

Understanding the Digital Divide between Public and Private University Students of the Dhaka Metropolitan Area

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Abstract

The rapid proliferation of new information and communication technology (ICT) has led to an unequal distribution of ICT resources, promoting advancement and access for some groups while constraining opportunities for others, ultimately resulting in the 'Digital Divide.' To understand the digital divide, this study was conducted to examine patterns in ICT skills and efficiency and the role of family economic conditions between public and private university students of the Dhaka metropolitan area. Using a quantitative research approach and employing a stratified random sampling method, this study involved the participation of 100 students. The sample was evenly distributed between private and public university students, with an equal split between male and female students. The study found no significant gap among public and private university students in the study area regarding basic access to digital tools and fundamental skills. However, there are clear differences between students from public and private universities. Private university students tend to have better access to high-quality digital devices. Consequently, they acquire more advanced digital skills, and use digital devices more frequently. A student's family economic situation plays a significant role in determining their access to quality digital devices. This, in turn, is responsible for the digital divide because students from lower-income backgrounds are unable to have better digital tools like the affluent students.

Keywords: Digital divide, digital access and skills, socioeconomic status, ICT Resource

Introduction

As the global connectedness increased through the information and communication technology, it is responsible for profound effects on societies

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around the world. It is believed that it has the potential to bridge gaps with improved access to information and opportunities. Now, it has also a factor responsible for rising new form of inequality around the globe known as the digital divide. It is a concept that divide individuals into distinct groups based on their access, efficiency and utilization of digital technologies.

Over the last few decades, internet users in Bangladesh increased notably. As of July 2022, Internet World Stats reported nearly 129 million people use internet which is more than 75 percent of total population. Despite this rapid growth, significant disparity remains in digital access and skills across different social and economic group. ICT has profoundly transformed education. Now, competency in digital tools is considered as a critical component of leaning.

The Government of Bangladesh (GoB) took the 'Digital Bangladesh' initiative in 2009. It was introduced by the then ruling party of Bangladesh, the Awami League, following the 9th Parliamentary Election. Notably, Dhaka stands at the forefront of this transformation as the city receives substantial amount of investment. Moreover, Dhaka is the most privileged and largest part of 'Urban Bangladesh,' and host highest density of higher education institutions among the urban populations. This description of Dhaka provides a suitable context for examining digital inequality.

Moreover, to ensure one of our Sustainable Development Goals- Goal 4: Quality Education ICT inclusion becomes inevitable. University students, who are among the first to embrace information and communication technology (ICT), are a priority in this area. Within the same geographical area, there are differences among students from private and public universities, particularly when it comes to exposure to technology and skills competency. Furthermore, economic conditions in families also greatly impact access and proficiency in these technologies.

The research objectives are to examine the status of the digital divide between different types of Higher Educational Institutions, compare the challenges and barriers to access Information Communication Technology (ICT), compare the challenges and barriers to advance skills level and efficiency in ICT, and to explore the role of family's economic condition on the dynamics of the digital divide.

Review of the Literature

The digital divide in education has been a subject of extensive research. Existing literature have already explored its multifaceted dimensions and its impact on students and teachers across various settings. This literature review synthesizes findings from several studies conducted in different contexts and examine the status of the digital divide between different types of Higher Educational Institutions, then compare the challenges and barriers to access Information Communication Technology (ICT), and compare the challenges and barriers to advance skills level and efficiency in ICT and explore the role of family's economic condition on the dynamics of digital divide.

❖ Digital divide among Higher-Educational Institutions

ICT access in Bangladesh addressed by Khalid (2011) and Badiuzzaman et al. (2021), but their focus on two contrasting contexts expose major limitations how digital inequality is conceptualized. While Khalid (2011) examined urban students, particularly studying in the English and Bangla medium institutions, claim that socio-economic stratifications have connection with institution they belong, Which, in turn, lead to lack of access. However, his emphasis on access to devices overlooks deeper indicators of digital inclusion, as access alone does not guarantee equality. Khalid's approach is largely technocentric and analyze a surface level understanding of digital inequality. In contrast, Badiuzzaman et al. (2021) highlights that issues such affordability, poor connectivity and lack of infrastructure in rural settings, particularly during crisis like COVID-19. Their framing is highly crisis-driven and the binary which assumes superior urban readiness. Together these studies expose a conceptual gap. According to them, digital divide is often attributed to rural deficit or access overlooking structural and institutional disparities. This study aims to address this gap.

While Ma (2021) expanded digital divide beyond access. She shifted her attention to skills and competences and demonstrate that digital competence varies among socio-economic status (SES). Emphasizing that students in high-SES institutions often outperform low-SES students due to their skills and engagement. Her findings support the existence of second-level digital divide which is effective use of digital access. Although her findings are context dependent and not necessarily generalizable to Dhaka, it is crucial to understand skills disparities to identify digital divide among university students. Sims et al. (2008) raised another critical concern

while examining UK (United Kingdom) universities, that e-learning often favors students who have pre-existing digital fluency. They argued that without targeted and inclusive design, e-learning becomes a tool for digital elitism, privileging those who already possess technological capital.

