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Landscape of Mobile App-Based Transactions in Rural Bangladesh: A Qualitative Analysis

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Abstract

The main aim of this study is to depict the factors that influence the adoption of mobile app-based financial transactions and explore the behavioral intention to adopt such transactions. Another aim is to construct a model for adoption willingness that can serve as a foundation for conducting extensive quantitative studies. A qualitative research method is employed in this study, where content analysis is used to analyze the verbatim interview scripts. Following an interpretive research paradigm, this study first explores various barriers and benefits that a smartphone user faces while adopting mobile app-based financial transactions and validates those factors by analyzing 15 interviews conducted through a semi-structured interview guide with participants selected through convenience sampling. By applying both inductive and deductive methods, the interpretive analyses build a theoretical framework comprising a range of factors. Performance expectancy, effort expectancy, economic factors, technology attitude, security, social influence, brand image, e-readiness, government policy, customer buying culture, and promotional offers are the factors to adopt app-based transactions in rural Bangladesh. by capitalizing on the widespread use of smartphones, fostering digital literacy, and addressing key challenges, Bangladesh can create a financial ecosystem that empowers its citizens and fosters inclusive development, which is a significant milestone in the journey towards a smart Bangladesh. The landscape of mobile app-based transactions is a reflection of our evolving relationship with technology and money. The day will come when people will carry only one smart device and all services on it will be immediately available. By adhering to our research methodology, individuals can create a model tailored to the specific context of adoption in any given situation.

Key words: *App-based transaction, landscape, smart Bangladesh, behavioral intention, UTAUT model.*

1. Introduction

In the ever-evolving digital landscape, mobile app-based transactions have emerged as a driving force behind the transformation of how we engage in financial activities. These transactions encompass a wide array of services and functionalities, ranging from mobile banking and payment processing to e-commerce and peer-to-peer transfers. Mobile applications, commonly known as apps, are standalone software that connects users to the Internet. With a simple click, these apps act as gateways through which users

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access the content they are looking for. As money flows more efficiently and securely, small-scale businesses flourish. Local economies receive a boost as transactions become quicker, reducing time spent in transit or waiting in queues (Islam & Rahman, 2019).

Bangladesh is known for its vibrant culture, lush landscapes and rapidly developing technology scene. The last decade has seen a quiet revolution in rural areas, fueled by the rise of mobile app-based transactions. Using MFS in apps is very convenient and this is the current trend in financial transactions as a cashless alternative. This trend has been driven by the increasing availability of smartphones (Ortega, 2019), affordable internet connectivity, and government initiatives to promote a cashless economy. As smartphones have proliferated rapidly and mobile applications (Apps) have evolved, a new economic landscape called the App economy has emerged.

Rural Bangladesh, once secluded from the digital realm, is now embracing the convenience of mobile app-based transactions. Where agriculture is the main source of livelihood, and traditional banking infrastructure is often scarce, the proliferation of mobile phones has acted as a catalyst for change. The mobile phone has become a gateway to financial empowerment. Mobile app-based transactions are bringing the unbanked population into the fold of the formal financial system. With just a few taps on their screens, villagers can effortlessly send and accept money, settle bills, and even access credit - services that were once distant dreams. Reacting to this evolving consumer behavior, businesses are progressively delving into the creation of mobile platforms as a cost-effective substitute for conventional websites (Wakefield & Whitten, 2006).

The landscape of mobile app-based transactions is a testament to human ingenuity and adaptability, offering us greater control and convenience in our financial lives. As we navigate this ever-changing terrain, it is crucial to remain vigilant, adaptable, and forward-thinking to harness the full potential of this digital revolution while addressing its challenges. In this digital ecosystem, traditional barriers to financial participation are rapidly eroding, empowering individuals and businesses with new tools to navigate the modern economy. From the rise of mobile wallets and contactless payments to the innovative fintech startups that challenge established financial institutions, the landscape is characterized by both disruption and opportunity.

Throughout this journey, we will delve into the key players, emerging technologies, regulatory considerations, and user experiences that define the landscape of mobile app-based transactions. The main aim of this study is to depict the factors that influence the adoption of mobile app-based financial transactions and explore the behavioral intention to adopt such transactions. Another significant target of the paper is to construct a model for adoption willingness that can serve as a foundation for conducting extensive quantitative studies.

1.1. Study Context

The landscape of mobile app-based transactions is a dynamic and transformative force reshaping the way we interact with finances and conduct business in the digital age. The journey through this landscape has revealed a multitude of facets, from the convenience and efficiency offered by innovative fintech solutions. As this landscape continues to evolve, it will undoubtedly play a central role in shaping the way we manage our finances and conduct transactions in the years to come.

Bangladesh's digital financial services and payments sector is poised for significant growth, driven by the shift in consumer preferences towards digital, contactless and cashless transactions. As of February 2023, there were approximately 6.6 million users of app-based banking services. Mobile Financial Service (MFS) providers such as Bkash, Rocket, Nagad, and Upay also play a pivotal role in facilitating app-based transactions. During February 2023, the total value of app-based transactions surged to Tk 293.86 billion, with an average daily volume of Tk 10.49 billion, slightly lower than the Tk 10.94 billion recorded in January 2023. These trends underscore the burgeoning potential of Bangladesh's digital financial landscape (Faijullah, 2023).

Bangladesh government has the slogan ‘My village-My town’ through which rural people are getting urban facilities. At present, 60.29% of the 172.1 million people live in rural regions in Bangladesh (World Bank, 2022). In Bangladesh, approximately 90% of the population utilizes mobile phones, with around 31% owning smartphones (Tribune Desk, 2022). At the start of 2023 internet diffusion raised at 38.9% (Digital 2023: Bangladesh Report). Mobile applications can serve as a supplementary option to old-style payment systems such as cash, cheques, credit cards, and debit cards (Uddin, 2014). The combination of smartphones and internet access has become an essential aspect of individuals' lives (Jeno et al., 2019).

In Bangladesh, users are increasingly growing their digital lifestyle, but still, most users are not aware of the advanced functions of mobile apps (Hossain & Haque, 2014). Many rural users think an app can only be used for cash in and cash out. Some locals believe mobile app-based transactions are only for the upper class (Regmi, 2015). Despite many advantages of app-based transactions for both consumers and merchants (Dahlberg et al., 2015), the rate of adoption is still not meeting expectations, consequently the extensive embrace of mobile payments has not yet transpired (Zhou, 2014). Rural regions continue to primarily rely on cash, and the level of adoption for digital currency remains considerably limited. Despite the rapid growth of mobile apps adoption, there are also the rejection and discontinuance of the use of some mobile apps (Okonkwo, 2019). To secure widespread adoption of mobile app-based transactions, it is essential to examine consumers' technology inhibition landscape. Despite the widespread fascination with mobile apps among broad users, relatively few studies have delved into the factors that influence their usage (Wang, 2018).

In the next section, we offer a concise summary of the existing literature, followed by the "research method" section. The subsequent part encompasses the "findings and implications," with the final section focusing on "conclusions and future research."

2. Literature Review

The term ‘app’ originated from ‘software application’ (Light et al., 2018). Mobile applications are designed for users to download onto mobile devices. (Olmstead & Atkinson, 2015). Apps were developed for smartphones in 2008 for iPhones and in 2009 for Androids. Following the introduction of mobile phone applications, there has been a substantial proliferation in the diversity and categories of apps (Nielsen, 2014).

The advent of mobile applications has significantly transformed the role of smartphones in individuals' lives, enabling them to carry out daily tasks such as ticket reservations, education, social interaction, gaming, entertainment, shopping, managing financial matters, and settling bills (Aydin & Burnaz, 2016). These apps also facilitate fund transfers, account management, mobile-based marketing, and various forms of monetary transactions (Oliveira et al., 2016). Smartphones, with their diverse multitasking capabilities and portability, have integrated into everyday existence (Falke et al., 2007), offering suitability, autonomy, and adaptability (Sarwar & Soomro, 2013), as well as flexibility, rapid accessibility, and pervasiveness to users, thereby boosting productivity across various facets of their lives.

Several recognizable earlier researchs utilized Diffusion of Innovation (DOI) theory (Eastin 2002; Azam et al., 2021) to investigate the behavior of adopting and using technology. Adoption can be described as the psychological disposition through which an individual either embraces or declines the use of an innovation (Azam, 2014). The process of spreading individual adoption is predominantly linked to the individual's awareness, knowledge, personality, and motivation. As per Rogers (1995), embracing a new concept is shaped by five essential attributes of that innovation, which include its relative benefit, compatibility, intricacy, feasibility of testing, and how visible it is to users within a social context.

A substantial factor to the widespread adoption and triumph of these applications is the increasing comfort and familiarity customers have developed with technology. In the present era, these apps have become so intuitive and user-friendly that even individuals who have had no prior experience with smartphones swiftly grasp how to operate and utilize them (Hew et al., 2015). In China, people are using mobile phones for their daily transactions and all financial services (Vijai, 2019). Countries like Bangladesh, however, may still have a long way to go in this regard.

Scholars have contended that factors like perceived utility and perceived ease of use indeed exert a positive and straightforward effect on customer trust. Among other elements of app adoption, the most influential role is played by economic benefits. Customers expect mobile apps to be economically viable, convenient, effortless, and error-free transaction method (Ali et al., 2021). Drawing from a Nielsen report in 2018, a

robust correlation exists between the duration individuals spend using their mobile phones and the evolution of usage patterns. Users of cheaper mobile phones tend to have a greater preference for utilizing lightweight versions of applications.

In the literature, one of the initial obstacles to technology adoption is insecurity, which is characterized as an absence of confidence in the technology and its capacity to perform effectively (Parasuraman, 2000). Zhang et al. (2012) demonstrated that perceived risk had a noteworthy adverse impact on behavioral intention.

In the individual adoption process, the influence of family, friends, and peer groups becomes significant (Bombardi-Bragg, 2017). Social identification significantly influences a user's intention to make in-app purchases (Hsu and Lin, 2016). In mobile app adoption, consumers may use the following information: the review in app stores, the icon of an app, user feedback on websites, news stories about some apps, and word of mouth (Zhang, 2018). Pleased customers act as a reference to use the innovation (Hoque & Sorwar, 2017; Venkatesh et al., 2012).

Block et al. (2017) have proposed that attitudes play a crucial role in participation in activities. Attitudes serve as a robust predictor of the intention to persist in using an application (Shaikh & Karjaluoto, 2015). Meuter et al. (2003) indicate that technology-related anxiety has a significant adverse effect on customer acceptance and the customer experience, particularly in the realm of self-service technologies. The degree of Internet proficiency and personal valuation of the Internet are additional moderating variables that influence the impact of convenience and collaboration on app utilization (Ahuja, 2016).

In adoption research, the reputation and physical presence of a company offering online services have shown a statistically significant connection with customer trust, as indicated by studies by Beldad et al. (2010). Numerous researchers have consistently identified and advocated the idea that a positive reputation of a company fosters a trustworthy relationship with its customers. Conversely, when a company has a negative reputation among consumers, it diminishes the trustworthiness (Beldad et al., 2010). Additionally, the smoothness of transactions has been found to have a clear impact on this relationship.

Researchers have frequently regarded behavioral intention as a crucial aspect of comprehending real usage actions. This perspective stems from mounting empirical proof indicating that behavioral intention is among the most reliable predictors of actual usage behavior, as demonstrated by studies such as Zhang et al., (2012) and Venkatesh et al., (2012). Wang et al., (2013) investigated the factors influencing the behavioral intention of app users and proposed that consumers' values regarding user experience play a pivotal role in influencing the intention to employ information technology.

In spite of challenges such as low internet access, limited information, weak legal and regulatory frameworks, insufficient financial support, traditional payment methods, a

shortage of skilled personnel, and high internet expenses, the government has outlined its ambitions to transform Bangladesh into a technology-driven society (Azam, 2014).

The adoption behavior of individuals is commonly examined using well-known theories such as the Theory of Reasoned Action (TRA) (Montano & Kasprzyk, 2015), Diffusion of Innovations (DOI) Theory (Rogers, 2010), Theory of Planned Behavior (TPB) (Ajzen, 1991), Technology Acceptance Model (TAM) (Davis, 1989), and Unified Theory of Acceptance and Use of Technology (UTAUT) (Hoque & Sorwar, 2017; Venkatesh et al., 2012).

3. Methodology

The research employed a qualitative research approach to accomplish its objectives. The approach includes a comprehensive analysis of existing literature as well as an in-person exploration. The preliminary step involved a comprehensive examination of prior research to establish an initial grasp of the elements influencing the acceptance of mobile app-based financial transactions. Subsequently, a field study was carried out to delve into and authenticate these factors and variables. This phase encompassed 15 in-depth interviews with individuals of significance, meticulously chosen through purposive sampling. These interviews aimed to gather expert opinions and valuable insights pertaining to the subject of the study.

