survey based on opinions, consulting a total of 150 respondents from six UDCs with random selection located in the Mymensingh District of Bangladesh.

Sources of Data: This study relies on a combination of primary as well as secondary data sources. We used both data sources to conclude the study. Using a semi-structured questionnaire, in-depth interviews (face-to-face) and observation methods were used to collect primary data for this research and relevant publications, journal articles, books, papers are analysed to collect secondary data.

Areas of the Study: The research is conducted within six Union Parishad from Bhaluka, Mymensingh Sadar and Trishal Upazila Parishad. The study areas were selected as the study areas with random selection within the Mymensingh district.

Table 3. Selection of Study Area

Sl No.	Name of Upazila	Name of Union Parishad
1	Bhaluka	Bhaluka Union Parishad
2	Bhaluka	Habirbari Union Parishad
3	Mymensingh Sadar	Dapunia Union Parishad
4	Mymensingh Sadar	Khagdohor Union Parishad
5	Trishal	Harirampur Union Parishad
6	Trishal	Trishal Union Parishad

In addition to the survey, detailed site observations were also shown to be highly effective in interpreting the findings of this research. The study of the data involved the utilization of descriptive statistics, document analysis, and theme content analysis approaches.

4. Results and Discussions

The study conducted a survey on six randomly selected UDCs located in the Mymensingh District of the country. The purpose of the survey was to gather demographic information about the visitors of these UDCs using structured questionnaires. The UDCs attracts a predominantly male demographic, with males constituting 81% of the visitor population. In contrast, females make up a smaller number of visitors, accounting for only 19%. This gender distribution corresponds to a male-to-female ratio of 51.04:48.6 among the projected total population of the country. The majority of the visitors fall within the age range of 16 to 25, accounting for 40% of the total, with the 26 to 40 age group closely behind at 30%. In the realm of education, it is seen that 14% of individuals have not had any formal schooling, while 44% have obtained primary to secondary level education, including classes 1 to 10.

Furthermore, 42% have pursued further education, namely at the college level, spanning classes 11 to 16. According to the data, 37% of individuals are engaged in self-employment, specifically in farming and micro businesses. Additionally, 30% of the population consists of students, while 11% are working in the service sector. Housewives account for 10% of the occupation distribution, while another 10% are now unemployed. The remaining 2% are involved in various other jobs. Generating income for individuals residing in rural areas presents a persistent set of challenges. Approximately 44% of the individuals who visited the UDC reported having no income. A total of 27% indicated that their monthly income was below BDT 10000, while 16% reported an income below BDT 5000. Conversely, just 13% of the visitors reported a monthly income beyond BDT 20000.

The results indicate that a majority of the participants, specifically 55%, lacked any form of information pertaining to computers and the Internet. Additionally, 31% have just minimal knowledge and abilities in this domain, while a mere 14% demonstrated proficiency in operating computers and utilizing the Internet.

As previously stated, UDCs provide a range of ICT-based services to those residing in rural areas, encompassing both public and private sectors. The primary objective of the UDC, however, is to offer government information and electronic services. The study revealed that a significant proportion of visitors, specifically 20.1%, sought access to

government services pertaining to agriculture and land matters. Additionally, 21.1% of visitors engaged in activities related to education, while 9.9% sought health-related services. Local government services were pursued by 13% of visitors, while 4.5% sought assistance with employment-related matters. Passport-related issues were reported by 11.2% of visitors, and the remaining 20.2% sought various other services.

It is worth mentioning that the government services accessed in the aforementioned regions encompass activities such as information retrieval, downloading pertinent forms or documents, submitting forms online, and examining or printing inquiry results. Individuals from diverse demographic groups using the internet for a multitude of distinct objectives.

This study uncovers several key findings:

a. Students demonstrate a strong desire for online access to various services, including result publication, completion of admission forms, and obtaining information about educational institutions.

b. Farmers and landowners express a need for innovation pertaining to agriculture, productivity, and market trends. Additionally, they seek services related to land records.

c. Local youth, both male and female, exhibit a demand for services such as passport applications and registration for overseas employment opportunities. These services offer the advantage of saving valuable time and money by reducing the need for multiple visits to distant offices.

d. Local residents, irrespective of gender, age, or occupation, express a need for services provided by the local government. These services include birth and death registration, as well as social benefits.

In the absence of digital service delivery, rural individuals would be compelled to allocate additional time, financial resources, and endure unnecessary inconvenience in order to engage in such activities. Additionally, the demographic characteristics of individuals residing in rural areas and the specific types of information and services they actively seek at UDC provide as compelling evidence of their significance. However, the primary inquiry revolves around the manner in which visitors assess the services rendered by the UDCs and the entrepreneurs associated with them. Therefore, I have conducted an analysis of the perspectives held by individuals residing in rural areas who visit UDC in order to receive services. This study specifically examined the factors of service availability, affordability, convenience, and quality. The analysis of empirical data obtained from six UDCs aims to evaluate customer satisfaction regarding the e-services provided by these UDCs. This evaluation focuses on several factors, including the availability, cost, convenience, and quality of the services rendered.