Together these studies show that ICT inclusion involves layers of inequalities. However, the absence of targeted research on Dhaka Metropolitan Area requires an interrogation about key structural distinction. This study aims to address structural disparities in digital divide.

❖ **Barriers to Accessing ICT**

Digital participation requires access to ICT, yet it remains unequally distributed due to complex interplay of economic, geographic, gendered and infrastructural factors. Choung and Manamela (2018) emphasized on income level. They claim it is one of the core determinants as lower-income individuals remain consistently disadvantage due to lack of affordability. Saha and Zaman (2017) moved beyond economic explanation, they argued that gendered barriers at higher education often reveals gender digital divide. While the study raises a vital point, it offers limited detail on how private and public universities foster digital gap. Infrastructural disadvantage faced by rural students is another concern raised by Siddiquee and Islam (2020) and Zia et al. (2009). These studies overgeneralize by treating urban areas as digitally well equipped with enhanced access.

Zhou, Singh, and Kaushik (2011) and Cruz-Jesus et al. (2016) acknowledge education as a driver of ICT inclusion. They argue that higher education equips students with capacity they need to navigate digital tools effectively. They consider higher education as both cause and consequences of digital inclusion. However, this assumption fails to examine inclusion as all higher educational institution cannot provide equal digital opportunities such as under-resourced public universities in Bangladesh. Education itself become a stratified experience rather than a bridging gap.

❖ **Barriers to Advancing ICT Skills**

Basic access to digital tools is an important step to ensure digital inclusion while developing an advanced ICT skills and digital efficiency is more complex. A critical reading of the literature reveals that disparities in ICT is not only the result of individual factors but embedded in institutional and structural context. The case of

urban higher education system like Dhaka is one of many aspects remained underexplored. Shuva and Akter (2011) examined the compounded nature of digital divide. Their study captured urban-rural, gender and socio-economic inequalities but they have only focused on access level overshadowing the critical second-level digital divide. Moreover, it does not offer sufficient evidence to distinguish how these barriers restrict digital inclusion among university students.

Korupp and Szydlik (2005) identified education to digital competence, which is similar to the access dimension explored by Zhou, Singh, and Kaushik (2011) and Cruz-Jesus et al. (2016). Additionally, their study is based on European context, which may limit its applicability within local context. A relevant issue addressed by Mariscal (2005), he argued that digital competency requires equal access to broadband internet, stable electricity, and ICT hardware. Lack of access to these resources limits the development of advanced digital skills. Infrastructural inequality is relevant to understand why underfunded universities often struggles to provide digital tools to their students in Bangladesh. Although access is provided, skill development requires a 'techno-centric' approach. Without social, institutional and pedagogical structures that encourage ICT learning, technology may remain underutilized. This is highly relevant to both public and private universities of Bangladesh. Although access is ensured, developing skills and competencies largely underdeveloped through these institutions.

Van Deursen and Helsper (2015) added that digital benefits are disproportionately realized by individuals with higher social status. Their findings show importance of socio-economic context- not only in skills but also how it benefits them to covert access into digital advantage. Collectively these studies show that ICT skill development is shaped by individual motivation, institutional resources, social capital and curriculum design. These factors play vital roles in determining proficiency among different groups. But none of the reviewed literature explicitly examined these dynamics within the context of university system.

❖ Family Economic Condition and the Digital Divide

Socio-economic status remains one of the powerful predictors of digital access, but most studies often view it as static variable rather than a dynamic one which intersects with institutional, social and digital outcomes. Romke (2013) shows that students from higher income families often demonstrate greater adaptation and higher academic excellence. But this study overlooked how university can lessen or

foster these gaps. Ritzhaupt et al. (2013) studies school students of Florida, USA, to find impact of socio-economic conditions on digital access. Their findings challenge the existing stereotypes as girls from lower-SES background shown better ICT literacy than expected. Despite their nuanced understanding, their study does not fully examine institutional context, a limitation that mirrors this study.

Harris, Straker, and Pollock (2017) showed a behavioral approach. By analyzing how SES influence the way young people use digital technologies. Their findings show a clear evidence and pattern that student from affluent areas tend to use ICT for educational enhancement while lower-SES often engage with digital tools for entertainment. This difference in behavior is significant and highly relevant to this study to find how institutional culture and peer group support in public and private universities may guide students toward different digital engagement.

However, these studies failed to assess how family income and institutional resources interplay and foster this gap. In Dhaka, private universities tend to serve more affluent students with their better infrastructure. However, public universities often enroll students from lower-income families with less institutional support to bridge the digital gap. Additionally, how family income might lessen or intensify institutional constrain is yet to be explored by existing literature. Without situating SES within urban university stratification, current research cannot explain how digital inequalities take shape in Dhaka's higher education sector. This study directly addresses that gap by examining how socio-economic background intersects with institutional type to produce unequal ICT access and competence in the capital.

