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Abstract

The study uses a qualitative research design to analyze the students' opinions of service quality related to the physical facilities of public universities in Bangladesh. The purposive sampling method was followed to select twelve students from multiple departments at six universities in different locations across the country. Data has been collected through a semi-structured interview protocol and analyzed using thematic analysis methods. The study uncovered inadequacies in the classroom's conventional tool setup, the library's limited seating capacity and absence of an integrated e-library, and the students' welcoming environment. New books and an updated curriculum are scarce, while the seminar room encounters inactive internet access and insufficient reference materials. There is a deficiency in the computer lab, a lack of opportunities for independent research in the laboratory, and an absence of modern equipment and essential chemicals. The ICT facilities perpetuate a traditional administrative approach within the university system. Additionally, the student residences are characterized by inadequate and unhealthy facilities, while the canteen system serves substandard food with insufficient nutrients. There needs to be more gym and sports facilities for females. Medical services are provided by substandard treatment and common medicine by inadequate doctors; students enjoy limited and scheduled transport, and an insecure campus exists; these adversely impact students' satisfaction and academic performances. Universities will take the necessary steps to enhance the quality of services, particularly related to physical facilities.

Keywords: Students' opinion, Service quality, Public universities, Physical facilities, Bangladesh

Introduction

Globalization, along with significant changes in international business and economic structures, is inducing considerable alterations in the landscape of higher education worldwide. Academic institutions often evaluate the experiences and viewpoints of students and other stakeholders to develop tactical strategies and make informed decisions. These initiatives seek to improve the external and internal quality of the institutions, thereby garnering attention and boosting their brand value on both national and international scales (Alhazmi, 2022). Conversely, due to modernization and globalization, it is imperative to enhance the education system comprehensively to instill skilled human resources capable of thriving in a competitive market, thereby enabling students to realize their full potential. Higher education institutions are transforming to adopt service industry structures comparable to industrial institutions, driven by the rising expectations of students and parents (O'Neil & Plamer, 2004). Ensuring product or service quality has gained significant attention in academic discourse. Quality denotes the intended standard of a product that fulfills the fundamental requirements and expectations of a defined target group (Şimşek, 2000). Quality denotes the state in which a service or product meets predetermined standards of excellence (Ada et al., 2017). Service quality influences student satisfaction (Cardona &

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Bravo, 2012). To improve service quality in higher education amid competition, it is essential to consistently assess and measure service quality for effective planning and program advancement.

The assessment of service quality is a crucial ancillary element in research. Quality measurement systems evaluate the degree to which a company successfully achieves its objectives, vision, mission, and operational operations. As articulated by Zeithaml et al. (1993), the notion of service quality relates to the assessment of client expectations and perceptions. A fundamental objective of service quality assessment is ascertaining an organization's status, specifically evaluating its prior performance, current status, and future aspirations (Kocapınar, 2002). Conversely, Goldstein (2009) elucidates that attaining excellence is not an abrupt occurrence but rather the culmination of high aspirations, sincere effort, intellectual mentorship, and efficient operational practices. The academic advancement and achievement of students are profoundly influenced by various factors, notably the accessibility of services and the quality of physical facilities and infrastructure within educational institutions (Küçükşüleymanoglu, 2017). Quality evaluation in higher education can be conducted through five essential criteria: method, process, infrastructure, interaction, and environment (Zineldin et al., 2011).

Thus, higher education institutions strive to enhance service quality by evaluating students' perspectives and identifying their needs, aiming to meet their expectations (DeShields Jr, 2005). Service quality relates to augmenting the value of an organization's service or product for customers, achieved through quality enhancement initiatives (Sapri et al., 2009). Service quality assesses an organization's objectives, mission, vision, and operations. Zeithaml and others (1993) characterize service quality as aligning consumer expectations and perceptions. "The comprehensive organizational strategy positions service quality, as perceived by customers, as the foremost driver of business operations," (Zeithaml et al., 1990). The fundamental and paramount principle of service quality assessment is to appraise the status of an organization. Higher educational institutions need to assess their status from various perspectives to meet students' expectations and maintain quality for future competition (Kocapınar, 2002).