A combined total of 12.8% of user's express strong agreement, while 55.1% of user's express agreement, regarding their satisfaction with the entire availability of assistance given by UDCs. In a similar vein, it is observed that 8.6% of participants exhibit a strong agreement, while 50.1% express agreement, regarding their pleasure with the total pricing of services obtained through UDCs. Around 15.7% of the participants exhibited a high level of agreement, whilst 48.8% demonstrated agreement, in relation to their contentment with the entire availability of services obtained via UDCs. In relation to the level of service provided offered by UDCs, it is worth mentioning that 13.1% of the participants strongly concur, whereas 44.9% concur, expressing their satisfaction. According to existing research, it has been found that a proportion somewhat lower than 40% of clients have expressed concerns over the quality of services offered by UDCs. It is imperative to accord significant emphasis to these concerns in order to guarantee the enduring viability and sustainability of UDCs. The assessment of overall customer satisfaction with electronic services provided by the specified UDCs is conducted by specifically examining the following aspects. The opinions of the participants were elicited using a five-point scale in this study.

The scale employed in this study is categorized as follows: 1 denoting "strongly disagree," 2 representing "disagree," 3 indicating "moderately agree," 4 signifying "agree," and 5 representing "strongly agree." Figure- 2 presents a concise overview of the respondents' overall satisfaction in this study, specifically pertaining to their assessment of e-services delivery.

Based on figure 2, an analysis of the overall user satisfaction with UDC services is presented. Out of the total sample size of 150 respondents, 14 individuals, or 9% of the respondents, expressed strong disagreement regarding their overall satisfaction with UDC. This response garnered the lowest level of agreement among the participants. Out of the total respondents, 54 individuals, accounting for 36.00% of the sample, express agreement with their satisfaction over the overall performance of UDC thus far. This has been identified as the most significant response. In addition to the aforementioned points, the result of analysis is shown on figure 3, which represents the descriptive statistics pertaining to the overall degree of satisfaction.

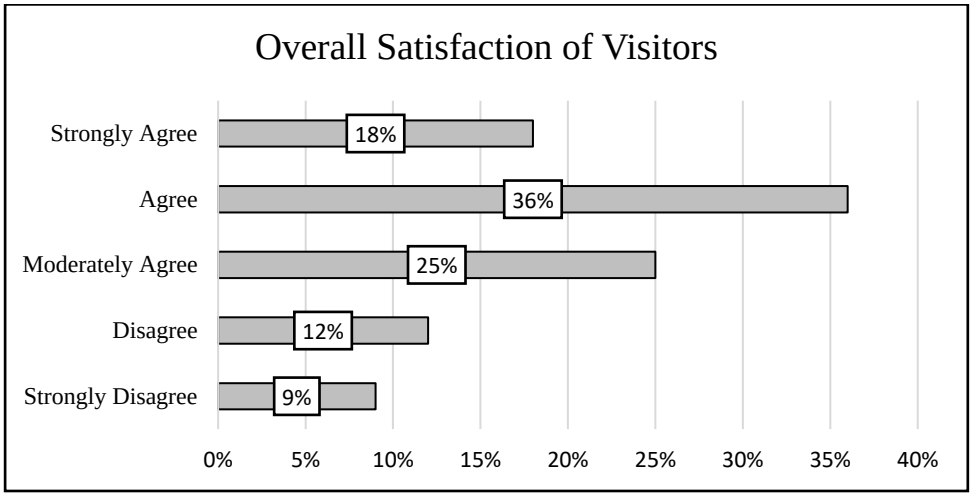

Figure 2. Overall Satisfaction of Visitors.

Mean	3.45
Standard error	0.047
Median	4
Mode	4
Standard deviation	0.928
Variance	0.861
Range	4
Min	1
Max	5
Percentiles 25%	3
50%	4
75%	4

Figure 3. Overview of the Descriptive Data.

Based on figure 3, which represents user perceptions or experiences, exhibits the following key descriptive statistics:

Central Tendency:

a. Mean: The average perception score is 3.45, indicating a moderate overall satisfaction with the e-service delivery.

b. Median: The median score of 4 presents that the majority of respondents have a positive perception of the e-service delivery, with half of them rating it at or above 4.

c. Mode: The mode of 4 further reinforces that a significant number of respondents share a common positive perception.

Variability:

a. Standard Deviation: The standard deviation of 0.928 reflects a moderate level of variability in the responses, indicating some diversity in opinions among the respondents.

b. Variance: The variance of 0.861 provides a measure of the dispersion of scores around the mean, reaffirming the moderate variability.

c. Range: The range of 4 signifies the spread between the least and most favourable perceptions, indicating a reasonable diversity in responses.