Theoretical Framework

Manuel Castells defines the digital divide as “inequality of access to the Internet” (Castells, 2002, p. 248). Jan Van Dijk, a prominent thinker of the network society with Manuel Castells, defines the concept of the digital divide as “the gap between those who do and do not have access to computers and the Internet” (Van Dijk, 2006, p. 178)

According to Van Dijk's findings, the suggestion is that the digital divide is decreasing in developed countries due to the physical accessibility of computers and the Internet. However, in emerging societies, the digital divide appears to be

widening. Moreover, in terms of skill access and usage access, the digital divide is both increasing and intensifying. According to Van Dijk (2006), there exists a significant disparity in the distribution of information skills and strategic skills among the populations of both developing and developed societies. To put it simply, information skills refer to the abilities required to search, select, and process information from computer and network sources, while strategic skills pertain to the capacity to utilize these sources to achieve specific goals and enhance one's societal status.

Research on the digital divide has demonstrated that the emergence of unique patterns of social stratification is a result of the rise of the information society. The increasing significance of technological advances and digital media in shaping economic, social, and cultural dynamics has given rise to new dependencies on digital technology, while simultaneously leading towards the emergence of digital exclusions as a distinct kind of social exclusion. (Castells, 2011)

Nobi (2018) finds that public university student comes from a comparatively lower socio-economic background than that of private university students. He claims that inadequate facilities are one of the major drawbacks for public university students to acquire enough skills. Bhuiyan and Hakim (1995) showed that the cost of higher education in public universities is lower than that in private universities. Students with higher socio-economic position can be admitted into private universities more than students having lower socio-economic position. Therefore, as a higher education institution, I will explore the gaps between public and private universities, the status of the digital divide in the Dhaka Metropolitan area.

Applying Van Dijk's (2005) framework helps us understand the digital divide between universities and analyze the disparities in access, skills, and usage of digital technologies between public and private university students of Dhaka metropolitan area, and how their family socio economic status plays a role to create these gaps, can provide valuable insights.

❖ Access Dimension

As digitalization accelerates, it is clear that its benefits are not distributed equally. A major issue, therefore, is how policies can be designed to promote internet access and other digital resources among vulnerable communities who lack the economic means to purchase them.

Van Dijk (2005) refers to this as ‘first level of digital divide’ or the ‘access gap’. Van Dijk’s framework identifies several dimensions and factors that can be relevant to my analysis. These are access, skills, and usage dimensions known as the first, second, and third level digital divide, respectively. This study adopts Van Dijk’s (2005) conceptual framework to analyze the initial digital divide between students of public and private universities in Dhaka Metropolitan. The core argument’s causal model delineates the process through which the first-level digital divide, specifically access to the internet, is both established and sustained due to prevailing disparities. This model is visually presented in Figure 1.

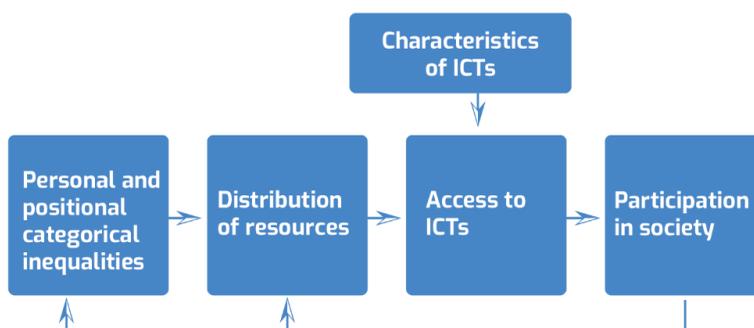


Figure 1: A causal model of resources and appropriation theory

Disparities in individual attributes are crucial in shaping the digital divide concerning access to technology. These societal disparities across various categories lead to an uneven allocation of resources, consequently resulting in unequal access. As access inequalities are contingent on the adoption of different technologies, these unequal technology implementations give rise to unequal participation within society. Ultimately, this unequal societal participation perpetuates the categorical disparities and uneven distribution of resources. To compare the access of digital devices (In the context of my study, internet access is defined as the presence of a broadband connection, mobile data connectivity) between public and private universities this causal model can help us to examine the personal and positional status, the resource distribution, access and degree of participation among university students of both public and private university students of Dhaka Metropolitan.

❖ Skills and efficiency dimension

The focus has transitioned from mere access to the diverse applications of digital technology, encompassing the influence of individuals’ social, cultural, and

economic backgrounds, as well as their motivations, interests, and proficiency in digital skills. Research on the second digital divide, as highlighted by Ragnedda (2017), has significantly contributed to the development of a more holistic and intricate comprehension of digital disparities. In 2005, Van Dijk introduced a comprehensive model, which delineates four successive stages of access to ICT: motivation, material, skills, and usage access (as depicted in Figure 2). This model proved instrumental in identifying and understanding what is commonly referred to as the second-level digital divide.

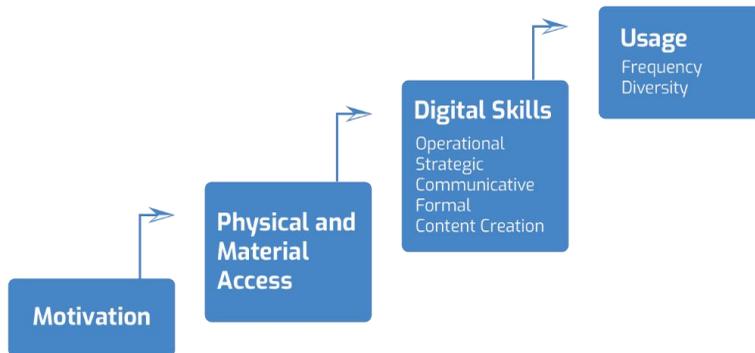


Figure 2: Four successive kinds of access in the appropriation of digital technology

Numerous factors contribute to an individual's motivation when it comes to accessing ICT, including considerations like the cost of acquiring technology, the time available for using it, and the awareness of its practical utility. To comprehensively examine the intricacies of material access, several key factors play a significant role, including gender, age, socioeconomic status, educational background, household income, and occupation.