The inadequacy of university facilities and educational resources adversely affects service quality, leading to discrepancies between students' impressions of received services and their expectations (Yousapronpaiboon, 2014). Every institution of higher education necessitates a competent workforce, technological assistance, and supplementary infrastructure to perform its functions efficiently. These services may be called organizational services (Donlagić & Fazlić, 2015).

Research Context and Purpose

Higher education in Bangladesh is undergoing an extensive transition. The evolution of higher education in Bangladesh encompasses a range of systems from prehistoric times through colonial and post-colonial eras. The establishment of Dhaka University in 1921 marked the emergence of the modern institutional framework for higher education in the British colony (Kabir, 2021). During the post-independence period of Bangladesh, the current educational structure has evolved through development, change, expansion, and refinement under various governments. A significant transformation was emerged with the post-1990s neoliberal regime, which initiated the privatization of education (Kabir, 2012). Bangladesh has 171 universities, encompassing public, private, and international institutions. The total comprises 55 public universities, 113 private universities, and three international universities (UGC, 2024). In the socio-economic context of Bangladesh, government universities are essential for shaping the future of higher education students. The expansion of higher education and the significant increase in enrollments contrast with growing concerns regarding the quality of education in these institutions, raising questions about the effectiveness of such education (Ali et al., 2021). Numerous issues persist regarding the quality of service in infrastructural facilities and the sufficiency of resources in these institutions, which students consistently encounter during their studies and research activities. Students are considered the primary customers in this context (Hill, 1995; Cardona & Bravo, 2012). It is essential to analyze and understand the status of service quality in physical facilities and its impact on academic performance and student satisfaction based on student opinions. This study aims to thoroughly analyze the service quality of physical facilities in public universities in Bangladesh, as perceived by students. Based on student opinions, highlighting the strengths and weaknesses of the existing physical facilities will create an opportunity to identify directions for infrastructure improvement. This study's findings

will contribute to enhancing the learning environment, improving student outcomes, and informing decision-making by university administrators and policymakers.

Method

A phenomenological qualitative approach was followed to conduct the study to gain an in-depth comprehension of the phenomenon (Cresswell, 2013). Following the nature of the research and the questions posed 12 graduate and postgraduate students of public university from various faculties and departments of six universities situated across the country were selected as respondents through convenience sampling. The responses exhibit gender parity with six males and six females, and their ages range from 24 to 30 years. To address participants, researcher used two codes accordingly (PM=Participant Male & PF=Participant Female).

The research aims to analyze the students' opinions of service quality regarding physical facilities; therefore, the researcher prepared an interview protocol that outlines the instructions and guidelines for conducting the interviews. The semi-structured interview schedule was developed by incorporating open-ended questions and sub-questions that were posed based on the responses provided by the individuals interviewed. The questions being addressed pertain to the provision of physical facilities at public universities in Bangladesh. The questions were submitted to three subjective and linguistics experts to assess and validate the items' clarity and validity. The questions were finalized following a pilot test with two participants. Sub-questions and associated subjective questions were employed; each interview lasting 30 to 40 minutes per respondent. Interviews were done by telephone and recorded using Android recording applications with the respondents' consent. The documents were transcribed using the web <https://flixier.com> software. Subsequently, the researcher refined, edited, and coded the data.

The data was analyzed using thematic analysis, a widely employed qualitative data analysis method for identifying, analyzing, and reporting findings (Braun & Clarke, 2006). The researcher documented all transcribed conversations and categorized themes and subthemes using inductive and deductive techniques. Finally, the researcher evaluated and interpreted principal themes by incorporating sub-themes.

Findings and Analysis

The researcher analyzed multiple themes from the study's collected qualitative data. The components are Physical Facilities, Library, Classroom, Student Residence, Food and Canteen, Health and Medical Services, Transport and Communication. The data has been classified, and the analysis is reported as follows:

Physical Facilities

Most interviewees (N=10) disclosed that their university has inadequate infrastructure. However, some participants were satisfied with their department's physical facilities but not with the capacities of other faculty and departments. Some students claimed that this is the era of research and technological revolution. However, most universities still need to be digitalized, and there is a massive scarcity of research with modern and updated equipment. A participant said:

“Our faculty has magnificent buildings and a good environment, but we often hear of classroom shortages in other faculties. Every classroom is clean with enough AC; seminar rooms, library, and computer lab are student-friendly.” (PM1)