3.1. Sample

We utilized a blend of convenience and purposive sampling methods to identify participants with direct experience in e-transaction processes (Clarke and Braun, 2013) who were willing to take part in our field study. In this research, we adopted the idea of conducting interviews until reaching the 15th case, as we had achieved information saturation and theoretical richness (Lincoln and Denzin, 2003). Participants for the interviews were chosen based on their engagement in app-based transactions, accessibility, and ease of contact. Our interview group comprised fifteen smartphone users with diverse educational backgrounds, all possessing a comprehensive grasp of our study's objectives. We made deliberate efforts to ensure diversity among the participants sampled. The demographic profiles and relevant participant information from our qualitative survey can be found in Table 1.

3.2. Data Collection

The research team prioritized qualitative data collection methods over numerical data, aiming to gain insight into participants' perspectives (Bryman, 2017). They conducted individual, face-to-face interviews as part of the qualitative survey, ensuring meticulous organization and recording after securing participants' consent. Before the field study, respondents received a detailed consent form outlining the study's objectives and ethical considerations, emphasizing their voluntary participation and the freedom to withdraw anytime. The researchers framed their inquiries in a "how" format rather than a "why" to

create a friendlier, non-threatening atmosphere, ultimately enhancing outcome quality (Yin, 2017).

We used semi-structured interviews, focusing on (i) factors influencing app-based transaction adoption, (ii) attitudes towards technology, (iii) barriers to participation, (iv) required resources and facilitating factors, (v) customer buying culture readiness, and willingness to use mobile app-based transactions. Each interview lasted approximately 60 minutes, with significant attention paid to nonverbal signals and other indicators to enrich the understanding of findings. We transcribed all interviews the day after each session.

3.3. Data Analysis

Due to the interpretive nature of the study, the researchers encountered a hurdle when analyzing the data. Among the various analysis methods commonly used in qualitative research, content analysis (Neuendorf, 2017) was chosen as an appropriate approach for analyzing the interview transcripts. This research thoroughly investigated the in-depth interviews from various perspectives through a meticulous review of the transcribed content. The process of content analysis unfolded in two distinct phases. The initial phase focused on the exploration of single interview transcripts, while the another phase involved the analysis of transcripts spanning multiple interviews. The analysis of content was carried out entirely through manual means, involving a blend of both inductive and deductive methods for classifying factors and variables. The investigation delved into themes, sub-themes, and conceptual explanations related to variables and factors through an inductive approach. Additionally, the process involved an assessment of measurement scales for some variables and factors.

4. Findings and Discussions

4.1. Demography

The participants engaged in the field study exhibited a wide range of diversity as the 15 respondents include students, business people, service holders, housewives, retired person, school teachers and farmers. Selection of participants was based on their practical experience, technological know-how and an interest in making a contribution to the field of cashless Smart Bangladesh. Most respondents have a so strong formal education in various academic fields.

Table 1: Demographic profiles of study respondents

Participants	Age Group (Years)	Gender	Occupation	Education	Monthly Income (Tk)	Use App-based Transactions since (Years)	Use Frequency
A	< 25	Male	Student	Honors	< 10000	4	Daily
B	35-44	Female	Primary School Teacher	Masters	20000-30000	4	Weekly
C	45-59	Male	Farmer	Primary	10000-20000	3	Monthly
D	< 25	Male	Student	HSC	< 10000	4	Weekly
E	< 25	Female	Student	Honors	< 10000	3	Daily
F	< 25	Female	Student	Honors	< 10000	5	Daily
G	45-60	Male	Business	Honors	20000-30000	6	Weekly
H	35-44	Male	Private Service Holder	Masters	> 80000	5	Weekly
I	35-44	Male	News Reporter	HSC	30000-50000	6	Daily
J	35-44	Male	Private Service Holder	HSC	10000-20000	5	Monthly
K	45-59	Female	Business	Primary	20000-30000	2	Monthly
L	> 60	Male	Retired Service Holder	HSC	20000-30000	2	Monthly
M	35-44	Male	Outsourcing	HSC	20000-30000	5	Weekly
N	35-44	Male	Service Holder	Graduate	20000-30000	6	Daily
O	> 60	Female	Housewife	Self-Educated	< 10000	2	Monthly

4.2. Factors Influencing Mobile App-Based Financial Transaction's Adoption:

Table 2 presents the factors and variables acknowledged through the analysis of the interviews. A total of 12 factors and 48 variables emerged from the combined insights of the field study and literature review. The following section outlines the origin of these variables, including illustrative quotations from the field study and references to pertinent literature.

In our research, the most influential determinant of intention was discovered to be performance expectancy, confirming our initial expectations. Nearly every participant emphasized that mobile app-based financial transactions offer efficiency and speed. E said "[…] Mobile app saves my money and time." They further expressed that these transactions could be conducted at any time during the day, enabling them to overcome constraints related to location and time. D said "[…] Transactions are very transparent." With app-based transactions, users can complete transactions with just a few clicks on

their smartphones. 7 indicated that app-based financial transactions increase efficiency and productivity. Most of the respondents said that money transfer is very easy and 9 respondents said that app-based transactions made their life hassle-free. The literature on information technology (IT) adoption has recognized performance expectancy as an important predictor of adoption (Venkatesh et al., 2003).

However, when it comes to effort expectancy, there was a divergence of views. Among the 15 respondents, 12 expressed that ease of use played a role in their intention to adopt or use mobile app-based financial transactions. 10 respondents felt that app-based transactions are clear and understandable while 10 respondents felt that it is user-friendly and easy to learn.

Mobile apps are often cheaper than traditional channels for financial transactions. This is because they do not require the same level of infrastructure and overhead costs. Factors that have been identified through a combination of literature research and field studies have demonstrated diverse impacts in certain instances. For example, Five of the 15 respondents felt that smartphone devices are reasonably priced. 11 respondents said that using mobile app-based financial transactions saves money. Eleven of the 15 respondents felt that charges for internet services are high. 11 respondents said that the cost or fee of smartphone app-based services is high. F said "[…] The cost of cash out charge and internet package is very high." Only 4 respondents felt that mobile app-based services increase unnecessary transactions.

We found that Technology attitude is significant in our field study, whereas it is reported to be insignificant in the literature. 6 respondents said that they have enough courage, while ten of the respondents indicated their constant readiness to embrace app-based services. 7 respondents said that they would adopt new technology after gathering knowledge. G said "[…] if the government make the app-based payment compulsory, then the attitude of people will be changed."

Mobile app-based transactions raise security concerns. As these transactions involve the transfer of funds, there is a risk of fraud and cybercrime. Ensuring the presence of required security measures to safeguard users' financial information is crucial.

It was observed that 10 respondents have trust in the effectiveness and precision of the technology, but 8 respondents have doubts on the authority's honesty and integrity, misuse of personal information, and hacking. E said "[…] I completely trust my app providers." F said "[…] I have closed my MFS account because of hacking." Instances of fraud have been reported where deliveries are supposedly completed, but customers later complain of non-delivery. 5 respondents said that mobile app-based financial transactions create tension. Skepticism about security and privacy lingers, demanding heightened cybersecurity measures to foster trust (Karim & Rahman 2022).

Interestingly, our study has detected that social influence plays a significant role. This outcome aligns with prior research, which has consistently demonstrated that social influence strongly impacts an individual's intention to accept and use IT. 6 respondents

were influenced by important people, whereas 8 respondents were influenced by family and friends. D said "[…] I have not influenced by my family and friends, I use app because of necessity" 10 respondents said that social media influenced them to use mobile app-based financial transactions.

Table 2: Factors and variables, along with their sources

Factors	Variables	Interviewee															
		A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	Literature
Performance Expectancy	Enables performing tasks more quickly and time-saving	√	√		√	√	√		√	√	√	√	√	√	√		Bankole et al. (2011); Lee et al. (2011); and Zhou (2014);
	Increases productivity	√	√		√						√	√	√	√		√	Bankole et al. (2011); Zhou (2014
	Use it from anywhere at any time	√	√	√	√	√	√	√	√				√	√	√	√	Bankole et al. (2011); Zhou (2014);
	Money transfer is very easy	√	√	√	√		√	√			√	√	√	√	√	√	Venkatesh et al. 2003;
	Hassle-free life	√			√	√		√	√	√			√	√	√		Hossain et al. (2021)
Effort Expectancy	The system is easy to use	√	√	√	√	√	√	√		√	√		√	√	√		Venkatesh et al. 2003;
	Clear and understandable	√	√		√	√	√	√		√	√			√	√		Venkatesh et al. 2003
	User-friendly and easy to learn	√	√	√	√	√	√	√			√			√	√		Zhou (2014) & Huh et al. (2009)
Economic Factors	Devices are reasonably priced	√	√		√					√	√						Field study
	App-based transactions saves money	√	√	√	√	√		√		√	√	√		√	√	√	Stockdale and Standing, (2004); Bakos, (1998)
	High charges	√	√	√	√	√	√	√	√		√	√			√		Stockdale and Standing, (2004);
	Increase unnecessary transaction	√	√			√								√			Field study
Technology attitude	Courageous		√					√	√	√				√	√		House et al. (2004)
	Gathering knowledge before use	√		√	√	√					√		√			√	House et al. (2004)
	Adoption readiness	√	√		√	√		√	√	√	√			√	√		Field study
	Necessity	√	√	√	√		√		√	√	√	√	√	√		√	Field study
Security	Personal information may be misused	√	√				√			√	√	√		√	√		Sarkar et al. (2020)
	Hacking	√	√	√			√	√		√	√	√			√		Sarkar et al. (2020)
	Trust/ Credibility	√	√		√	√		√	√		√	√		√		√	Lee et al. 2011
	Create Tension			√		√	√		√					√			Field study
Social Influence	People important to me use it		√	√		√				√	√	√					Venkatesh et al. 2003
	Encouraged by my family and friends	√	√	√		√	√		√	√		√					Venkatesh et al. 2003
	Good reviews on mass/social media	√	√		√	√	√	√	√		√			√	√		Shan & King (2015)
e-Readiness	Sophistication of the Internet	√	√		√	√	√	√			√			√			Azam (2014)
	Transaction speed	√	√		√	√	√	√	√		√			√	√		Field study
	Low digital literacy	√	√	√	√	√	√	√	√		√	√		√	√		Field study
	Many people do not have a smartphone	√	√	√		√			√		√						Field study
	Laws relating to consumer protection	√	√		√	√				√				√			Zhu & Kraemer (2005); Azam and Quaddus, 2012
	Available app-based MFS	√	√	√	√	√	√	√	√	√							Zhu & Kraemer (2005)
	Not accepted everywhere	√	√	√	√	√	√	√	√		√				√		Field study
Brand Image	Goodwill		√		√		√				√			√	√		Field study
	Well-known/ Familiarity				√						√			√			Field study
	Offer varieties of services	√		√		√			√		√		√		√		Field study
	Advertisement		√	√	√	√	√	√	√		√			√	√		Field study
Government Policy	Government's motivational program	√	√		√	√	√	√		√				√	√		Azam (2014)
	Government grants/ Vata	√	√	√	√	√	√		√		√			√	√	√	Azam (2014)
	Curbing black money	√	√		√	√	√			√	√						Zhu & Kraemer (2005)
Customer Buying Culture	Cash dominant transactions	√	√	√	√	√	√	√	√	√	√	√	√	√	√		Świecka et al. (2021)
	Worried about the quality of product	√	√		√		√	√	√	√		√		√	√		Field study
	Prefer goodwill		√	√	√		√				√			√	√		Field study
	Compare offers before buying		√		√	√	√	√	√		√	√		√	√		Field study
	Distant dream to be cashless	√	√	√			√		√		√	√		√	√		Field study
Promotional	Cashback	√	√	√	√	√		√	√	√	√			√	√		Field study

The majority of the participants voiced apprehensions regarding infrastructure and e-readiness. Their concerns revolved around issues such as the speed and intricacy of the

Internet, transaction velocity, and server-related problems. D said "[…] I can forget my moneybag, but never forget to take my mobile." Many people have lower levels of education, low digital literacy and lack of training. E said "[…] to encourage app-based transactions, adequate training in necessary." Digital literacy remains a hurdle, as many rural users are still learning to navigate the complexities of mobile apps. Many people do not have a smartphone. Most of the respondents are aware of legal readiness. 10 respondents said that "[…] Mobile app-based financial transactions are not accepted everywhere."

6 respondents said that goodwill influenced them to use mobile app-based financial transactions. 10 respondents were influenced by advertisements. J said "[…] I have influenced by goodwill and advertisement of app-based transactions." A significant number of respondents expressed their desire to embrace online services that have a strong reputation and a physical offline presence.

It is interesting to note that, eleven respondents mentioned government grants/ vata as an influential factor. 9 respondents said that Government's motivational program for accepting mobile payment is still low. H said "[…] upobritti, widow vata enhanced the app-based transactions."

Customer buying culture greatly influenced the use of mobile app-based financial transactions. I said that "the society is still cash dominant". Most of them are worried about the quality of the product ordered, they have lower e-payment habits. H said that "[…]it is a distant dream to be cashless."