In this study, Van Dijk's (2005) four dimensions of digital divide- motivation, material access, skills and usage- are operationalized to analyze the nature and extent of digital divide among university students of Dhaka. Motivation refers to students' willingness and interest in engaging with digital technologies for academic and personal purposes. Access can be defined as the possession and availability of digital device such as computers, smartphones, tablets and internet connectivity. Digital skills consist operational skills (basic device and internet use), informational skills (ability, evaluate and manage information) and strategic skills (using internet and devices for academic excellence) often defined as digital literacy. The fourth dimension, usage refers to frequency and depth of ICT use in day-to-day life. All

these dimensions will be examined comparatively throughout the study between public and private university students to understand how socio-economic and institutional factors influence their positions within the digital stratification of have or have nots.

❖ **Role of the family’s economic condition**

Figure 3 illustrates how digital inequality is shaped by a linear interaction between access, skills, and usage depending on socio-economic condition. This model directs the data collection and analysis by aligning students access with their skills and use of ICT in their educational and personal settings. Here, inclusion of family socio-economic condition adapted from Bourdieu’s notion of economic capital is the prime driver of other forms of capital.

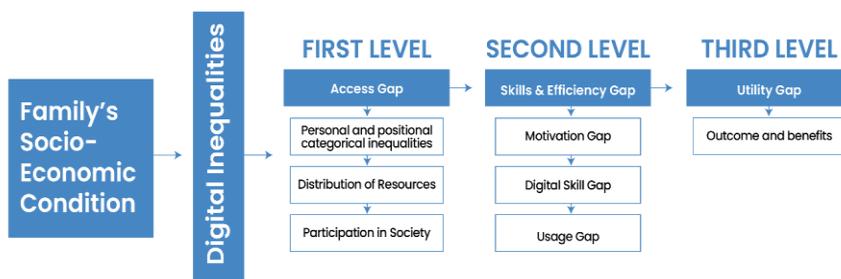


Figure 3: Circle of Digital Inequality
Source: Own elaboration based on Ragnedda (2017) and Van Dijk (2005)

Pierre Bourdieu asserted that economic capital serves as the foundation for all other forms of capital, and that an individual's position within the social space—defined by their economic and cultural capital—deeply influences their perspectives and attitudes. Bourdieu introduced the concept of "social space," a framework for understanding how individuals and groups are positioned within society. This social space is influenced by two keys 'principles of differentiation': economic capital and cultural capital. Social space in terms to the relative positions occupied by individuals and groups within it. The relative positions of individuals within this social space are influenced by their levels of economic capital, which, in turn, affect their access to and utilization of digital technologies. In his seminal work titled "Distinction" (Bourdieu, 1979), the author undertook an examination of the cognitive frameworks that individuals employ when engaging with the social realm, encompassing various aspects such as works of art. In this study, the concept of economic capital will be utilized, which pertains to the material resources that include wealth, land, and money that an individual has control over or possesses.

Methodology

❖ Research Design

This study employs a quantitative survey research design was chosen to compare the Digital Divide between Public and Private University students in the Dhaka Metropolitan Area. It also explores how socio-economic status of family shapes students' digital access, skills and usage.

❖ Sampling Technique

To understand the digital divide between public and private universities in the Dhaka Metropolitan Area, this study follows a stratified random sampling method. This method required to create a detailed matrix where universities were stratified by type (Public/Private) and based on the cost of a BBA degree. This matrix served as the foundation for determining how many students to include from each university.

University Type	Cost of BBA Degree (In taka)	University Name	Number of Respondents
Public University		Dhaka University	25
		Jagannath University	25
Private University	7- 10 Lakh	North South University	10
	4-7 Lakh	East West University	10
		United International University	10
	Less than 4 Lakh	University of Information Technology and Sciences	10
		Dhaka International University	10
Total			100

Private universities were categorized into three cost-based tier: High cost (7-10 lakh BDT), Medium-cost (4-7 lakh BDT) and Low-cost (Less than 4 lakh BDT). From this tier, five universities were selected, one from each tier and two from medium and low tier to reflect the larger share of middle and low-cost institutions. Additionally, two major public universities were chosen as the number of public universities is limited in Dhaka compared to private universities.

For statistical adequacy, feasibility and diversity 100 students were chosen for this study. Fifty respondents were drawn from public universities (25 each) and fifty from private universities (10 from each). Gender parity was also maintained to ensure representativeness.