Classrooms

Most participants (N=7) disclosed classroom crises in their departments; conversely, N=5 indicated satisfaction with the number of classrooms available. More than half of respondents indicated that the classroom size and capacity need to be improved relative to the student population in their department. Conversely, most classrooms continue to need more materials. Several departments continue 5 to 6 regular batches while having only 3 to 4 classrooms readily available. Due to the shortage of classrooms,

frequent changes to class routines have disrupted students' teaching and learning processes. Many indicated that, despite modern science and technological advancements, the classroom continues to adhere to traditional practices. In certain instances, disparities exist in allocating classrooms among various departments within the same university. Some departments possess classrooms equipped with modern digital facilities, while others need essential classrooms. Furthermore, the existing classrooms often need to be more adequately supplied with necessary materials, which disrupts student concentration and hinders effective learning. One of the respondents stated about classroom inadequacy in the department. She said:

"We have just three classrooms for five batches. We wait longer to start class for a vacant classroom, so we sometimes cancel a class, which wastes our valuable time." (PF7)

Library

The researcher discovered that all participants (N=12) acknowledged the existence of a central library at their university. However, the majority expressed that the seating capacity of the library needs to be improved for the overall number of students. This phenomenon is evident in extensive university libraries. The library was a primary concern for many students regarding infrastructure and learning resources. Students arrive early in the morning and queue to get seats in the libraries of big universities. The current number of students exceeds the library's seating capacity, resulting in many students leaving the library owing to insufficient space. Most respondents (N=10) indicated that the library remains partially non-digital and adheres to conventional standards and procedures. In this instance, perusing conventional catalogs is revealed to be arduous and time-intensive. Many students asserted that their library's reading atmosphere needs suitable student-friendliness. Several respondents disclosed that the library possesses an extensive collection of old books but many complained that the syllabus is deficient in contemporary and modern scholarship. Several respondents asserted that the library needed an environment conducive to academic study and research, noting that individuals typically use the library for job-related reading; this detracts from or impedes students' focus on academic and research pursuits. Most respondents indicated that the absence of digitization constitutes libraries' primary challenge. Consequently, students (N=12) are prohibited from entering with own books and baggage. Although the library engages in reading books, it is permitted to borrow just a certain quantity of books for a specified duration. Students desire to study in the library; moreover, there is a need for more seating. So, they endure significant difficulty reading in the library. One of the students expressed:

"The need for resources and facilities is insufficient relative to the student number. We arrive early to get a seat or to ensure space in front of the library. We frequently depart from the library because of a need for more seating. Furthermore, there are only two hundred seats for four thousand pupils available in the dormitory reading room." (PM1)

The absence of modernization in libraries hinders their academic pursuits. They believe that, despite the contemporary times, the absence of library digitalization, insufficient availability of new and updated books, uncooperative behavior of librarians, and inability to provide a conducive study atmosphere discourages many from utilizing the library and engaging in academic research. Students regard them as elements in their demonization. For instance, three expressed the same opinions and the following perspective in this context:

"... library seating capacity is inadequate and poor. We cannot utilize the main library since we cannot bring our books. Our library cannot track or transact books digitally, but we can issue them manually for a particular duration." (PM3, PF4 & PF10)

Curriculum and Books

There were two distinct views on whether the library and seminar rooms had new and curriculum-related books. Many (N=7) expressed that the library and seminar rooms have enough books. A few (N=5) stated that the library does not have current and curriculum-related books specially books in native language. The library and seminar rooms need more of the reference and syllabus books professors refer to during class. The library has many antique books. Since the library is a job-oriented study, the

authorities are apathetic. So they need to show responsibility in bringing new syllabus books. One of the respondents stated:

“... library revealed that the recommended books were unavailable. If you seek scholarly books, the personnel's reaction will be unimaginable because they don't think anyone would search for anything other than job-related books in the central library. Thus, you will encounter many unseen barriers and feelings you cannot comprehend at first glance.” (PF2)

Seminar Rooms

The departmental seminar room is a small library. Students collect department-specific books, journals, and educational tools here. Students can do group work, study, and find reference books during and after class. Some (N=6) have complained that seminar room amenities are not supplied despite students paying a fee annually and seminar room is rarely opened and closed by following time table. There are inadequacy of internet, computer service and reference books. Thus, it does not benefit them. A participant stated:

“..Indirect pressures.... seminar room personnel aren't friendly and helpful to students. It is closed infrequently so we could not study the full day because of such an environment. There are no computers or WiFi to use my laptop.” (PM1)

Computer Lab

The integration of technology and computers in contemporary schooling is indisputable. Every department must possess a computer lab as an essential component of contemporary education. In this context, nearly all respondents (N=10) acknowledged the presence of computer laboratories in their respective departments, yet they deemed these facilities insufficient relative to the students number. Students are not permitted to utilize the computer lab at their discretion. Many departments may utilize computers during classes in ICT-related courses. Additionally, several departments use other departments' lab which hinders student learning and undermines computer education.. According to a respondent:

“Our department has 60–70 students but only 15 lab PCs. Thus, students cannot use the computer lab freely. We can only use the computer lab during ICT classes.” (PM5)

Laboratory

Some university students (N=60) said they are sent research data to external labs because of their underdeveloped labs, and it is challenging and time-consuming. However, it hinders research and educational pursuits. The laboratory has been criticized for its out datedness. Many have highlighted the lack of chemicals, elements, and materials for science and technology experiments and research in the specified courses. Many students claim that the university and government do not fund extra for lab science and technological researches. Most students (N=10) recognized that the scarcity of budget, guidelines, spirit of discovery, and lack of provision of adequate facilities discourages new research activities compared to universities of developed countries. A student complained that the lab lacked sophisticated mechanical practical research tools. Some claimed that desperate lab equipments and tiny laboratories limit testing and independent works. Many indicated that some departments had just one lab for 4/5th graders and needed more equipments. A participant expressed:

“....laboratory facilities are inadequately equipped and underdeveloped. Occasionally, we send to external laboratories because chemicals or elements are sometimes required, which may not always be available, resulting in research delays. The university allocates limited financial assistances. Our laboratories require installing new instruments and capabilities for sophisticated research compared to laboratories in the world's best-ranked.” (PF4)

ICT Infrastructure

A majority (N=10) of the students expressed that the university's ICT infrastructure needs improvement. Modern digital boards are absent despite the presence of computers and power points in the classrooms.

Teachers utilize conventional boards for conducting classes. The primary complaint was that each university library continued to operate under conventional management. Books are issued by recording in the ledger. Students are restricted from entering into the library with their own books and belongings due to conventional system. Each student (N=12) recognizes that library lacks Internet connectivity with international institutions, libraries and research centers; consequently, international journals, books, and research papers are inaccessible even when needed. None of the universities have yet to archive their research and thesis papers online hub in the central library. Consequently, students and researchers use conventional means to locate and peruse printed materials. Despite establishing mobile banking for university various fees, most universities is not still used the online payment system. Indeed, all university websites have yet to be completely transformed. For instance, faculty profiles, departments and institutes need access to comprehensive information. To obtain certificates, mark sheets or requisite documents, students must adhere to conventional procedures and visit multiple administrative offices a long duration. Not all universities have implemented student portals and identification systems on their websites. One individual stated:

“Our century-old university does administrative and student office activities using traditional methods, which is the most significant disadvantage. The website information about all departments and faculty members needs to be updated. There is no student portal or online mechanism to pay fees; instead, one must queue at the bank. Students need to submit applications to obtain certificates, mark sheets, and other documents in traditional mood. University libraries utilize conventional catalogs. It is not associated with foreign libraries, research institutions, or universities for research papers and has yet to digitize soft copies of theses and articles.” (PF2)