The promotional offer of different app service providers has a direct effect on adoption decisions. Except for 3 respondents all of them said that "cashback, price cut/ discount influenced them to use mobile app-based financial transactions." 10 respondents said that they compare different types of offers before buying.

4.3. Causal Links:

We conducted a thorough analysis of the interview scripts to extract relationships among the previously identified variables, which are depicted in Table 3.

Table 3: Causal links

	Participants														
Constructs	**A**	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**	**J**	**K**	**L**	**M**	**N**	**O**
PE & INT	√	√	√	√	√	√	√	√		√	√	√	√	√	√
EE & INT	√	√	√	√	√	√	√		√	√		√	√	√	
EF & INT	√	√	√	√	√		√		√	√	√		√	√	√
TA & INT	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
SEC & INT	√	√	√	√	√		√	√		√	√		√		√
SI & INT	√	√	√	√	√	√	√	√	√	√	√		√	√	
ERED & INT	√	√		√	√	√	√	√	√	√		√	√		
BI & INT		√	√	√	√			√		√		√	√	√	
GOVP & INT	√	√		√	√	√	√	√	√	√			√	√	
CBCUL & INT	√	√	√	√	√	√	√	√	√	√	√		√	√	
PO & INT	√	√		√	√	√	√	√		√	√		√	√	
INT & Adoption	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√

Note: PE: Performance Expectancy; EE: Effort Expectancy; EF: Economic Factors; TA: Technology Attitude; SEC: Security; SI: Social Influence; BI: Brand Image; ERED: e-Readiness; GOVP: Government Policy; CBCUL: Customer Buying Culture; PO: Promotional Offer; INT: Intention to Use

The table displays all the elements examined during the analysis of the field study and founds a causal connection among them. For instance, the concept of "PE & INT" signifies that performance expectancy positively influences the willingness to engage in mobile app-based financial transactions. It was noted that all participants agreed that performance expectancy directly affected their willingness to use mobile app-based financial transactions. The connection between these two factors was discovered and substantiated through the responses and observations of the participants. A said, "[…] Individuals residing in various regions of the country have the convenience of placing orders and receiving home delivery services for their purchases." M opined the same by saying, "I believe that performance expectations are pivotal in the adoption of new technologies. Users are inclined to embrace a technology when they perceive it as advantageous and capable of enhancing their performance and efficiency." Nine participants agreed that Mobile app-based transactions contribute to a seamless shopping experience, echoing similar observations. For instance, H said, "A significant number of individuals prefer not to visit markets due to the unsanitary and unclean surroundings, […], traffic jam troubles the people, […] they experience a convenient and trouble-free shopping experience through a mobile app." Respondent A said, "He can use app-based transactions anytime from anywhere, […]." K said that "app-based transactions save time, cost and increase productivity."

4.4. Adoption Model

As previously mentioned, one of the key goals of our paper is to create a model for the adoption of mobile app-based financial transactions, based on our field study. Initially, we primarily utilized the UTAUT model to establish a foundational conceptual framework for our study, which was subsequently refined and enhanced through the scrutiny of data collected via in-depth interviews.

Using the connections between the variables outlined in Table 3, we formulated distinct adoption models for each participant in the interviews. Subsequently, we amalgamated these individual models to create a complete model, as depicted in Fig. 1. The figure also illustrates several moderating variables, including "age," "gender," "education," and "occupation."

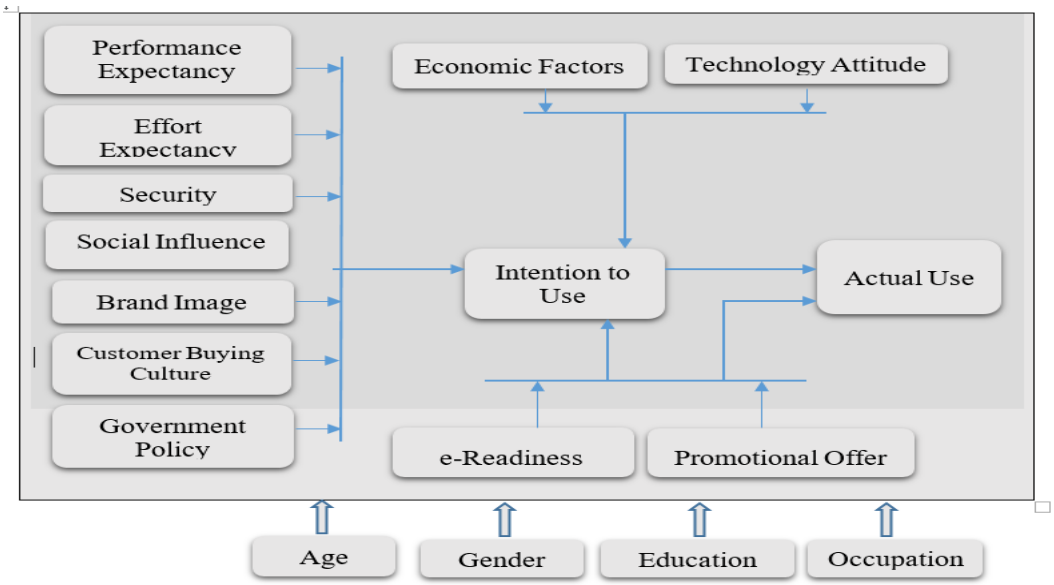

Figure1: Model for Adoption of Mobile App-Based Financial Transactions

Each of these variables serves as a moderating factor that impacts the relationship between the respective antecedents and the "adoption decision." It's important to highlight that the model presented in Figure 1 can serve as the foundation for conducting a comprehensive quantitative study aimed at identifying the significant precursors and moderating variables in the adoption of mobile app-based financial transactions on a larger scale.

5. Conclusion and Implications

The landscape of mobile app-based transactions in rural Bangladesh is a testament to the country's resilience, adaptability, and thirst for progress. The landscape of mobile app-based transactions is a reflection of our evolving relationship with technology and

money. The adoption of app-based transactions is a crucial step toward building a smarter Bangladesh. The day will come when people will carry only one smart device and all services on it will be immediately available. In the next few years, all transactions will be processed through the app as this is the most convenient way to do transactions that overcomes time and location obstacles, allowing bankers to expand banking services to rural areas (Azam, 2021). Mobile app-based transactions are more than a financial tool; they are agents of change, breaking down barriers and rewriting the narrative of rural development. Digital assets comprising data ecosystems, building and delivery of unified digital services, digital money, digital transactions, and awareness of cashless transactions, etc. will be the invisible foundation of Smart Bangladesh. The government and the private sector should continue to work together to promote the use of digital payment solutions and educate the masses about their benefits.

As the landscape continues to evolve, it is imperative to address the challenges head-on while maximizing the opportunities for growth. The issues of limited smartphone usage, lack of affordability for smart devices, insufficient awareness of the advantages of digital technologies, and the absence of a cloud-first approach require attention and resolution. Bangladesh should strengthen its current policies regarding cybersecurity and emerging technologies, including AI, Robotics, Blockchain, IoT, and Microprocessor design. Investing in digital literacy initiatives, ensuring robust cybersecurity measures, and fostering collaborative efforts can pave the way for a more inclusive and prosperous rural Bangladesh.

Through this exploratory analysis, a spectrum of factors that influence adoption decisions has been identified which included *Performance Expectancy, Effort Expectancy, Economic Factors, Technology Attitude, Security, Social Influence, Brand Image, e-Readiness, Government Policy, Customer Buying Culture, and Promotional Offer*.

Promoting a cashless society in Bangladesh through the adoption of mobile app-based financial transactions can bring numerous benefits including reduced dependence on physical currency, security, convenience, financial accessibility, especially for underserved communities and remote areas, improved transparency in financial transactions and improved economic efficiency and the potential to combat corruption and tax evasion, thereby promoting a more responsible and sustainable financial ecosystem. Through mobile apps, it is possible to provide timely service and eliminate all kinds of bureaucratic tyranny. Mobile apps reduce the amount of banknote printing required for cash transactions. The use of mobile, app-based financial transactions leads to a smart citizen.

Our research delves into twenty variables derived from the field study, constitutes a substantial augmentation to the existing body of literature. Furthermore, this paper has taken a step forward by crafting a theoretical model. The projected model can assist as an initial point for future research studies aiming at formulating hypotheses for empirical validation, especially from the perspective of developing countries and considering different country perspectives. By adhering to our research methodology, individuals can create a model tailored to the specific context of adoption in any given situation.

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Intentions to Use Artificial Intelligence: A Study on the University Students of Bangladesh

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Abstract

The usage and development of artificial intelligence (AI) in higher education in Bangladesh have created new opportunities and difficulties. The internal architecture of higher education will undergo a significant shift in governance as a result of the use of AI in education. However, this study aims to investigate whether students of Bangladeshi universities have any plans to use various AI-related technologies. To get input, students were required to submit a survey on AI and intentions. The data were analyzed using Smart PLS 3 and the Statistical Package for Social Sciences (SPSS) version 24.0 considering the Unified Theory of Acceptance and Use of Technology (UTAUT), which served as the framework. We were able to successfully use a survey to validate our conceptual model and set of hypotheses by collecting data from 304 respondents.The results proved that the adoption of automated technologies, which have a strong correlation with collaboration, is positively connected to the antecedent variables, such as performance expectancy, social influence, and facilitating conditions. Additionally, this study has demonstrated that effort efficiency may not be as significant in forecasting a willingness to adopt new technology. The shortcomings of this study are: a global perspective is lacking, and the respondents don't have much expertise with AI. Researchers may carry out a longitudinal study with a larger sample size from universities in various nations. Additionally, it could include important model components and take into consideration various cultural contexts.

Keywords: *Artificial Intelligence; UTAUT; Technology; University; Behavioral Intentions.*

1.1 Introduction

Classroom education has progressed as advances in science have grown, from the traditional classroom teaching paradigm to the artificial intelligence (AI) virtual learning method. Many schools have also begun to use AI technology in recent times to organize and implement high-quality efficient education and perhaps teaching activities, such as image processing, speech recognition, natural language processing, augmented reality, and other technologies, which provide convenient conditions for promoting school modernization and improvement. However, AI fosters the growth of human learning, perception, emotion, and other intelligence by allowing machine systems to do human-like learning, perception, emotion, and other mental tasks (Zheng,

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2020). This development has inspired educational solutions that take into account concerns such as AI-assisted teaching and AI-assisted learning. According to the present study, research on AI in education is concentrating on system innovations such as intelligent tutoring systems, with the bulk of current studies focusing on higher education (Zawacki-Richter et al. 2019). Besides the educational systems were radically altered during this COVID-19 pandemic. The need for AI is more understood in this dilemma. Schools, colleges, and universities all across the world have been closed down. Digital or online learning has become a feasible option for sustaining the educational system's goal as a result of changing learning situations. Trainers, academics, and students have all been caught off guard. While educational institution closures throughout the world have had a substantial influence on students' learning, E-learning has swiftly gained popularity as a means of dealing with the present crisis, and many schools and higher education institutions now use it for regular sessions. (Kashive, Powale&Kashive, 2020). Therefore, many researchers are looking towards digital innovations and upcoming technologies such as AI to help the education system not only to support this crisis but also to bring a revolutionary change in the learning circumstances of the world in the future (Bouktif& Manzoor, 2021).AI is projected to have an enormous effect on education as well, transforming how faculty teach by giving new tools. Offering tailored instruction improved access to information, and advocating for more inclusive education, can completely change how students learn. There are countless opportunities (UNESCO MGIEP, 2018). Though AI has substantial benefits, it also has some downfalls. Teachers employing remote teaching techniques are unable to regulate students in real-time, and students have a great degree of freedom, resulting in students' inability to focus on listening and teachers' inability to understand students' learning status in a timely fashion. (Wang, 2021). According to a study by (McGovern et al., 2018), AI adoption in Bangladesh and the rest of the world is slow, citing a lack of skill, growing privacy concerns, ongoing maintenance, integration capabilities, and limited demonstrated applications as factors. Applications of AI, however, have boosted Bangladesh's societal prospects.Adoption at the right time can substantially aid her distinctive growth, but neglect might have negative consequences. However, there appears to be a discrepancy between Bangladesh's concerns about AI's relevance and ramifications (Wahid-Uz-Zaman, 2019).

Furthermore, fostering students' desire to understand AI would be an essential educational aim in this setting. A well-designed curriculum typically encourages pupils to learn more about the subject. Investigating students' desire to learn as a measure of the curriculum's impact may help to guarantee that students continue to study more about AI. This study attempts to use artificial intelligence to correlate students' classroom conduct with engagement in class, as well as to accurately assess their active involvement in class. A unique technique based on feature fusion will be developed to assess the proper classroom management for this aim.