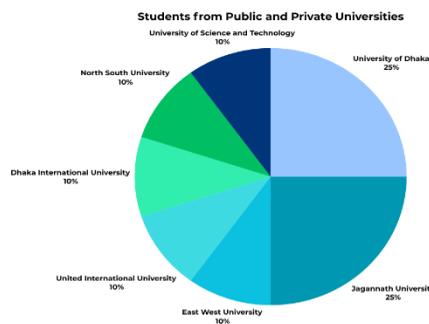
❖ Study Area

This study was conducted in Dhaka Metropolitan Area. Since the study aims to explore the dynamics of the digital divide in the context of urban areas, Dhaka Metropolitan was the most urbanized city. Furthermore, Dhaka's high concentration of universities made it a practical and relevant site for this research. Before data collection, a list of 42 universities within the Dhaka Metropolitan Area was compiled. To ensure a fair and representative sample, a lottery method was employed to select universities. Ultimately, this process led to select 5 private universities and 2 public universities as research participants. This method was designed to enhance the reliability and fairness of my investigation into the digital divide phenomenon in an urban context, and I believe it has laid a strong foundation for my research endeavor.

❖ Data Collection Method

Data were collected though a structured questionnaire. Then, the questionnaire distributed both online via Google forms and in-person across university campuses.

Figure 4: Percentages of students from different Higher Educational Institutions



This approach was both cost-effective and efficient and allowed to reach target audience. The questionnaire consists of closed-ended/structured questions regarding the key points of this study objective. While filling in the list of questions, respondents have to rate them from strongly agree to strongly disagree. Likert scale was utilized, which has five levels: strongly disagree, somewhat disagree, agree, somewhat agree, and strongly agree (1- strongly agree, 5 -strongly disagree). There were 48 questions to find out the digital divide in terms of access, skills, and efficiency between public and private university students of Dhaka. After completing the data collection, it was organized and analyzed through two computer programs- Microsoft Excel and SPSS.

❖ Limitations

Although students were selected using a sampling frame following stratified sampling, the sample may not fully represent all the university students in Dhaka, particularly smaller and specialized institutions. Additionally, the study relied completely on self-reported measure of digital skills introduce possibility of response bias. Because participant may overestimate or underestimate their abilities. Cross section was needed for cyclical nature of digital divide but the study aimed to be linear.

❖ Ethical Issues

To ensure the voluntary participation of individuals in this research study, participant was provided a clear explanation of the research's purpose, objectives, and their role. Participant were autonomous over making own decision to continue answering questionnaire or not. Anonymity and confidentiality were also ensured to protect privacy of participants. They were not asked to fill their names or any other information that could be used to contact them. The researcher was the only person who knew each participant's information. This information was carefully guarded and not shared with any other party. The data was stored securely to prevent any unauthorized access, ensuring that participants' personal information remained confidential and protected.

❖ Findings and Results

Participants underwent an extensive assessment as the study needed to evaluate comprehensively their own access to digital resources, proficiency in utilizing them, and the economic conditions of their families. This study adapted a structured questionnaire to assess the complexity of access, skill and their family's socio-

economic condition. Such a multifaceted assessment is crucial for understanding the complex interplay between digital engagement, skills, and economic factors among public and private university students of the Dhaka metropolitan area.

❖ **Assessing Digital Access**

To understand students’ access to digital device, this study examined two critical dimensions, affordability of internet and devices.

Affordability of Internet Access: Participants were asked about their ability to afford consistent internet access, a basic requirement for online interaction and engagement. The results show a distinct difference between public and private university students. While public university students rely mostly on mobile data or shared Wi-Fi connections, private university students usually spend more reliable broadband internet and better internet connection as they have ability to afford.

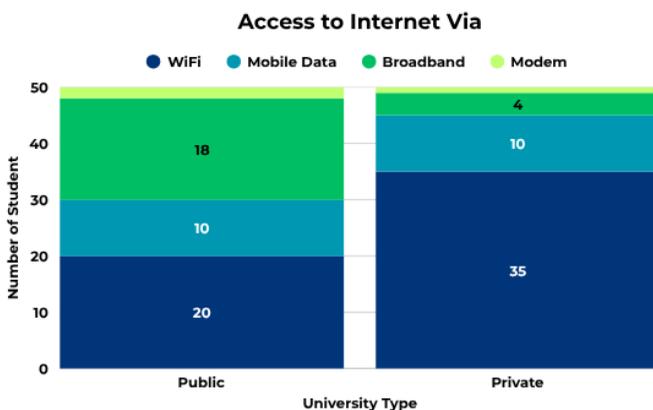


Figure 5: Internet access through different sources

Another important ICT access is having an internet connection; in this regard, there is a stark contrast in the monthly internet expenditure of public and private university students is eminent. As private university students enjoy having a high-speed internet connection, by spend much more than public university students. They have better internet connections compared to public university students. Where public university students are mostly dependent on mobile data and Wi-Fi, the private university students mostly use faster broadband internet connections, which makes their internet connection more efficient than that of public university

students. These findings demonstrate that income remain a central factor of access to digital technology to establish first layer of digital divide.