Students’ Residence

All (N=12) students confirmed that their university has halls of residence, yet they need to be significantly more in student numbers. Most students in big cities and old universities have shared severe dissatisfaction with their residence issue. Initially, it is stated that dorms accommodate more than the number of students compared to the allocated seating capacity. Each room accommodates more students than its capacity allows. Secondly, hygiene is not adequately maintained and there needs to be more hygienic washrooms. The majority of students claim that the seating arrangement in these dormitories is contrived. Students are meant to serve as agents of the ruling party and political students’ organizations. It is fundamentally an endeavor to establish two distinct classes on campus and inside the state. One class ruler and another is a subordinate to ruler; Students are used as instruments for upholding the supremacy of the rulers. This technique has been executed astutely for an extended period, perpetuating the seats problem in the university residence halls. Eliminating the accommodation crisis will free students from the tyranny of the rulers. Students believe that the university administration and state policymakers are cognizant of this dilemma and issue; however, they need to address it. Students asserted that despite the presence of systematic administration in the halls, the overarching control and management are fundamentally dictated by the political leaders of the dominant group of students. They allocate excess students other than the specific seats to fulfill their political aims. Newcomer, conversely, accommodates 30 to 50 pupils per room. Its sole objective is to develop these students' political agenda and assist their party. Additional issues in residential settings encompass inadequate internet connectivity, insufficient cleaning services, and unsatisfactory sanitary conditions, particularly in female students' dormitories. Moreover, students cannot study effectively due to insufficient reading rooms and amenities for each student in dorms. Conversely, students cannot get peaceful, pleasant, and tranquil sleep due to an inadequate atmosphere. A student described:

Our dorms lack the amenities and atmosphere for a student's physical and emotional well-being. The rooms are overcrowded; more students stay than the capacity. The dorms' sanitary and sanitization needs to be cleaner and hygienic. Non-tiled washrooms have bad conditions and an unhealthy environment. The big problem is that dorms are politically controlled, and students face facility crises; we are forced to attend political programs. If I do not attend, I could be kicked out of the dorm or denied a room seat (PM1).

Canteen and Food Service

Regarding the service quality offered by the university, all students (N=12) equally expressed their dissatisfaction with the canteen and food services. It has been claimed that the food provided in the residence halls and university canteens is sufficient for survival only. The provided foods don't contain necessary nutrition and protein. A level of stamina or mental strength can only be maintained for a short time with the supplied nutrition. This nutritional insufficiency poses significant obstacles to academic performance. Conversely, all participants claimed that there is limited diversity in the food offered, with almost the same meals provided daily, and that cleanliness standards aren't followed in the preparation and serving. Conversely, the canteen proprietors provide lower-quality and inadequate quantities of food at high rates, owing to no subsidies from the institution or government. There is no kitchen facility for students to prepare their meals by own, nor a refrigerator for storing purchased food. The students perceived university administrators' absence of monitoring and supervision as a big issue. Simultaneously, the absence of accountability from the university administration compels students to tolerate a miserable life with poor food quality. One respondent remarked:

"...physical well-being is essential but the food served doesn't provide nutrition or mental stamina to study for a long time. Some common items are provided which is enough for a student's intellectual development and health. The cooking quality is poor and the quantities are limited. Many students are not able to accommodate food from outside." (PF4)

Gymnasium and Sports Court

Most respondents (N=12) agreed that their university has a central playground whereas (N=6) confirmed the absence of a gymnasium on campus. However, there is a consensus that gymnasiums need more equipment for sports and physical activities. Female participants (N=5) disclosed the lack of opportunities and facilities for females to engage in sports and physical exercise. It revealed that a type of gender discrimination persists in universities regarding sports and extracurricular activities; as girls are not encouraged to participate in physical activities and sports and observed some reluctance regarding women's involvement and organization in sports activities. Female students (N=2) claimed that their university maintains distinct gymnasiums for men and women separately and sports events are scheduled on different occasions.

"Despite having a central playground,.....lacks awareness, opportunities, and a safe environment for girls to exercise, play sports, and enjoy entertainment. I feel that there is no freedom based on gender in our university. There are facilities but comparatively fewer opportunities for girls in terms of sports or participation in co-curricular activities and there is a sort of reluctance based on gender." (PF2).

Health and Medical Facilities

Most respondents (N=10) expressed dissatisfaction with the medical and health services offered by the university. Students have pointed out a deficiency in excellent medical services and one of the most problematic sectors. There are not qualified and sufficient doctors. Participants witnessed that the medical center frequently dispenses common treatment without doing any diagnostic tests. Most respondents claimed that the medical center needs modern testing equipment and technologies. Conversely, female respondents (N=2) indicated that there shortage of female doctors to discuss their personal issues and health concerns. The principal complaint was the inadequate utilization of current university resources and facilities. The main issue was that the physicians and staff at the medical center did not treat the students with respect and commitment. They referred students to the government medical hospital in case of intricate and challenging treatment. Each medical center has an ambulance but it can only be provided services with recommendations from authoritative sources in emergency. Several students, however, acknowledged that the medical center offered them fundamental treatment and medicines free of charge. A student stated:

"There is a crisis of modern technology and equipment; and service is not provided sincerely and appropriately by existing resources with respect, commitment, cooperative mentality. The doctor does not even bother to check or test, no matter how chronic your problem. They will give common medicines by roaming around. These hurt my self-respect, that there is no honesty." (PM11)

Campus Environment

Many students have also voiced grave complaints about the atmosphere on campus. A student at a large university characterized their campus setting as 'Culture Shock.' Outer people's uncontrolled and unrestricted movement and entrance into campus significantly impede educational activities and the overall campus environment. Most respondents (N=8) confirmed that their campus gates are open, allowing unrestricted access for outsiders which many perceived as a security concern particularly for female students. Many students have seen the rampant and unrestrained engagement in student politics on campus as a significant challenge for an effective study and research atmosphere. Most students, particularly female students (N=5), expressed concerns regarding the cleanliness and hygiene on campus, citing a significant deficiency in sanitary facilities. One commented:

"I encountered a profound culture shock at university. By "culture shock," I refer to the university providing all amenities except for an appropriate learning environment. This environment discourages students who wish to study. There are security concerns on campus due to the lack of restrictions regarding mass entry into campus premises. There exist political issues and other challenges." (PF2)

Transport and Communication

Most interviewees (N=10) recognized that their institution provides a bus service for students, while other participants (N=2) stated that their university offers a shuttle train for student transportation. Nevertheless, most students claimed that the quantity of transportation and routes significantly inadequate proportional to the number of students. Students of city find public transport adequate but the associated costs are excessive and uncomfortable. Some universities are situated in remote area and distant from the central city; students frequently miss classes and exams if they fail to get onto the scheduled bus for not available public transports. Certain universities possess a limited number of bus routes. Many female students claimed overcrowding in buses and trains to be a factor in harassment. All these elements adversely affect the student's mentality, impacting overall academic performance including classes and examinations. One of them stated:

"Our university is located far from the city, so we fall into trouble even if we miss classes and exams because there are not enough public transports. We need more buses and routes schedules. As public bus is crowded, we, female students, face harassment sometimes. These disrupt the mental balance and make us tired, diminishing interest, eagerness, and motivation toward studies." (PF8)

Discussion

Education in Bangladesh is the focus of renewed discourse both globally and nationally after pandemic Covid-19. On the other hand, the fourth industrial revolution is prompting each state and nation to gear up anew. In this context, the critical challenge is to develop skilled and competitive human resources. Consequently, it is imperative to assess the total capacity of public universities in Bangladesh. Measuring the service quality of higher education institutions enables an understanding of capabilities, existing status, shortcomings, and prospective areas for development. In this regard, the foremost dimension of service quality within the institutions is the assessment of physical facilities. As the primary stakeholders of the educational institution and direct beneficiaries of its services, the research findings and decisions significantly influence the perceptions and opinions of the students. The actual state of an educational institution's physical facilities is a crucial indicator of student satisfaction and influences academic performance. This qualitative research highlights students' perceptions of service quality regarding the physical facilities of public universities in Bangladesh.

The present research indicates that most students face inadequate services related to the physical facilities of their universities. Consistent findings have been reported in prior investigations within this field (Alam et al., 2021; Jaber Hossain & Islam, 2012; Rahman et al., 2020; Ullah, 2020). Physical facilities exist in every institution, yet they still need to be improved compared to the student number and requirements. While students in specific departments acknowledged satisfaction with their faculty facilities (Islam & Himel, 2018); but they reported dissatisfaction with the facilities of other departments. Numerous previous research findings indicate a significant correlation between the quality of university physical facilities and student satisfaction (Barua & Uddin, 2021; Haque et al., 2011).

Specifically, adequate infrastructural services such as suitable classrooms, well-equipped libraries and ICT facilities enhance students' academic learning and performance (Chowdhury et al., 2018; Nehemiah, 2023).