Distribution:

a. Minimum: The minimum score of 1 presents that there are respondents with relatively low perceptions of the e-service delivery.

b. Maximum: The maximum score of 5 indicates that some respondents have highly positive perceptions, contributing to the overall range.

Percentiles:

a. 25th Percentile (Q1): With a value of 3, it represents that a quarter of the respondents have a perception score below 3, highlighting a subgroup with less favourable opinions.

b. 50th Percentile (Median or Q2): The median score of 4 reinforces that half of the respondents have a positive perception, establishing a baseline for overall satisfaction.

c. 75th Percentile (Q3): A score of 4 at the 75th percentile indicates that three-quarters of the respondents have a perception score of 4 or below, underlining the predominant positive sentiment but with some variability.

In a general sense, the comprehensive findings indicate that a majority of the visitors expressed a moderate level of agreement or agreement in relation to the topics they were prompted to provide feedback on. This observation reflects a good perception.

UDCs are established with the objective of enhancing accessibility to public services for rural communities and businesses through the implementation of a Public-Private Partnership (PPP) framework. Therefore, it is crucial for national facilitators to actively collaborate with community members and companies to determine the additional services needed by the community. It is crucial for national facilitators to proficiently oversee the potential incidence of exorbitant fees for services among community members, while also guaranteeing that entrepreneurs comply with the designated office hours of the UDC and uphold the accessibility and functionality of the requisite equipment. In order to maximize consumer satisfaction with UDCs' services, it is essential to provide supplementary training to entrepreneurs in the areas of management of services and skills related to technology development. This training program will equip participants with the essential information and expertise required to properly function as dedicated entrepreneurs inside underdeveloped countries (UDCs). In the provided setting, it is crucial to consistently record the input, recommendations, and preferences of the rural community pertaining to the information and services they necessitate, alongside the prevailing charges they are incurring for those services.

Additionally, it is crucial to monitor the attitudes of entrepreneurs and members of the UP in order to effectively address any issues that may arise. This can be achieved through the utilization of a communication channel, and appropriate actions should be implemented based on the gathered data. Simultaneously, it is imperative to undertake comprehensive nationwide initiatives aimed at raising awareness and promoting the provision of e-services through UDCs. These efforts should focus on enhancing the understanding of rural communities regarding the benefits and significance of utilizing the e-service delivery system.

In the specific context of e-service delivery in Bangladesh, the UDC has established a distinctive model of public-private partnership (PPP) for the widespread provision of government and commercial services facilitated by information and communication technology (ICT). The sustainability of these digital centres is anticipated to be achieved by the active participation of local entrepreneurs as key stakeholders. The Public-Private Partnership (PPP) approach offers potential benefits in terms of risk reduction and cost savings for government operations. Additionally, it presents opportunities for rural citizens to access information and government services more effectively. This is achieved through reduced costs and time, as well as an environment characterized by enhanced transparency and decreased corruption. Furthermore, the development of UDCs has created avenues for rural youth in Bangladesh to showcase their entrepreneurial skills in the field of ICT-related service provision.

Nevertheless, it is anticipated that the conscientious entrepreneurs will endeavour to develop and introduce novel services that are advantageous to rural areas, so generating supplementary revenues and accruing additional profits. Given that entrepreneurs retain all of the profits they earn, they are more inclined to demonstrate entrepreneurial behaviors towards visitors and make efforts to provide high-quality services in terms of availability, pricing, timeliness, and responsiveness to visitor inquiries. Nevertheless, entrepreneurs must prioritize both the provision of high-quality services and the maintenance of functional equipment for service delivery. This can be achieved by regular equipment servicing and the acquisition of new equipment to enhance the efficiency of services provided to visitors.

5. Conclusion

Using Public-Private Partnerships by the Union Digital Centre (UDC) offers a pragmatic strategy for enhancing government e-service provision and expanding its benefits to the local community. This decision considers the existing obstacles of the digital divide and the prevalent socio-economic concerns encountered in Bangladesh. However, it is crucial to emphasize the long-term sustainability of underdeveloped countries (UDCs) through the execution of necessary measures that ensure their efficient functioning, while also providing a range of motivating prospects for the entrepreneurs involved. While the visitors do not possess an unfavorable viewpoint regarding the UDC and its services up to this point, they also express dissent over the adequacy of the services they obtain in terms of accessibility, pricing, efficiency, and delivery of services. Moreover, rural folks exhibit a notable deficiency in their confidence level about how their economic and social circumstances are positively impacted by their Aspire to Innovate initiative and the provision of public services through the UDC. Therefore, the existing condition of electronic service delivery in rural regions through Universal Digital Centers (UDCs) highlights the urgent requirement for an improved supply of customized and innovative services at lower costs and with greater convenience. It is necessary to prioritize efforts that aim to enhance the atmosphere of UDC and facilitate the acquisition of ICT-based micro-enterprise operation skills by entrepreneurs in rural Bangladesh.

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