1.2 Related Literature

In their study, Li et al. (2021) stated that adding artificial intelligence to the classroom can encourage interactive learning and the development of intelligent institutions. Another study was carried out by Nayal et al. (2021) to see if artificial intelligence (AI) and machine learning (ML) are adequate for dealing with COVID-19 effects. The finding revealed that "lack of central and state norms and standards," as well as "lack of data security and privacy," are the two most significant barriers to AI –ML deployment in the agriculture supply chain. Furthermore, AI-ML in the ASC allows for more precise prediction, which decreases uncertainty.The outcome of a scholarly investigation by Chatterjee et al. (2020) suggested that employees' behavioral intent to use an AI-integrated CRM system at their place of employment is directly impacted by perceived utility and simplicity of use. Furthermore, two intermediate factors: the hedonic attitude (HA) and utilitarian attitude (UTA); have an impact on workers' behavioral intention to utilize an AI-integrated CRM system. Another study by Kashive, Powale, and Kashive (2020) found that attitudes and satisfaction levels influencing the inclination to use the e-learning module fluctuated by gender and learner type.During the COVID-19 epidemic, Barton (2020) used machine learning to describe the influence of AI in academia and faraway schooling options. According to the research, students, instructors, schools, and universities faced distinct problems when remote learning was adopted soon following the closure of educational facilities. The research looked at AI techniques that are thought to be more successful in remote education, as well as the problems that may arise.Another study, performed by Alam (2020), suggested that AI will undoubtedly change India's educational environment, generating massive disruptions in traditional pedagogy. However, several crucial constraints have thwarted the adoption of artificial intelligence in the educational process in India. A Markov approach to decision-making has been implemented by Dwivedi et al. (2020) to assess the value of AI in academic information systems to follow the successful execution of strategies for instruction during a crisis. According to the study, students had trouble interacting with existing online teaching materials, which affected their academic achievement.According to a subsequent study by Gourari et al. (2020), a thorough and informed investigation of student, teacher, scientific, and educational electronic environments is essential regarding correctly creating and implementing artificial intelligence technology. Fuzzy thinking is employed by Sun et al. (2020) to describe how AI might help students at Southeast University in China improve their digital learning systems. Because digital learning systems could sustain instructional continuity in a way that was comparable to that of traditional classrooms, the majority of students were excited about them. The teachers used upbeat energy in the classroom to assist children deal with the mental stress brought on by the quarantine. To investigate the opinions of primary school teachers in Indonesia on online learning, Aliyyah et al. (2020) used data analysis and machine learning. Insufficient resources, frequent false positives, a breakdown in communication, and lower levels of student engagement were among the reasons given by 77.6% of primary school teachers as to why remote learning was difficult. Faculty

were only able to convey to students the essential components of the subject matter due to the limited availability of online learning tools and technologies. According to Zaman (2019), the effective use of AI would depend on people, processes, and technology. People will adopt AI more quickly if they recognize the advantages, accept the technology, comprehend it, and use it objectively. Kandlhofer et al. (2016) predict that in the future, AI will take a more prominent role in education, from pre-kindergarten to higher education, with potential subjects including reasoning learning, expert systems, supervised learning, decision trees, and neural networks. The development of artificial intelligence has opened up a wide range of new opportunities while also drawing attention to important elements of the existing higher education teaching and learning processes.

The above evidence strongly suggests that many studies have been conducted in the field of AI, but there is a clear gap that, according to the best of my knowledge, none of them has examined the student's intention to use AI in Bangladesh. So, this study is thus an attempt to expose the crucial issue identified above.

1.3 Conceptual Framework and Hypotheses Development

Conceptual Framework

Our theoretical basis was the Unified Theory of Acceptance and Use of Technology (UTAUT). UTAUT, a cohesive causal model, was generated to clarify and foresee how students in an assortment of fields would begin to utilize technology (Dowdy, 2020; Sumak& Sorgo, 2016). In several prior studies, the validity and reliability of UTAUT have been empirically confirmed. The UTAUT is based on the specific notions of Performance Expectancy, Effort Expectancy, Social Influence, and Facilitating Conditions, and it integrates eight technological acceptance models. These models aid in identifying the factors that affect how well people adopt technology (Venkatesh et al., 2003). These four important criteria were the initial ones we used for our inquiry. Following are discussions of the key constructs and ensuing hypotheses based on the model and study areas.

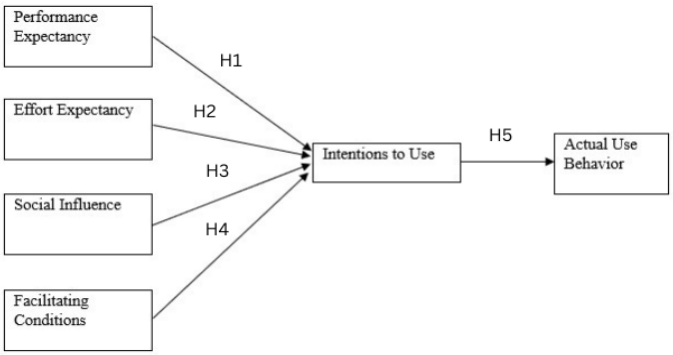


Figure: Conceptual Framework of the Study.

1.3.1 Performance Expectancy (PE)

Performance expectation (PE) refers to the perceived value of adopting a system and the conviction that doing so would improve one's performance at work (Venkatesh et al., 2003). Because users frequently want to foresee the extent of advantages to be received from a given technology, It has repeatedly been noted by several studies (Dwivedi et al., 2019) that it is the most relevant driver of behavioral intention (BI) for technology use. Prior investigations (Brown et al., 2010, Hong et al., 2011, Wang et al., 2014, and Pullen et al., 2015) have shown that there is a significant correlation between performance expectancy and the use of technology. It seems sensible to extrapolate this relationship to AI-enabled products.According to studies (Ransbotham et al., 2018; Duan et al., 2021), AI is associated with enhanced efficiency, which may be interpreted as an attachmentto performance expectancy. Information technology research models only have a little amount of empirical data to support this link. Performance expectations and intention to use technology did not significantly correlate, according to Cao et al. (2021). According to Chatterjee et al. (2021), utilizing AI-enabled technologies to improve performance was connected with performance expectancy. The following hypothesis was formulated in light of the review above:

H1: Performance expectancy positively influences the student's intention to use artificial intelligence.

1.3.2 Effort Expectancy

Effort expectancy (EE) is a dependable gauge of technology adoption. It is referred to as the ease of system usage, according to Venkatesh et al. (2003). EE is regarded to be a highly crucial variable since it supports individuals to figure out how much activity is required to use a certain technology., as previously discovered (Magsamen-Conrad, Upadhyaya, Joa, & Dowd, 2015; Oliveira, Thomas, Baptista, & Campos, 2016). Its effect on user intention is thus anticipated to be large and positive. In light of these debates, the accompanying hypothesis is created.

H2: EE positively influences students' intention to use AI.

1.3.3 Social Influence (SI)

Social influence (SI), as defined by Venkatesh et al. (2003), is the degree to which individual judges that "vital people" think they should approve the use of a new system. The influence of SI (friends, family, coworkers, and peers) on the adoption of behaviors at the individual level has been studied in many research (Shen, Ho, Ly, &Kuo, 2019; Wu & Chen, 2017). SI is a strong predictor of action and intention, according to studies by academics like Pavlou and Fygenson (2006), Lu et al. (2005), and Rogers (1995). The study's premise is that teachers who receive encouraging feedback from their social networks are more likely to have a strong BI to use ICTs. The discussions raised above generate the following hypothesis:

H3: Social influence has a positive impact on the student's intention to use AI.

1.3.4 Facilitating conditions

Venkatesh et al. (2003) defined facilitating conditions as the degree to which the user thinks that there are enough resources and support options available for using technology in enterprises. The organizational and technological support provided to students to enable them to adopt and use online tools with artificial intelligence (AI) in their assignments is referred to in this study as enabling conditions. A recently completed meta-analysis of the UTAUT model showed pleasant conditions can also contribute to the expansion of a positive attitude toward technology (Dwivedi et al., 2019). Supporting the usage of AI and being willing to behave has a favorable association. (Chatterjee and Bhattacharjee, 2020; Jain et al., 2022; Alam et al., 2018). As a result, we come up with the following hypothesis:

H4: Facilitating conditions have a positive influence on the student's intention to use AI.

1.3.5 Intention to use (IU) and actual usage behavior (AUB)

Intention to use (IU) technology refers to a user's plans to embrace and employ a certain tool (Venkatesh & Brown, 2001; Venkatesh et al., 2003). It is thus believed to have the greatest impact on how they will utilize technology (Jaradat& Al Rababaa, 2013). Intention acts as a mediating variable to carry out the action in support of the activity to which one's aim to use AI is indicated (Nasrallah, 2014). The most important predictor of people's behavior, according to a variety of research, is behavioral intention.In their most recent study, Alam and Uddin (2019) discovered a positive influence of ERP intention on the actual implementation of ERP. According totheir consequences (Chatterjee & Bhattacharjee, 2020), there is a suitable and massive relationship between intent to act and actual application when it comes to the adoption of artificial intelligence in higher education.We can construct the following assumptions based on the information presented above:

H5: Intention to use positively influences the actual usage.

1.4 The theoretical framework of the study

Artificial Intelligence

Artificial intelligence is not a new concept. McCarthy (Cristianini, 2016), who continued Turing's (Turing, 1937, 2009) work, created the phrase in 1956. Turing explained how intelligent computers are capable of intelligent reasoning and thought. Since 1956, the concept of AI has expanded and altered as a result of major improvements in its capabilities. Due to its multidisciplinary character and developing capabilities, the phrase is challenging to define even for professionals. AI is now defined as "computing systems that can engage in human-like processes such as learning, adapting, synthesizing, self-correction, and the use of data for complex processing tasks" (Popenici et al., 2017). The

term "artificial intelligence" (AI) can also refer to a computer system that can perform a certain task using features (such as voice or vision) and intelligent behavior that were previously thought to be exclusive to humans (Russell, 2010). In plainer language, the word "AI" refers to intelligent machines that can carry out jobs that have historically been done by people. Indeed, people read about AI in the context of the ongoing digital era, in which our way of life is changing due to growing digital transformation (Chaudhry & Kazim, 2022). As a result of such transformation, people's abilities and knowledge must adapt to the new situation. In this regard, the World Economic Forum recognized sixteen skills as being essential for the future workforce in the twenty-first century (World Economic Forum and The Boston Consulting Group, 2015). Technology literacy, communication, leadership, curiosity, flexibility, and other traits are included in this. When defining AI, may be difficult because of the multidisciplinary interest of researchers in linguistics, psychology, education, and neuroscience who tie AI to terminology, perceptions, and knowledge in their respective fields.As a result, it has become necessary to categorize AI inside particular disciplinary domains (Crompton & Burke, 2023). But artificial intelligence (AI) is playing a growing role in education. One significant example is individualized teaching methods, which are well-proven to be beneficial in enhancing learning (Khosravi et al., 2022; Kulik & Fletcher, 2016; du Boulay, 2016).Systems utilizing AI in Education (AIED) may also employ a variety of advanced AI techniques to develop the crucial interface for the learning process.

The UTAUT Model

To figure out how well any new technology is received, models from the literature on technology adoption are frequently utilized. Sun & Zhang (2006) and Venkatesh, Chan & Thong (2012) assert that these models frequently explain the factors that affect acceptance. The Theory of Reasoned Action (TRA), often known as the adaptation of psychological theory, is one of the most significant models in the research on technology adoption (Park, 2009). Despite being widely used, according to Venkatesh and Davis (2000), TAM only accurately estimated fewer than 50% of cases regarding technology use. After thoughtfully reviewing studies on the adoption of technology, Venkatesh et al. (2003) constructed the UTAUT model, which inevitably aids in solving and addressing the TAM dilemma. They designed a model known as the unified theory of acceptance and use of technology (UTAUT) to amalgamate the key components from eight well-known theories and models to predict and explain the adoption and usage of new technologies. It is important to note that the UTAUT model also includes the theory of reasoned action (TRA), information diffusion theory (IDT), theory of planned behavior (TPB), theory of technology acceptance (TAM), combined model of TAM and TPB (C-TAM-TPB), motivational model (MM), model of personal computer usage (MPCU), and social cognitive theory (SCT).Al-Qaysi et al. (2023) assert that the Unified theory on the adoption and usage of technology is an appropriate framework for examining how people accept new technologies. This theory expands on Brown et al.'s (2010) cooperation theory by analyzing the impact of technology throughout both the initial and

post-adoptive eras (Venkatesh et al., 2011). The concept, according to Venkatesh et al. (2003), aims to explain how people utilize technology and behave while doing so willingly. Performance expectations, effort expectations, social influence, and enabling environments are the four elements that affect how individuals utilize technology. The UTAUT model is capable of reliably describing a sizable portion (70%) of the heterogeneity in users' motivation to use technology, according to past studies. However, it has been found that the conventional UTAUT model is inadequate for investigating AI since it only focuses on the employment of functional techniques and is unable to adequately capture the complex procedures involved in the adoption of AI (Gursoy et al., 2019). Montesdioca and Maçada (2015) claim that some research that made use of the UTAUT standards condensed their subject matter by evaluating the efficacy of technology in terms of performance and user satisfaction. Through UTAUT, students will obtain a thorough understanding of their efficacy while applying AI (Rishi Agarwal, 2017). Efficiency, knowledge, and skills among students may all be improved with the usage of AI (Jacques Bughin, 2018). Preparing them for the current, competitive business climate, helps students make smart judgments.