The study's findings disclosed that more than half of the departments were dealing with a classroom crisis, with the majority of classrooms being inappropriately sized proportional to the number of students. Classrooms with the proper materials and technology are crucial for adequate learning opportunities and perfect learner instruction; moreover, many classrooms rely on conventional systems (Azad, 2024; Ullah, 2020); but quality teaching-learning require classrooms equipped with sophisticated technological teaching aids and learning resources. The digitalization of classrooms is essential for effective, sustainable and pleasurable learning; moreover, there needs to be more consistency (Sarkar et al., 2012). Conversely, since the advent of COVID-19, the proliferation of digital classrooms globally has been prevalent, and distance learning has emerged as an essential tool for conducting educational activities. But numerous studies reveal a significant disparity in higher education in Bangladesh during and following the pandemic (Ahsan et al., 2023).

Many studies about libraries services have indicated that library materials, staff competencies, service orientation, attitudes, and tangible facilities significantly influence students' satisfaction or dissatisfaction with library usage (Alam & Mezbah-ul-Islam, 2023; Edwards & Browne, 1995). However, most students expressed dissatisfaction with the library's physical facilities and environment for studying and doing research. The seating capacity at large universities such as Dhaka University Library is severely inadequate compared to the number of students. Consequently, students have to queue early to get a seat. Libraries are not yet fully digitized; there are inefficiencies and limitations in automation processes, online accessibility and e-library resources (Zabed et al., 2009). The old way of operating has resulted in delays in student service delivery. Due to the absence of digital access, students are restricted from bringing their essential books and bags into the library which is regarded as a significant inconvenience and obstacle to utilizing the facility. These libraries have no interactive connectivity with foreign libraries, universities and research institutions to obtain modern knowledge and access recently published articles. The library's inadequate status significantly detrimentally affects student academic performance and the growth of learned human resources while creating to student dissatisfaction (Andaleeb & Simmonds, 1998; Roknuzzaman, 2007; Sarkar, 2012).

A library needs modernization, digitization, and current curriculum-related books, journals, and research papers as the globe advances in science and technology. It is necessary to establish an e-library to preserve online access to books and research works (Tabassum, 2023). The department's seminar room has reference books, but the university library is full of entirely of ancient literatures. The current study also found that Bangladesh's science curriculum still needs to be updated to the international standards (Aminuzzaman, 2011; Andalib, 2003). The curriculum needs to be worldwide standard so that students could go overseas with scholarships to become trained resources (Ahmmed, 2013).

Seminar at department' is considered as mini-library for studying and group work. Though older prominent universities offer this but newer rarely meet this services which shows the university's infrastructure challenges. Many departments' seminar rooms lacks necessary reference materials or journals for students; and personnel's lack of professionalism and cooperation affects students (Alam et al., 2021). Inadequate computer and internet WiFi in seminar rooms negatively impact students' academic performance and lead to significant discontent (Barua & Uddin, 2021).

The study disclosed the inadequacy of computers compared to the number of students in the computer lab. Computer learning and training are essential to sustain in the technology-based era (du Plessis & Webb, 2012), but students can only learn independently rather than in ICT-related courses. Several earlier studies (Sarkar et al., 2012) have distinctly addressed the deficiency in knowledge and scientific advancement in higher education in Bangladesh, along with the deficit in highly trained workforce and innovation. The absence of opportunities for students to engage independently and willingly in the laboratory, the deficiency of essential materials, equipment, and chemicals, insufficient funds for

research, and the unavailability of advanced equipment for both fundamental and new research have collectively hindered students' motivation to innovate and pursue research (Haque et al., 2011).

Multiple studies have found that most universities' library and student services are still maintained in the conventional way, which delays student services and causes dissatisfaction (Chowdhury, 2011). Students are suffering and struggling to pay university fees to the bank and collect certificate mark sheets. This study demonstrates that ICT management facilities are limited (Zabed et al., 2009). The system needs a student portal where they will get all the academic notice-information updates, course selection, assignment-project submission, course results, university calendar, and so on. The analysis also figured that public universities' ICT infrastructure reveals the academic information, faculty profiles, and course offerings deficiency on the university website (Islam & Selim, 2006; Rahman, 2021; Shahriar et al., 2016).