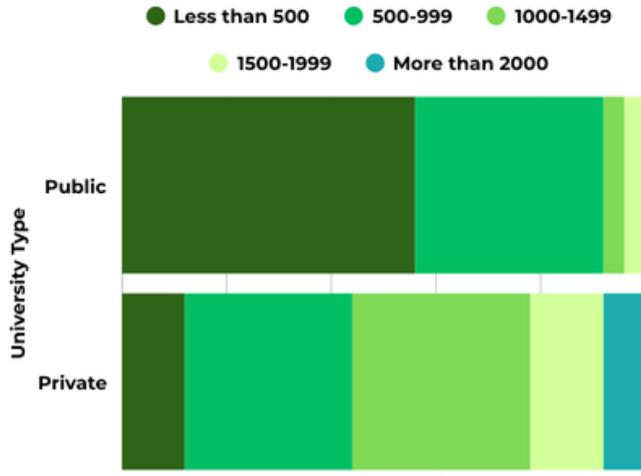


Figure 6: Monthly Internet Expenditure of University students

Accessibility to Devices: Cost of mobile phone and computers emerged as one of the major barriers to ICT access. Private university students can afford better and higher-end digital devices compared to public university students. Public university students reported limited or no personal ownership due to their affordability issues.

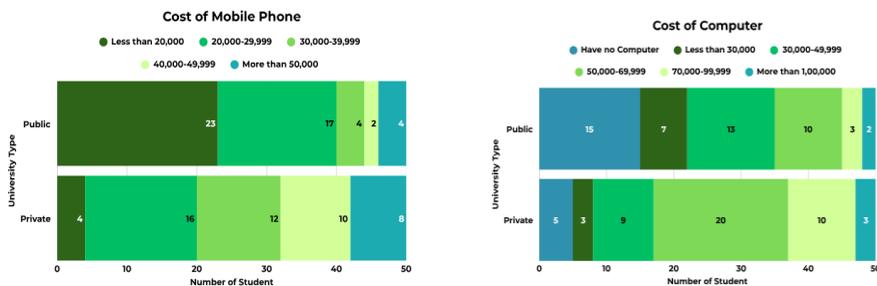


Figure 7: Cost of Mobile Phone and Computer between public and private university students

To compare the challenges and barriers to access ICT, the cost of computer and mobile phones were key factors in comparing challenges to ICT access. (Figure 3) shows that due to the price of electronics goods, such as mobile phones and computers, they are often unaffordable for personal use by many public university students. Thus, public university students appear to spend moderately or not at all

due to the high prices of computers and mobile devices. In contrast, private university students can afford higher-end devices more than public university students. This disparity suggests that income is a crucial factor that influence access to these technologies. This digital divide in terms of device affordability raises concerns about the equitable participation of students in the digital age.

❖ **Proficiency and Frequency of Device Usage**

After establishing the disparities in device ownership, the next step was to examine whether these differences reflect into gaps of digital skills. Participant rated their proficiency in using computers and mobile phones on a five-point Likert scale. It is clear that both groups have basic familiarity with mobile phone applications such as social media, email, and online communication. However, public university students are less proficient in complex computer-based tasks. There is a clear difference between them, in terms of, software installation and academic use of Microsoft office. Public university students show higher reliance on mobile devices rather than computers.

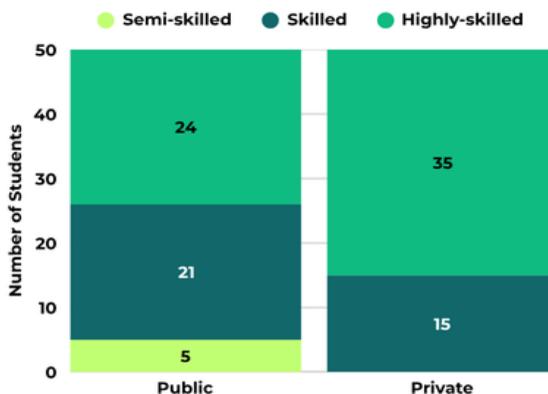


Figure 8: Efficiency of using computer among public and private university students

To compare the challenges and barriers to advancing skills level and efficiency in ICT, respondents were asked about their proficiency in using the computer and mobile phone. There is a significant level of difference between public and private university students in using mobile phones and computers. Private university students appear to have more computer-oriented skills, while public university students lean toward mobile-oriented skills.

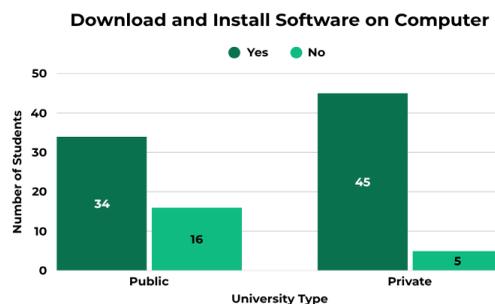
Notably, when it comes to basic digital skills like email, social media, and online services, there's a moderate or no significant difference between the two groups. However, disparities emerge in more advanced skills such as installing a software in computer and its usages. This suggests that public university students may need additional support or resources to bridge this gap. Though both in public and private universities, students have 100% internet access and have access to digital devices, whether it's a computer or a mobile phone, public university students have less efficiency in downloading and installing the software they need.

At the same time, public university students are less likely to use Microsoft Office, although their academic purposes require gaining such skills. Private university students mostly use digital devices for academic purposes on a daily or weekly basis. In contrast, the public university students use digital devices most on a monthly or yearly basis.