1.5 Statement of the Problem

Artificial intelligence has already had a direct and indirect impact on our way of life and will continue to do so in the future. Many scholars have presented an intriguing question: how much will technology transform education? As a result, this study will examine the future of higher education if artificial intelligence is adopted, as well as the intention of Bangladeshi university students to employ AI in their educational institutions.

1.6 Research questions

However, this study will find out the answer to the following question:

1. How do students perceive AI?
2. Which of the driving factors are pushing students to adopt AI?

1.7 Objectives of the Study

The primary objective of the study is to investigate the intention of students in using AI for their classroom management.

The specific objectives will be as follows:

1. To evaluate the perceptions of students towards AI.
2. To examine the factors pursuing students to adopt AI.
3. To inspect the problems of using AI according to the perspective of Bangladesh.

2.0 Materials and Methods

2.1 Research design

This study uses a quantitative methodology that enables the researchers to validate their hypotheses and find solutions. The initial stage is to base the survey's questions on the study undertaken by Alam et al. (2020), who used the UTAUT model to look at people's attitudes toward technology. It took around 10 minutes to complete the study's questionnaire, which had two parts for evaluating our theoretical model. In the first portion, demographic questions about the respondent are asked, and in the second, questions assessing the components of the study model are asked. The research model comprises 22 elements in six constructs.The questions were composed to ensure they were uncomplicated for the respondents to grasp. The purpose of the inspections was to discover more about the mindset and attitudes of the students from multiple universities who have experience with and knowledge of AI technology. The survey questionnaire questions for each concept were graded on a 5-point Likert scale, with 1 denoting "strongly disagree" and 5 denoting "strongly agree”.

2.2 Sampling and data collection

Both the face-to-face survey and the online survey methods were used for collecting data for this study. A simple random sampling technique was applied for collecting the data. The researcher visited different universities in Bangladesh to collect data through the survey method and the respondents were chosen from an array of Bangladeshi public and private universities. The students from these universities who have employed AI technology and gained experience were chosen at random. Besides, the researchers contacted students who were interested in completing the survey via phone and email. From January 6 through March 30, 2022, data were collected. A total of 635 students from 15 universities participated in the survey. When the questionnaire was given to the possible respondents, an immediate answer was sought. The survey protects the privacy and identity of the respondents. At the end of the specified time frame, 372 replies had been received, with a response rate of 58.6%. 68 submissions were missing information after being reviewed after 372 were made. 68 replies were found to be lacking information after a careful examination, either as a consequence of respondents checking several options or by leaving the response page completely blank. The online survey was conducted through an online questionnaire survey (Google Form) via Facebook Messenger, email, and WhatsApp. A final dataset of 304 responses from respondents was the outcome of this.

3.0 Data Analysis

Statistical software tools like the Statistical Package for Social Sciences (SPSS) version 24.0 and Smart PLS 3 were used to statistically evaluate the quantitative data. The nature of relationships and the effects of mediation between the variables were examined using Smart PLS. Due to its dependability in psychometric model analysis, PLS-SEM has gained popularity among business and social science academics (Wold, 1985). PLS-SEM

is an alternative to covariance-based SEM (CB-SEM) because of this useful property, particularly when there are several indications, routes, and interactions between important variables in a research model or exploratory study (Hair &Hult, 2016). The hypotheses were tested using the bootstrapping approach. Through the use of the path coefficient () and t-statistics, the study examined the link between independent and dependent variables. The study's use of pre-justified notions and item scales led to the confirmation factor analysis (CFA). The study employed Cronbach's alpha, composite reliability (CR), average variance extracted (AVE), convergent, and discriminant validity statistics as its reliability and validity indicators.

Results

A two-step procedure was used to evaluate the collected data (Anderson &Gerbing, 1988). We started by examining the measurement model's accuracy, convergent validity, and discriminant validity. The structural model was then examined to ascertain the direction and strength of the connections among the theoretical components.

Data Analysis and Reporting

Pretest

The pretest questionnaire was created and delivered to ten students from various departments at JatiayKabi Kazi Nazrul Islam University (JKKNIU) who had prior experience using AI technology. They discovered that some of the assertions in the surveys, which were based on the previous literature, were confusing to them. One of the responders, for instance, advised defining the area of effort efficiency. Another user proposed that the term ‘facilitating conditions’ should be defined more clearly.Various adjustments to each section of the questionnaire were made in response to participants’ feedback. The final version of the questionnaire for the pilot study was developed with minor changes and modifications.

Pilot study

The pilot research was conducted to examine the internal consistency and reliability of the measurement scales. The survey utilized in the pilot research was a 5-point Likert-type scale with the following responses: 1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, and 5 = Strongly Agree. Six constructs and 22 associated items made up the questionnaire. A total of 372 replies from students at different public and private universities in Bangladesh were gathered during the one-month pilot project, which began in the middle of November 2021.

3.1 Sample characteristics

The respondents were found to be from 15 different public and private universities in Bangladesh. The following Table 1 provides a brief overview of the respondents' profiles:

Table 1: Profile of the respondents

Particulars	**Percentage**
Gender	
Male	68.4
Female	31.6
Total	100.0
University	
Public	76.3
Private	23.7
Total	100.0
Degree	
Honors	72.2
Masters	27.8
Total	100.0
Discipline	
Science	46.4
Arts	43.2
Business	10.4
Total	100.0
CGPA	
Above 3.50	28.7
Below 3.50	46.8
Below 3.00	24.5
Total	100.0
N = 304	

3.2 The Measurement Model

We evaluated the validity and reliability of the underlying constructs of the study to evaluate the measuring approach. As a result, composite reliability and Cronbach's alpha are used to evaluate dependability. But our measurement model is described in the following sections.

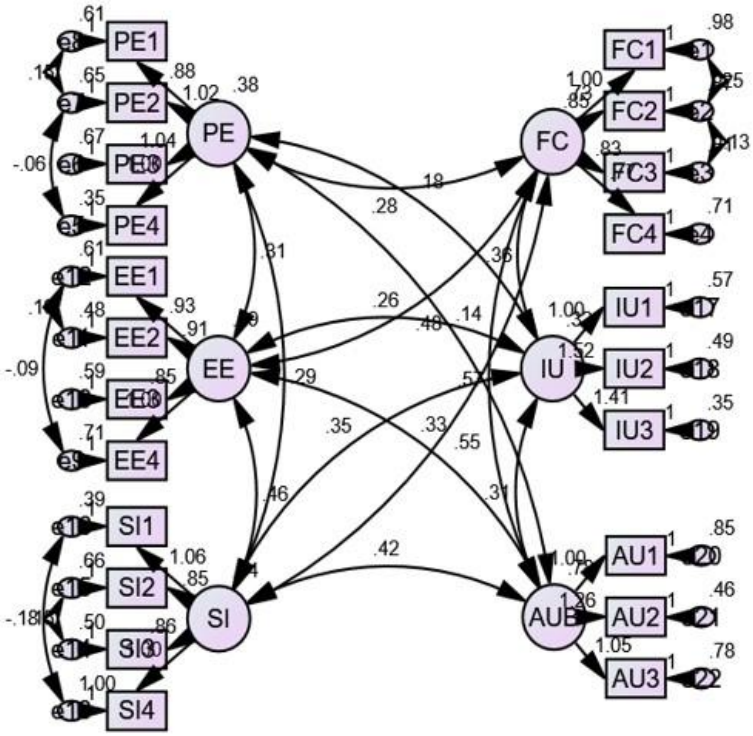


Figure: Measurement model of the study.

Reliability and validity of data

The reliability was evaluated using the composite reliability (CR) and Cronbach's alpha (rho_A) indices. According to theory, dependability is seen to be enough when the composite reliability, rho_A, and Cronbach's alpha all exceed 0.70 (Hair, 2006). According to Table-4.3 below, all of the constructions have composite reliability (CR) and rho_a values that are greater than the suggested value, or 0.7 and are thus considered to have appropriate reliability.

Both convergent and discriminant validity were evaluated in the study. When measuring constructs have an average variance extracted (AVE) of at least 0.50 and items/factors loading are significantly higher than 0.70, convergent validity is said to be good (Hair et al., 2021). The item loadings are shown in the table above. The item loadings, which range from 0.712 to.889, and the AVE (in Table 3), which ranges from 0.553 to.712, are

both higher than the suggested value. As a result, the prerequisites for convergent validity have been met.

Table 2: Construct's reliability and validity

Particulars	Measur-ement Items	Factor Loadings	VIF	Reliability			Validity
				Cronbach's alpha	Composite reliability (rho_a)	Composite reliability (rho_c)	The average variance extracted (AVE)
Actual Use Behavior	AU1	0.813	2.03	0.798	0.808	0.881	0.712
	AU2	0.889	1.16				
	AU3	0.828	1.42				
Effort Expectancy	EE1	0.813	2.07	0.783	0.783	0.861	0.608
	EE2	0.826	1.11				
	EE3	0.759	2.03				
	EE4	0.717	1.37				
Facilitating Conditions	FC1	0.787	1.83	0.727	0.706	0.831	0.621
	FC2	0.749	1.64				
	FC3	0.754	2.24				
	FC4	0.766	2.37				
Intention to Use	IU1	0.738	1.19	0.763	0.778	0.864	0.682
	IU2	0.859	1.51				
	IU3	0.878	1.67				
Performance Expectancy	PE1	0.712	1.27	0.733	0.741	0.832	0.553
	PE2	0.729	2.52				
	PE3	0.748	2.04				
	PE4	0.783	1.94				
Social Influence	SI1	0.832	1.01	0.799	0.811	0.881	0.711
	SI2	0.796	1.58				
	SI3	0.835	1.79				
	SI4	0.746	2.23				

The square root of the AVE (FL test) and the HTMT tests were taken into account to evaluate the discriminant validity (Table 4). A construct's correlation with other constructs must be bigger than its square root for discriminant validity to be adequate (Henseler et al., 2009). In the accompanying table 4.4, each latent construct's square root of the AVE (bolded in the diagonal) is larger than its associated correlation, indicating that the data utilized in this study have strong discriminant validity. And according to Bagozzi et al. (1991), all other inter-item correlations are below the. 80 cutoffs, demonstrating the distinctness of each concept.

When using the HTMT test, discriminant validity between two reflective conceptions has been shown in the HTMT value is less than. 90 (Henseler, Ringle, and Sarstedt, 2015). We can observe that all of the HTMT values in Table 4 below are less than. 90. The prerequisites for the discriminant validity are therefore properly satisfied. Table 6 below displays the outcome of the findings.

Table 3. Inter-construct correlations and discriminant validity (Fornell–Larcker Criterion).

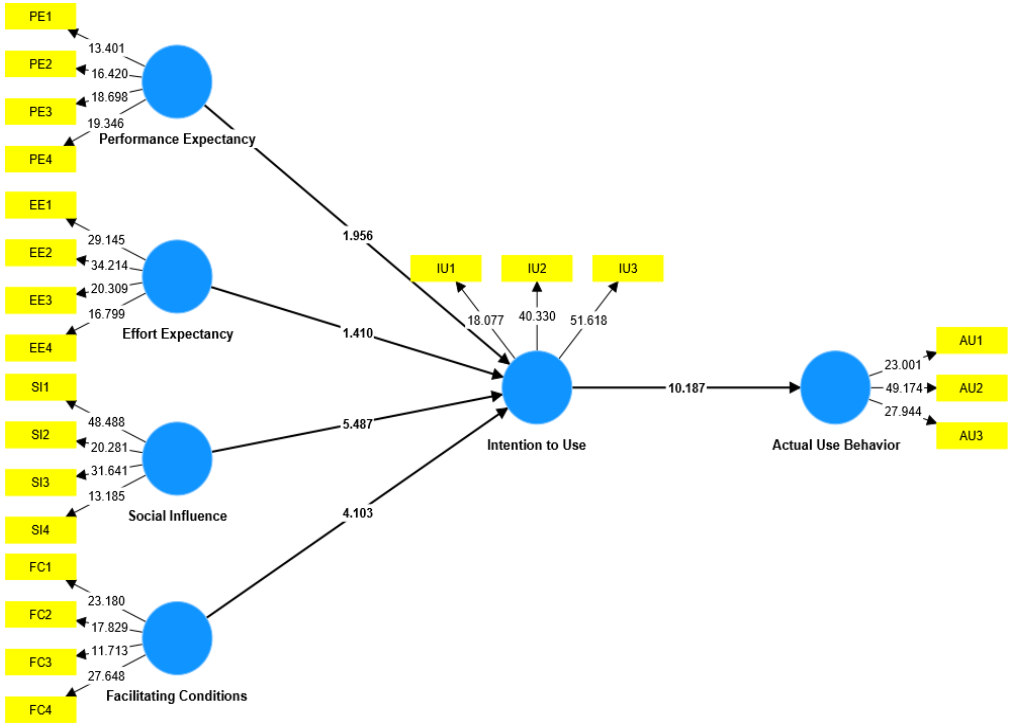
	Actual Use Behavior	Effort Expectancy	Facilitating Conditions	Intention to Use	Performance Expectancy	Social Influence
Actual Use Behavior	**0.844**					
Effort Expectancy	0.374	**0.78**				
Facilitating Conditions	0.539	0.494	**0.788**			
Intention to Use	0.491	0.481	0.572	**0.825**		
Performance Expectancy	0.169	0.489	0.386	0.413	**0.743**	
Social Influence	0.436	0.549	0.535	0.601	0.424	**0.843**

Table 4. Inter-construct correlations and discriminant validity (Heterotrait-Monotrait Ratio [HTMT])

	Actual Use Behavior	Effort Expectancy	Facilitating Conditions	Intention to Use	Performance Expectancy	Social Influence
Actual Use Behavior						
Effort Expectancy	0.468					
Facilitating Conditions	0.723	0.666				
Intention to Use	0.617	0.627	0.76			
Performance Expectancy	0.206	0.643	0.523	0.552		
Social Influence	0.54	0.685	0.709	0.761	0.543	

3.3 Structural Model

This study examined some general hypotheses regarding students' adoption techniques for artificial intelligence (AI) and other associated technologies using the UTAUT theoretical framework. Using the UTAUT framework, we were able to construct and evaluate a structural equation model (SEM), which was trustworthy and highlighted a number of significant discoveries. After that, Figure 4.1 displays the study's structural model. It displays the matching items under each construct (variable) as well as the t-values for each route.