Current research highlights student accommodation as a crucial component of physical facilities service quality revealing that this issue is the fundamental concern in all universities. In urban universities, dormitories are essential for a safe, student-friendly and smooth academic life. However, students' dissatisfaction with housing issues is evident (Choi & Seo, 2021; Tajwar, 2024). However, healthy and peaceful student housing is essential for academic activities (Onifade, 2021). However, the dormitory regulation by the ruling party's student organization willingly created the housing crisis than required quantity which affects students' mental academic performances. The unhygienic washrooms in existing dormitories starkly illustrate the housing problem particularly in girls' dorms. The overcrowding, political control and poor management, forcing to attend in political programs and guest rooms, poor internet connectivity, non-regular cleaning, and inadequate governance affect student proper growth (Ullah, 2020; Sarkar et al., 2012; The Daily Sun, 2019).

Quality and balanced food service is essential for students' physical and mental development (Cano & Hijada, 2024; Wenjing, 2019) and physical amenities (Raihen et al., 2023) affect satisfaction. Students survive on the food that is served at higher prices. Catering hygiene management, catering service, food quality, and environmental and corporate social responsibilities are essential (Ji & Ko, 2022). However, students are provided with limited items of unhygienic food. However, the food served in university canteens should meet nutritional and protein needs. Students in public universities necessitate government and university subsidies for ensuring nutritious food through maintaining an annual food calendar (Mohiuddin & Chy, 2015).

Along with academic and research activities, sports and exercise facilities are essential for students' physical and mental growth (Ullah, 2020). Though every university has a central playground but students are dissatisfied with the lack of adequate, necessary and modern equipments in gymnasium. Despite a few universities having girls' gymnasiums; the study found a culture of discrimination and reluctance towards women in sports and physical exercise.

According to Nekoei-Moghadam & Amiresmaili (2011), healthcare facilities are the most vital service after university housing and food. This study found strong dissatisfaction with university medical facilities with existing medical centers (Barua & Uddin, 2021; Rahman et al., 2020). The shortage of doctors particularly female doctors and modern medical equipment are limited; thus, the medical centers mainly provide primary care and common treatments with some free drugs (Ullah, 2020). The big allegation is that doctors and staffs do not behave with students with respects. Emergency ambulance services are limited and doctors referred to government hospital in complex disorders which shows the poor state of medical service. of female doctors compared to female students is a significant complaint (Monem & Baniamin, 2010).

Effective and efficient education requires a student-friendly and safe campus (Akter & Uddin, 2018). In this study, culture shock prevents universities in Bangladesh's big cities from conducting normal and welcoming educational activities (Monem & Baniamin, 2010). Most campuses allow outsiders to enter which makes students feel unsafe specially female. Related studies also (Haque et al., 2011; Tajwar,

2024) highlights the need for cleanliness, peaceful and noise free environment in universities located in large cities. Students need more seating, entertainment, and lovely landscaping on campus.

Every institution transports students and faculty by bus or train, but the number of routes and buses are inadequate to the number of students. This study also revealed due to inadequate bus service and public transport students fail to attend classes and exams on time where university is located far from city (Rahman et al., 2020). Due to poor seating and overcrowding in transports significantly impacts students' mental health.

Conclusion and Recommendation

This study mainly analyzed the students' opinions regarding physical facilities' service quality. The study's findings indicate that students are more or less dissatisfied with almost all physical facilities. Students expressed profound dissatisfaction with residential accommodations, ICT facilities, laboratory amenities, library services, and canteen and food facilities. Furthermore, while some positive opinions are expressed regarding the facilities of other factors but it is noted that inadequacies are prevalent in most instances. Inadequate physical facilities adversely impact academic performance and reflect student dissatisfaction. Consequently, it is recommended that university administrators and policymakers pay close attention to enhancing all physical facilities including student accommodations, university ICT, laboratories, libraries, and dining facilities. Moreover, student satisfaction and academic performance could be increased by enhancing the quality of physical facilities and ensuring effective management and monitoring.

Limitations of the Study

This research is conducted based on the perceptions and opinions of students. However, there is also an opportunity to evaluate the opinions and views of various stakeholders including teachers, researchers and university administrative personnel. Because of constraints in both time and cost, this study has only been carried out at six different public universities. There are many modern and research-related tools and scales to measure academic and non-academic service quality; but in this study, an attempt has been made to reach a conclusion based on the opinions of students. This will create an opportunity to research on other dimensions in the future.

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