A chi-square test for independence with $\alpha=0.05$ was used to assess whether the ability to use digital devices and mobile or computer-oriented learning differed between public and private universities. The chi-square test is statistically significant, $\chi^2(1, N=100) = 8.21, p < 0.05$, while the Phi coefficient of 0.286 indicates a moderate relationship between these variables. As seen in Figure 8, while public university students are more likely to be mobile-oriented, in contrast, private university students possess skills that are computer-oriented.

To assess their proficiency with the fundamentals of using digital devices, research participants were questioned about their ability to do their academic assignments on their own as well as whether they possessed access to email, social media, and OTT services. Students were also asked about their abilities to use ride-sharing applications, send emails to their instructors, order food online, book bus or train tickets, and browse the internet for services.

Figure 9: Ability to install software on the computer between public and private university students



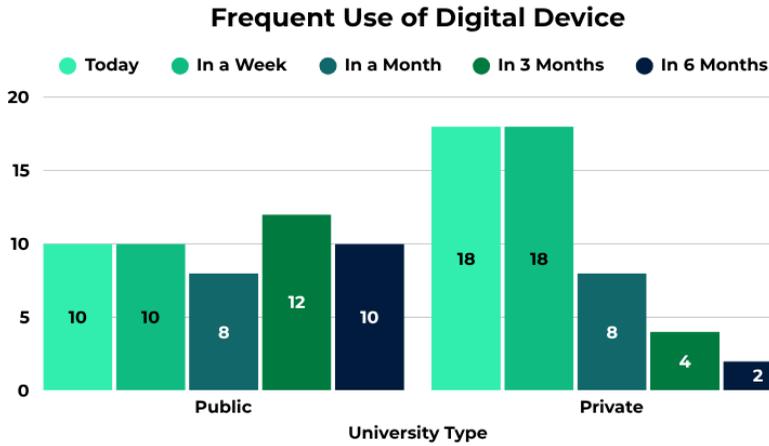


Figure 10: Frequent use of Digital Devices by university students

❖ **Economic Conditions of Participants' Families:**

Understanding financial and educational background of students' families is crucial to interpret the observed digital disparities. Respondents were asked to report their parents' level of education, monthly income and spending on education. The analysis demonstrates that students from high-SES are predominantly from private universities and they enjoy better access to internet and devices and possess superior digital skills.

The above analysis shows that students from high-SES predominantly enroll in private universities and they enjoy greater access to various devices, have high internet expenditure. Consequently, they possess superior digital skills. The same pattern is supported by the correlation analysis.

Variables	r	Significance
Family Income and Skills	.610**	p < .01

Table 1: Correlation between students' skills and family's income level

N = 100

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

The above table:1 suggest that there is a significant and strong positive relationship between family income and students' skills. ($r=.610$, $p < .01$) is indicating that the role of family income is influencing the digital divide. It is evident in the correlation analysis above as the table shows that there is a strong correlation between family income and skills, suggesting that students from more affluent backgrounds tend to have better digital skills. This correlation underscores the importance of economic factors in shaping students' abilities and access to technology.

Variables	r	Sig. (p-value)	Significance
Family Income and Computer Use	.462**	.000	p < .01
Family Income and Mobile Use	.201*	.045	p < .05

Table 2: Correlation between the monthly income of the family and computer and mobile use

Notes:

$N = 100$

** Correlation is significant at the 0.01 level

* Correlation is significant at the 0.05 level

In terms of computer and mobile use, family income plays a key role. The results demonstrate a moderate and statistically significant positive relationship between family income and computer use ($r = .462$, $p < .01$). However, there is a weak but significant relationship between family income and mobile use ($r = .201$, $p < .05$). This correlation analysis suggests that higher family income is more strongly associated with using computer than mobile.

In essence, these findings reveal a structural connection between economic, social and digital capital. Students from affluent and more educated families possess both means and social environment that promote digital literacy. In contrast, economically deprived households tend to prioritize basic needs over high-end technology spending, which, in turn, reinforcing existing educational inequalities. As digital literacy is becoming a pre-condition for academic and professional advancement, these gaps accelerating long-term social stratification.

Discussion

The purpose of this study was to investigate potential inequalities in access and usage of digital devices among public and private university students in the Dhaka metropolitan area. As anticipated, these study findings have illuminated several

divides that need to be addressed to ensure equitable access to digital resources and the development of digital skills. Despite nearly universal internet access, there are disparities in terms of the quality of access, with a significant contrast in monthly internet expenditure between public and private university students.

❖ **Affordability and Access to Digital Devices**

This study aligns with Khalid (2011) and Badiuzzaman et al. (2021), who examined access dimension of digital divide, and extended their conclusion by demonstrating the quality of access. This dimension, the skill gap, create a new form of inequality. While both public and private university student reported about their universal mobile phone ownership, the capacity of using computer and frequency of using internet vary substantially.