3.4 Hypothesis Testing

Structural Equation Modeling (SEM) (Figure 4.1), which was used to assess the proposed link between the pathways, was based on the measurement model, which was discovered to be a satisfactory fit. The hypothesis was tested using the bootstrap methodology. The research employs beta coefficient () t-statistics to examine the link between endogenous and exogenous factors. The outcomes of the research model's hypothesis testing are displayed in Table 5.

Table 5: Results of the hypothesis testing

Hypothesis	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T statistics (|O/STDEV|)	P values	Decision
H1:Performance Expectancy -> Intention to Use	0.108	0.112	0.055	1.976	0.051	Supported
H2:Effort Expectancy -> Intention to Use	0.086	0.09	0.061	1.41	0.159	Not Supported
H3:Social Influence -> Intention to Use	0.351	0.343	0.064	5.487	0.00	Supported
H4:Facilitating Conditions -> Intention to Use	0.269	0.274	0.066	4.103	0.00	Supported
H5:Intention to Use -> Actual Use	0.492	0.495	0.048	10.187	0.00	Supported

The results show that the UTAUT can make certain educated speculations about students' aspirations to use AI and related technologies. First, we discovered that PE significantly influences a person's decision to use these technologies. Thus, H1 gets accepted. The results match those of the studies done by Andrews et al. (2021) and Uddin et al. (2020). This seems to also make logical sense in the context of our investigation. Furthermore, EE failed to demonstrate a substantial influence on the desire to adopt these technologies. H2 is hence rejected. Studies have shown that EE, however, may not be as important in predicting the desire to embrace new technologies (Zhang, 2020; Chang, 2013). Since the results of SI are statistically significant, it follows that it is crucial to ensure that students enjoy utilizing AI technology. H3 has been accepted. The Asia-Pacific Ministerial Forum on ICT in Education 2017 firmly endorses the idea that Member States should create learning environments and communities of practice to help educators and exchange innovations (UNESCO, 2018). The results of the research by Kim et al. (2022) and Rozmi et al. (2019) are likewise in agreement with the findings. Accordingly, the close friends and family members of users in Bangladesh will have a significant impact on whether they choose to employ artificial intelligence or not. Finally, we discovered that Facilitating conditions had a favorable influence on behavioral intention, indicating that organizational infrastructure supports might greatly encourage individuals to utilize artificial intelligence at work. According to earlier research (Alam et al., 2020; Amin et al., 2022; Chatterjee et al., 2021), there is strong evidence that there is a clear link between behavioral intention and actual use behavior. The results are compatible with those of the research projects carried out by Alam et al. in 2020 and Kim et al. in 2022. So, it is likewise agreed upon that hypothesis H4 and H5 are accepted.

3.5 Model Fit Indices

Two fit indices—Standardized Root Mean Square Residual (SRMR), d_ULS (squared Euclidean distance), and d_G (i.e., geodesic distance, Chi-square, Normed Fit Index (NFI), and Root Mean Square Residuals Theta (rms_Theta)—mean the quality of fit of

the model. According to Hu and Bentler (1998), a good match has an SRMR value lower than 0.08. The NFI should be as near to 1 as possible. According to Lohmöller (1989), NFI values greater than 0.9 often indicate a good match. The model's model fit indices are displayed in Table 6 as values. It demonstrates that the estimated model's SRMR value is.073, which is less than the model fit criterion of.08, and that the estimated model's NFI value is.853, which is acceptable (very near to 1).

Table 6: Model fit indices

Fit Indices	Saturated Model	Estimated Model
SRMR	0.063	0.067
d_ULS	8.396	12.319
d_G	3.726	4.218
Chi-Square	3462.674	3539.351
NFI	0.80	0.853
RMS_theta	.0182	.023
df = 1950, Chi-Square/ df = 1.78		

To show that the model has a good fit, the original value of the fit indices SRMR, d_ULS, and d_G should be lower than the upper bound of the confidence interval (Dijkstra and Henseler, 2015). The SRMR value is displayed in Table 7 along with the d_ULS value and the d_G value, both of which have 99% confidence intervals of 12.319 and 13.005. These show that SRMR, d_ULS, and d_G model fit requirements are well satisfied. The rms_Theta value should be close to zero for a successful model fit (Lohmöller, 1989). The rms_Theta value is.023, which denotes a satisfactory model fit, as seen in Table 6 above.

Table 7: The exact fit criteria

SRMR				
Saturated Model	0.063	0.075	0.087	0.094
Estimated Model	0.067	0.089	0.106	0.12
d_ULS				
Saturated Model	8.396	6.146	6.251	8.231
Estimated Model	12.319	7.263	10.195	13.005
d_G				
Saturated Model	3.726	2.667	3.24	4.423
Estimated Model	4.218	3.786	3.982	5.267

4.0 Conclusion

Around the world, education in artificial intelligence (AI) is becoming more and more significant. However, there isn't a test on the market right now to identify the pupils' current point of view. This study set out to develop a tool that would look at student intentions about the employment of AI. This study extends a UTAUT model to explain the objective of students learning about artificial intelligence. Educators can gain from assessing students' intentions to create a curriculum that encourages them to see AI learning favorably. Students' perceptions of AI in education as a novel technology contributed to highlighting the importance of attitude through the UTAUT.This study examines how students utilize and adapt to AI. It was shown that performance effectiveness, social influence, and enabling environments all significantly affect students' intentions to utilize AI. On the other hand, it has also been discovered that effort efficiency has no significant effect on the behavioral intentions of the pupils. This study further demonstrated how adoption influences actual usage. Additionally, it sparked the creation of five hypotheses regarding the goals of students about AI. Four hypotheses predicted a strong relationship between behavioral intention and actual usage behavior.Through an understanding of these concepts, we discovered that there is a connection between students' intentions and their actual usage behavior while applying AI. According to the study, students' intentions to adopt AI or adhere to the AI curriculum may be influenced by their comprehension of how AI might promote social welfare.

4.1 Theoretical implication

Our research generates significant literary contributions. First, the study adds to the growing body of research on AI in organizations. It expands on earlier conceptual studies that showed how useful AI may be for businesses. This model discovers a complete structure to understand how technologies based on AI have been accepted by social development organizations. This empirical study strengthens the case for the use of AI in team management and job execution (Larson and DeChurch, 2020). The results of the study may also aid in the adoption of technology as underdeveloped nations deal with the rise of AI. Considering their low degree of AI knowledge, the findings can be applied to other developing nations. As a result, the discovery may contribute to the establishment of an environment that encourages the use of AI-based technologies in social development organizations in developing nations. Third, the study adds to the body of knowledge about how the employment of AI affects team dynamics in an organizational setting. The majority of previous research on AI adoption in human teams has only been done in laboratory environments (Zhang et al., 2021). Fifth, the study makes a solid case for the UTAUT model's prediction that students would use AI-enabled technologies in social development organizations. Artificial intelligence aversion has been included in the model as an exogenous component that affects usage.

4.2 Practical implication

AI should be regularly applied to better university work settings to increase students' mental health and wellness. It should be mentioned that new artificial intelligence must be created to enhance student mental wellness and the psychological well-being of the educational system as a whole. New AI should be created and planned with consideration for their psychological requirements to lessen the stress of the studies and contribute to their physical and mental welfare, therefore extending the psychological advantages of AI throughout the entire educational system. The world nowadays is dominated by technology. Without converting them from manual to digital, no organization can last over the long term. Although AI adaption will initially confront enormous difficulties, the beneficial consequence is favorable to organizations' development. This study will help universities, independent organizations, company owners, the government, private firms, and HR consultants focus on policies to deal with issues of AI adaption and to protect best practices. As a result, educators can utilize it to assess pupils' existing conditions or confirm the efficacy of fresh AI teaching strategies. Bangladesh is placing a lot of emphasis on automation, control, and quick technical improvement in several industrial fields.The effective deployment of this system can increase productivity and make this nation more competitive on the world stage, which has just lately attracted the attention of government agencies and IT investors in this country. In addition to fostering industry innovation, the digitization of an economy also creates domestic job prospects, facilitating quicker economic growth. Furthermore, by reading this paper, IT investors, various businesses, and HR experts from various industries can gain more helpful information that they can utilize to create a future environment that is AI enabled across the nation.

4.3 Limitations

We have presented a model with significant explanatory power in this study. However, it is difficult to deny that this research study has certain particular shortcomings. The application of AI in higher education in Bangladesh is still in its infant stages. The responders don't have a lot of experience with AI. As a result, all of the syntheses are prognostic. We received 304 valid replies from the survey work. All of these inputs were from infrequent AI users. So, it is impossible to generalize this result. Adopters should utilize it with the necessary prudence. Results lack a global perspective because they are only dependent on information from institutions in Bangladesh.Even though the study is cross-sectional and only had a small sample size (N = 304), the survey was done in a very short amount of time. Since students gain new information via experience, their perceptions of PE, EE, SI, and FC may alter over time. In a survey, there is always a chance that terminology may be misunderstood, and we accept that participants can have varying definitions of some terms. Response bias occurs when respondents don't give their honest thoughts when responding.

4.4 Future directions

The study is carried out among Bangladeshi university students. To have a full picture of it, future research that could be conducted at other South Asian universities must also be examined. As a result, researchers may carry out a longitudinal study with a larger sample size to enable generalization of the findings in the future. Future studies can also make an all-encompassing effort to comprehend how different national cultures affect companies and, ultimately, how those cultures affect those organizations' adoption of AI-CRM. To obtain a clearer picture of the usage of AI in Bangladesh, future researchers are predicted to include more respondents with greater expertise in the field. Future research may be conducted by involving relevant constructs in the model.

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Measuring the effect of internet banking service quality on customer retention: the mediating role of customer satisfaction

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Abstract

The study's purpose is to evaluate the impact of internet banking service quality on retaining customers. Furthermore, the study investigates the role of customer satisfaction in defining the connection between five service quality attributes (reliability, responsiveness, assurance, tangibles, and empathy) and retention. The study employs self-administered questionnaires with a convenience sampling technique. The 360 usable data has been collected from voluntary participants who have experience with internet banking services. Subsequently, the study analyzed data using Smart PLS 3.3.3 in measurement and structural model. The study results revealed that four service quality dimensions such as reliability, assurance, tangibles, and Empathy have a substantial impact on customer retention while the effect of Responsiveness remains insignificant. The results for deciding the customer satisfaction suggest that responsiveness, assurance, tangibles, and empathy generate significant influence even though satisfaction partly mediates the link between four service quality aspects (Responsiveness, Assurance, Tangibles, and Empathy) and customer retention despite not influencing the association between reliability and retention. The study has improved the internet banking service literature towards retaining customers.

Keywords: *Service quality dimensions, internet banking services, customer satisfaction, customer Retention*

1. Introduction

Internet banking services emerged in the mid's 90 gained worldwide prominence due to offering online services consistently (Boateng et al., 2016). Internet banking services quality has attracted customers to internet banking service adoption intentions. Despite the importance of internet banking, maintaining internet banking

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service quality is a crucial and challenging task. Santouridis & Kyritsi (2014) identified that customer satisfaction and retention are not possible until providing smooth internet banking services to customers.

The literature discussed internet banking services, where Boateng et al. (2016) demonstrated that internet banking services significantly influence internet banking services adoption intentions. Also, Sharma et al. (2020) explained that internet banking service quality influenced customers' intentions towards internet banking services. Ramseook-Munhurrun & Naidoo (2011), in their study, argued that Responsiveness had a substantial impact on internet banking services adoption intentions. Moreover, Raza et al. (2015) claimed that Responsiveness, Assurance, tangibility, and Empathy significantly affect customers' internet banking services adoption intentions.

However, very few studies (Rod et al., 2009; Raza et al., 2020) addressed the consequence of internet banking service quality in achieving customer satisfaction and retention. Therefore, it can be inferred that the quality of internet banking service in terms of reliability, responsiveness, assurance, tangibility, and empathy might affect customers' satisfaction and retention.

The present study explores the direct impact of reliability, responsiveness, assurance, tangibility, and empathy on customer satisfaction and retention. Moreover, the study investigates the mediating effect of customer satisfaction on the connection between these service quality attributes and customer retention through the proposed research model presented in Figure 1. Therefore, the study will help the policymakers of the banking industry and other industries reveal some insightful knowledge about the impact of services quality on satisfying and retaining bank customers.

2. Review of literature

2.1 Internet banking

The global growth of information technology has penetrated internet banking services to be most popular to customers. Internet banking is an online banking service, a new information system that emerged in such techniques as the internet and World Wide Web. Boateng et al. (2016) define internet banking as an alternative distribution channel based on a technology-based self-service option. Internet banking was first introduced in 1990 by Californian bank wells Fargo (Santouridis & Kyritsi, 2014). After that, security first network bank provided a comprehensive banking atmosphere that advanced the potential of internet banking.

Consequently, today most banks used internet banking services to provide services to their customers. It is now widely accepted and well regarded that internet banking performs as an essential alternative to conventional services. Also, Sharma et al. (2020) explained that internet banking combines banking activities over the internet. It provides services to customers, which commonly include account balance checking, transactions checking, making mobile top-up, transferring money among accounts, paying bills,

accounts opening, and ordering checkbooks (Ramseook-Munhurrun & Naidoo, 2011). Amin (2016) demonstrated that some bank accounts are not physically present but operated through the internet. Thus, this new way of banking transactions services benefits both services providers and customers. In their study, Rod et al. (2009) explained that quality attributes like reliability, responsiveness, assurance, tangibility, and empathy influence internet banking services adoption intentions.

2.2 Customer satisfaction

Customer satisfaction is the matching point of customers' perceptions and performance of services/goods(Amin, 2016). Biswas et al. (2020) and Hasan (2021)define satisfaction as the consequence of evaluating customers' perceived value and consumption value of particular products/services. Hasan et al. (2021) argued that customers determine their satisfaction based on cost and customer reward points. In their study, Shahid Iqbal et al. (2018) and Hasan & Hasan (2019) explained that customer satisfaction is measured based on customers' expectations and gains from the products/ services.

Moreover, Chen et al. (2012) explained why service quality becomes an essential determinant of customer satisfaction. He claimed different customers seek different services to be satisfied from the same service encounter. Janahi & Al Mubarak (2017) indicated that customers are satisfied with electronic banking only when it provides flexible and convenient advantages such as speedy transactions, less costly, time-saving, easy transfer. Electronic banking includes security and privacy that influence 50% of customers to be shifted from traditional banking to online banking systems (Chen et al., 2012). Kundu & Datta (2015) and Hasan (2018) found that customer satisfaction depends on quick services, affordable service charges, ease of money deposits and withdrawal, use of ATM booths, account statements over email/ SMS, etc. That is to say, the level of satisfaction of bank customers is the result of service quality dimensions.

2.3 Customer retention

Customer retention refers to customer loyalty, which is interchangeable in literature. Customer retention and customer loyalty are not identical because customer retention considers the repeat patronage/ repeat purchase (Hasan et al., 2020; Venetis & Ghauri, 2004). On the other hand, customer loyalty refers to the attitudinal aspects, which contain attitudinal and behavioral characteristics (Ranaweera & Neely, 2003; Hasan & Sabbir, 2020). Customer retention only focuses on repeat purchasing behavior regardless of factors influencing that behavior. Customer retention makes long-term relationships/ associations with customers by fulfilling the customer's requirements. Venetis & Ghauri (2004) found that service quality, perceived value, trust, customer satisfaction, and commitment influence retention. Past satisfaction plays a crucial role in current customer profitability and loyalty. Alshamsi et al. (2020) argued that customer retention results in expected service quality and customer satisfaction. As a result, customer retention is determined by customer satisfaction by offering high-quality products/services.

Figure 1. Research framework

2.4 Service quality and customer satisfaction and customer retention

Quality of a service refers to customers' service expectations from past experiences, marketing communications, and word of mouth. Edward & Sahadev (2011) described elements such as customer's expectations, personal needs, past experiences, word of mouth, and service provider's communications as service quality. Due to different customers and different service providers, service quality measurement is very difficult for an organization. Prasad & Shekhar (2010) described three qualities of services-procedural, functional, and image quality of any assistance. Thus, service quality is the general perception and expectation towards the service of any specific product and company.

The most prominent service quality measurement model is SERVQUAL, an appropriate tool for measuring an organization's service quality. Parasuraman et al. (1985) brought the SERVQUAL model, which consists of service quality measurement and defines service quality by the discrepancy between expectations of the customers and perceptions of the service providers. Parasuraman et al. (1985) explained that service quality is the blank space between expected service and perceived service. Regarding the service quality model, the researchers demonstrated the following five determinants of service quality in order of importance.

Reliability: Capability to carry out as promised accurately.
Responsiveness: Prompt service providing willingness.
Assurance: Trust and confidence are increased by employees' knowledge and courtesy.
Empathy: Customer's care and attention.
Tangibles: Visibility of equipment, physical facility, and written materials.

Along with the service quality determinants, the service quality gap has emerged the SERVQUAL model. This model explains the difference between customers' expected services and their expectations. The SERVQUAL scale identifies six gaps in delivering services to customers. These gaps are-

Gap 1: management perceptions and customer's expectations gap.
Gap 2: Service specifications and management perceptions gap.
Gap 3: Service delivery and quality specifications gap.
Gap 4: External communication and service delivery gap.
Gap 5: Perceptions of service delivered and customer's expectations gap.
Gap 6: Employees' perceptions and customer expectations gap.

Previous studies explored the service gaps in various industries of several factors affecting customer satisfaction and retention. Raza et al. (2020) explained that service quality, security, flexibility, priorities, determination, expectations, and user-friendliness influence customer satisfaction. In their study, Hussien & Abd El Aziz (2013) identified that the service provider's service delivery aspects (i, e. reliability, responsiveness, assurance, tangibles, and empathy) influence customer satisfaction and enhance customer satisfaction retention/loyalty. Also, Ellahi & Bokhari (2013) identified that the quality of services significantly influenced customer satisfaction in the banking industry. Ennew & Binks (1999) confirmed that the quality of services in the banking industry significantly influenced customer satisfaction and customer loyalty/retention. Considering these studies, it can be concluded that service quality becomes an essential component of the banking industry because there is a connection between service quality and customer satisfaction and customer retention. Therefore, it is pertinent to investigate the impact of service quality dimensions (reliability, responsiveness, assurance, tangibility, and empathy) on customer satisfaction and customer retention in the banking industry. As a result, the following hypotheses are proposed.

H1: Reliability significantly affects customer satisfaction towards internet banking.

H2: Reliability significantly affects customer retention towards internet banking.

H3: Responsiveness significantly affects customer satisfaction towards internet banking

H4: Responsiveness significantly affects customer retention towards internet banking.

H5: Assurance significantly affects customer satisfaction towards internet banking.

H6: Assurance significantly affects customer retention towards internet banking.

H7: Tangibles significantly affect customer satisfaction towards internet banking.

H8: Tangibles significantly affect customer retention towards internet banking.

H9: Empathy significantly affects customer satisfaction towards internet banking.

H10: Empathy significantly affects customer retention towards internet banking.

H11: Satisfaction partially mediates the association between reliability and customer retention.

H12: Satisfaction partially mediates the association between responsiveness and customer retention.

H13: Satisfaction partially mediates the association between assurance and customer retention.

H14: Satisfaction partially mediates the association between tangibles and customer retention.

H15: Satisfaction partially mediates the association between empathy and customer retention.

3. Methodology of the study

3.1 Sampling and data collection

With the limited previous research on the impact of service quality in internet banking on the level of customer satisfaction and customer retention, it was apposite to embark on a descriptive research study by proposing a hypothesis and testing the hypothesis (Watson et al., 2013). Since customer retention was the pattern of customer behavior, a quantitative survey approach was adopted. Data were collected from respondents using the convenience sampling technique. Initially, a pilot study on 30 respondents had conducted. The questionnaire had been checked by expert opinion before the survey was administered. After that, the data was collected through generating and purposively sending Google drive to respondents who use internet banking services at least once in a life. 360 usable data were collected within two months (January 1, 2018, to March 1, 2018). Subsequently, 360 data were analyzed to investigate the hypothesized relationship.

3.2 Measures

A self-administered structured questionnaire had been developed with closed-ended questions considering the accessibility to participants having mixed exposures to internet banking services (Watson et al., 2013). Survey questions were developed using a five-point Likert scale. The scale (1) refers to 'strongly disagree' and (5) refers to the 'strongly agree' to measure all independent and dependent variables. Gender, age, marital status, education, and income were considered demographic profiles.

3.3 Data analysis

The study used both the measurement model and structural model developed by Henseler et. (2015) in analysis. The whole analysis was conducted by Smart PLS 3.3.3.

4. Results and analysis

Structural equation modeling (SEM) was used to estimate the proposed model's hypothesis and casual assumptions. Most researchers distinguished between the measurement models and the structural models unambiguously. The SEM follows two approaches- covariance-based approach and variance-based approach. The study analyzed hypothesized relationship of the model using Smart PLS 3.3.3. The study examined the measurement model to evaluate consistency, reliability, and validity. Subsequently, the study examined the structural model for hypothesis testing. The results of the demographic profile are presented in Table 1.

Table-1. Demographic profile

		Frequency	Percent
Age	18-30	106	29.44
	31-50	123	34.16
	51-70	84	23.34
	71-above	47	13.06
	Total	360	100.0
Gender	Male	189	52.50
	Female	171	47.50
	Total	360	100.0
Education	Basic Education	69	19.17
	Secondary	98	27.22
	Bachelor or above	193	53.61
	Total	360	100.0
Occupation	Student	51	14.17
	Agriculture	87	24.16
	Businessman	140	38.89
	Others	82	22.78
	Total	360	100.0

4.1 Measurement model

The measurement model first measured the indicator's reliability, calculating factor loadings that are preferably greater than 0.6 (Nunnally, 1994). The study result shows (see Table II) that all factor loadings range between 0.608 and 0.929, suggesting internal consistency. Subsequently, the study measured two other indicators- composite reliability (CR) and Cronbach's alpha value to construct reliability. Table II shows that the CR values are between 0.825 and 0.920. The Cronbach's alpha values are in the range between 0.678 and 0.877, which suggests the construct's reliability because these values are more significant than the threshold (Nunnally, 1994).

The average variance extracted (AVE) was used to assess convergent validity in the research (Henseler et al., 2015) that means the amount of indicator variation explained for each item of constructs and should be larger than 0.5, as a result, latent variables may explain more than half of the variance of their indicators. As shown in Table II, each construct's AVE value is over the predicted threshold of 0.5, which indicates convergent validity. Finally, this research assessed discriminant validity using the measurement model, which stipulates that for discriminant validity, AVE's square root must be larger than the correlations between the constructs (Henseler et al., 2015). Table III indicates that the square root of each construct is bigger than the AVE, indicating the discriminant validity of the construct.

Table II.