Utilization of digital technology found in this study extend their findings. Public university students' have strong reliance on smartphones indicates not only their mobile-oriented digital skill but also their affordability. Moreover, such access often indicates consumption rather than productive digital practices. Learning complex software and creating content need better technological access. As public university students lack affordability, they often use devices such as smartphones for entertainment. Because smartphones have limiter processing power, small screen and low capacity that restrict their ability to perform advanced academic or creative work. This pattern shows how economic inequality turns into technological inequality, where low-end devices shaping not only the access but also participation in digital learning.

In contrast, private university students have better devices, stable internet and institutional support that ensure their advanced digital engagement. This finding challenges the earlier studies as they claimed that inclusion comes with access. Therefore, to ensure inclusion second-level digital gap need to be addressed. Cruz-Jesus et al (2016) identified economic context as the determiner for meaningful digital disadvantage. While their argument aligned with the findings, digital divide also points towards social dimension- learning environment, encouragement students get from teachers, and motivation- shapes their digital engagement.

❖ **Proficiency and Skills**

Although public and private students living in the same city and having comparable level of education, they have distinct patterns of digital skills. Public university

students show proficiency in mobile-oriented tasks, whereas private university students are proficient in using computer and have competence in working with complex software.

Digital engagement relies on institutional practices, private university promoting digital literacy as students require to attend some classes online, access their results online, in some cases they need to submit their assignment on google classroom and via email. After Covid-19, the adaptation into a virtual classroom taken less time in private university than public universities so do their students. Again, private university students enjoy nurturing themselves with digital literacy as they have affordability and resources available. However, due to resource scarcity, public university students form limited digital proficiency. These inequalities often leads to skills hierarchy that can be align with the notion of habitus coined by Bourdieu. Pierre Bourdieu defined habitus that describes a person's skills, disposition and practices develop through social background and experience. In this context, the difference between public and private university students reflects- 'technological habitus' where students access, skills and practices shaped by the institutions they belong and their family's SES.

❖ Family Income and the Digital Divide

Economic status continues to play vital role in shaping digital experience. The analysis of this 's study reveals a strong positive relationship between family income and students' digital skills. As Romke (2013) and Ritzhaupt et al. (2013) assert, there is a close link between students' socio-economic status and their access and adoption to digital technologies. This manifests through gaps in device ownership, internet expenditure and frequency of digital engagement. Moreover, differences in efficiency levels and the frequency of interactions with digital devices also contribute to the major gap between public and private university students in the Dhaka metropolitan area.

Although students from both type of university use digital devices for their academic purposes, the depth and diversity of usage vary significantly. Students from lower-SES families often rely on low-end devices, inexpensive data plans which in turn limits their participation in resource-intensive academic task such as online assignments, digital presentation, data analysis and creative design-based works. Often teachers restrict themselves assigning these tasks to avoid inconveniences and support students as this can disadvantage students and reinforce existing

educational inequalities. This study findings align with Choung and Manamela (2018) that argue, limited economic resources can restrict both access to ICT tools and exposure to digital learning environments that build confidence and creativity. Therefore, family income does not only determine access to ICT but also shapes digital capability and social opportunity. Digital divide observed in this study represent a loop where economic constrain restrict technological proficiency, which in turn limits academic performances due to lack of access and skills. Further, it predicts that this poor academic result will reduce their employability that will reinforce socio-economic inequalities over time.

Conclusion

Digital divide among university students of Dhaka is one of the persistent issues examined by focusing on differences between public and private higher educational institutions. The primary objective was to explore how gaps in access, skills, and usage of digital technologies shape by family's economic conditions and create unequal educational opportunity in a growing digitalized landscape. The findings reveal that substantial disparities still exist in quality of access and level of proficiency although students in Dhaka possess near universal access to basic digital devices and internet. Private university students enjoy greater access and have superior proficiency leading them to more advanced digital competence. In contrast, public university students are predominantly from lower-SES families and they often struggle to access and acquire ICT skills.

The implications of these findings are significant for actors such policymakers, educators, and institutions. Economic inequalities continue to reproduce digital inequality and accelerating educational stratification even within same urban context. Therefore, digital literacy programs integration with subsidized device schemes, and equitable access initiatives into higher education policy is essential step to bridge the gap. Particularly, public universities require immediate infrastructural investments and targeted digital training to bridge the skills gap. Ensuring equitable ICT access is both an educational concern and a pre-condition for achieving SDG 4: Quality Education. Achieving it will lead the country towards building an inclusive digital Bangladesh.

This research acknowledges certain limitations. To start with, the sample size is very limited, only 100 students from seven universities, may not represent the full

diversity of Dhaka's higher education. Moreover, reliance on self-reported measure may bias as respondents could overestimate or underestimate their digital proficiency. The evolving nature of digital practice remains unexplored in this study. Thus, Future research should adopt longitudinal or mixed-method approaches to examine how digital access and skill levels evolve across years or with policy change. Exploring the gender dynamics can provide valuable direction for policymakers to develop inclusive policies in reducing digital divide.

Digital disparities among university students is not merely a technological gap, rather it reflects a broader socio-economic and structural inequalities. These inequalities often embedded within the unequal education system. To bridge these gaps, a multifaceted approach that integrate infrastructure, affordability and skill development is need of the hour. By implementing inclusive digital policy and equitable share of digital resource distribution among institutions can ensure equal opportunity for all.

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