4.1.1 Measurement model results

Constructs/Items	**Factor loadings**	**Cronbach's alpha (α)**	**Composite reliability (CR)**	**Average variance extracted (AVE)**
Reliability				
The use of internet banking is reliable.	0.922			
I prefer using internet banking instead of visiting the branch to make my transactions.	0.929	0.877	0.920	0.794
I trust internet banking services.	0.819			
Responsiveness				
I can get my account information up-to-date through internet banking quickly.	0.887			
Internet Banking provides services smoothly.	0.909	0.841	0.903	0.757
Through internet banking, I get solutions to any of the problems promptly.	0.812			
Assurance				

Constructs/Items	**Factor loadings**	**Cronbach's alpha (α)**	**Composite reliability (CR)**	**Average variance extracted (AVE)**
Internet banking for bank transactions is secured.	0.870			
I feel secure while making transactions through the internet.	0.949	0.835	0.901	0.753
Internet banking service guarantees the security of my personal information.	0.776			
Tangibles				
The physical aspects of internet banking are appealing.	0.837			
Internet banking maintains up-to-date technological equipment.	0.896	0.819	0.892	0.734
Physical facilities of internet banking are modern.	0.836			
Empathy				
When I face a problem, internet banking sincerely solves it.	0.898			
Internet banking service providers give me personal attention if any help is required.	0.859	0.818	0.891	0.733
Internet banking service providers provide what I want.	0.809			
Satisfaction				
I am satisfied with internet banking services.	0.868	0.678	0.825	0.617
My expectations before using Internet banking services have been met with the current experience.	0.852			
Overall, internet banking services satisfy me.	0.608			
Customer Retention				
I will continue using the services of internet banking.	0.869	0.832	0.899	0.748
I will use the services of internet banking in future.	0.899			
I will recommend the internet banking services of my friends and acquaintances.	0.825			

4.2 Structural model

After validation of the measurement model, the structural model was assessed, where the model tested hypotheses estimating the path's coefficients, t- statistics, and p-value. Table IV and Figure 2 show the results of all hypotheses, where the connection between reliability and customer satisfaction was found insignificant (H1) (β= 0.086, t= 1.777, p = 0.076), which indicates that H1 was not supported. These findings indicate that the reliability of internet banking is not an influencing factor for customer satisfaction. However, the association between reliability and retention (H2) was valid (β= 0.076, t= 3.188, p = 0.001), indicating H2 was supported. This result implies that reliability is a significant factor in customer retention from an internet banking perspective. The strength of the relationship between Responsiveness and satisfaction (H3) was found valid (β= 0.108, t= 2.110, p = 0.035), which suggests that H3 was supported. However, the strength of the relationship between Responsiveness and retentions (H4) was found unconvincing (β= 0.037, t= 1.289, p = 0.198), indicating that H4 was not supported. The association between assurance and satisfaction (H5) was found significant (β= 0.100, t= 2.471, p = 0.014); thus, it indicates that H5 was supported. The strength of relationship between assurance and retention (H6) was found significant (β = 0.044, t= 2.027, p = 0.043); thus it supports H6. Tangibles has a significant impact on satisfaction (H7) (β= 0.471, t= 8.625, p = 0.000), which supports H7. Similarly, the study revealed that tangibles significantly affect retention (H8) (β = -0.259, t= 8.265, p = 0.000), indicating that H8 was supported. The strength of association between Empathy and satisfaction (H9) was found significant (β= -0.270, t= 5.331, p = 0.000); thus, it supports H9. Similarly, the relationship between empathy and retention (H10) was found significant (β= 0.076, t= 2.379, p = 0.018), which supports H10.

Table III. Results of discriminant validity

	Rel	Res	Ass	Tan	Emp	Sat	CR
Rel	0.891						
Res	0.232	0.870					
Ass	0.22	0.402	0.868				
Tan	0.160	0.482	0.306	0.785			
Emp	0.398	0.413	0.340	0.327	0.856		
Sat	0.315	0.506	0.398	0.656	0.537	0.785	
CR	0.390	0.471	0.409	0.447	0.574	0.903	0.865

Notes: Rel = reliability, Res = responsiveness, Ass = assurance, Tan = tangibility, Emp = empathy, Sat = satisfaction, CR = customer retention

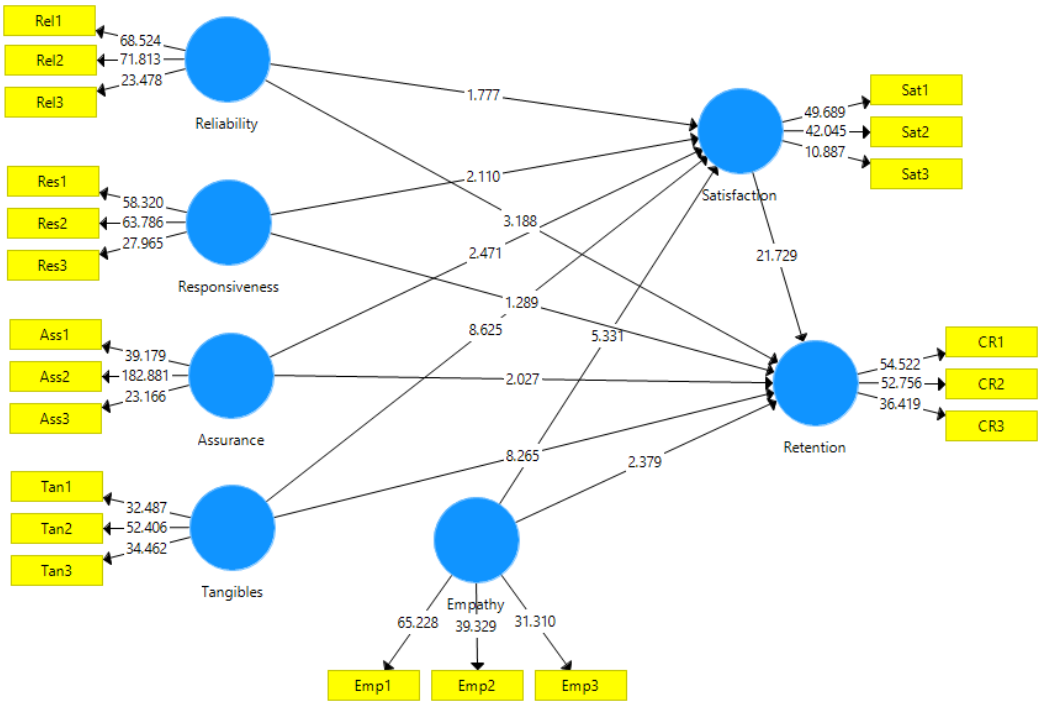

Figure 2. Structural model

In line with these results, the study examined the mediating effect of satisfaction, where satisfaction has no mediating impact in the relationship between reliability and retention (H11) (β= 0.083, t= 1.788, p = 0.074); thus, it did not support H11. The strength of the intervening effect of satisfaction in the relationship between Responsiveness and retention (H12) was found statistically significant (β= 0.105, t= 2.099, p = 0.036); thus, it indicates that satisfaction partly mediates the association between Responsiveness and retention, supporting H12. The study results show that satisfaction has a considerable intervening effect in the relationship between assurance and retention (H13) (β= 0.097, t= 2.480, p = 0.013); thus, it reflects that satisfaction partially mediates the link between Assurance and retention, supporting H13. Similarly, tangibles, including satisfaction, significantly influences retention (H14) (β= 0.458, t= 7.361, p = 0.000), which indicates that satisfaction partially mediates the association between tangibles and retention supporting H14. The strength of intervening impact on the association between Empathy and retention (H15) was found significant (β= 0.263, t= 5.338, p = 0.000); thus, it indicates that satisfaction partly mediates the connection between Empathy and retention, supporting H15.

Table IV. Path coefficients and hypothesis testing

Hypothesis	Relationships	Beta	T-Statistics	P-Values	Decisions
H1	Reliability -> Satisfaction	0.086	1.777	0.076	Not Supported
H2	Reliability -> Retention	0.076	3.188	0.001	Supported
H3	Responsiveness -> Satisfaction	0.108	2.110	0.035	Supported
H4	Responsiveness -> Retention	0.037	1.289	0.198	Not Supported
H5	Assurance -> Satisfaction	0.100	2.471	0.014	Supported
H6	Assurance -> Retention	0.044	2.027	0.043	Supported
H7	Tangibles -> Satisfaction	0.471	8.625	0.000	Supported
H8	Tangibles -> Retention	-0.259	8.265	0.000	Supported
H9	Empathy -> Satisfaction	0.270	5.331	0.000	Supported
H10	Empathy -> Retention	0.076	2.379	0.018	Supported
H11	Reliability -> Satisfaction -> Retention	0.083	1.788	0.074	Not Supported
H12	Responsiveness -> Satisfaction -> Retention	0.105	2.099	0.036	Supported
H13	Assurance -> Satisfaction -> Retention	0.097	2.480	0.013	Supported
H14	Tangibles -> Satisfaction -> Retention	0.458	7.361	0.000	Supported
H15	Empathy -> Satisfaction -> Retention	0.263	5.338	0.000	Supported

5. Discussions and conclusions

The present study aimed to test hypotheses on the impact of service quality on customer retention towards internet banking services. The study also addressed the mediating impact of satisfaction in the association between quality of services and retaining customers. Therefore the study has left several theoretical and managerial implications to academicians and banking service providers.

Theoretical implications

The findings indicate that service quality measurement scales (reliability, assurance, tangibles, Empathy) had a significant impact on customer retention consistent with prior studies (Prentice, 2014; Baumann et al., 2007). The findings contribute to marketing literature that customer retention is predicted by services' reliability, Assurance, tangibles, and Empathy. However, Responsiveness had an insignificant influence on customer retention aligned with previous literature (Islam et al., 2020). Thus, this result contributes to the services marketing literature that service delivery responsiveness had a minimum effect on retention towards internet banking services. Also, the study findings revealed that responsiveness, assurance, tangibles, and empathy had a direct effect on the level of customer satisfaction aligned with prior studies (Balinado et al., 2021; Zaibaf et al., 2013). This result indicates that customer satisfaction towards internet banking services is predicted by internet banking services' responsiveness, assurance, tangibles, and empathy towards the services. However, the study revealed that reliability had an insignificant influence on customer satisfaction aligned with prior studies (Prentice et al., 2020). This result contributes to service marketing literature that the reliability of internet banking services had minimum impact on the level of customer satisfaction.

Concerning these findings, the study revealed that satisfaction is the partial mediator for the relationship between four major service quality dimensions like responsiveness, assurance, tangibles, and empathy and retention. These findings contribute to internet banking service literature that satisfaction had an intervening effect on the association between customer's service quality dimensions (responsiveness, assurance, tangibles, and empathy) and retention. However, the study revealed that satisfaction had an insignificant intervening effect in the relationship between reliability and retention. This result points out that the strength of the relationship between reliability and retention is not impacted by satisfaction, contributing to internet banking service literature.

Managerial implications

With theoretical implications, the present study suggested some managerial implications that can boost the managerial performance of any industry. First, the present study suggests internet banking service providers deliver services that should be reliable, secured, well physical aspects of service providers, and provide service with care and full of emotions because these aspects might retain customers in the internet banking services industry. Second, to make customers satisfied, internet banking service providers should deliver the services responsively, securely, with good physical aspects of service providers, and emotionally attached to customers. Third, the internet banking service managers should focus on customer satisfaction because customer satisfaction intervened in the connection between service quality dimensions (responsiveness, assurance, tangibles, and empathy) and customer retention.

Limitations and future research

With plenty of theoretical and practical implications, the present study had several limitations which create scope for future researchers. First, the current research researches at a specific period, while future researchers might conduct a longitudinal study for an extended period. Second, the study used a convenience sampling technique for the research. In contrast, future researchers might adopt a simple random sampling technique to avoid biasing method or biasing data. Third, the present study measured customer satisfaction and retention using SERVQUAL model scales, while future studies can use. the theory of reasoned action (TRA) and theory of planned behavior (TPB).

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The effect of corporate boards on financial performance: Empirical evidence from Bangladeshi listed pharmaceutical companies

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Abstract

This fact-finding research aims to explore how corporate boards impacted the financial performance of publicly listed pharmaceutical companies in Bangladesh from 2007 to 2020 by focusing on the following characteristics: board size, board independence, women on the board, and board meetings. On the other hand, ROA, ROE, and TQ are used as the proxies of financial performance. Fixed and random effect regression models have been used to test the study hypothesis and meet its objective. The researchers finally implemented the Dynamic Ordinary Least Square (DOLS) method for estimating the long-term impacts on dependent variables.The study confirmed that BSIZE has a substantial negative effect on ROA, ROE, and TQ, whereas board independence has a notable beneficial impact on ROA and ROE. The study also shows that the ROA and TQ are significantly and favorably impacted by having women on board. Finally, ROA is negatively and significantly impacted by the frequency of BMEET.The study greatly contributes to the literature on corporate boards' affinity with firm performance. This study also offers academic support for governance reforms now being assessed by policymakers, investors, governments, international organizations, other stakeholders, and the general public. The research contributes to the growing body of knowledge on the connection between corporate boards and the firm performance of Bangladeshi pharmaceutical companies. This study focuses only on DSE-listed pharmaceutical companies in Bangladesh but excludes unlisted companies as financial and non-financial information about those companies needs to be accurately available.

Keywords: *Corporate board, Board Size, Board Independence, Women on Board, Board meetings, Firm performance, Bangladesh.*

1. Prelude

The concept of corporate governance (CG) in the subcontinent became popular after the Asian financial crisis due to the poor performance of companies in the subcontinent (Berglof & Von Thadden, 1999). Over the last few decades, CG has attracted the attention of academicians, practitioners, regulators, corporate stakeholders, and the public at large, particularly in the wake of corporate scandals, corporate catastrophes, and bailouts in both the advanced and emerging world (Akinkoye & Olasanmi, 2014; Rana & Hossain, 2023). The eventual collapse of well-known corporations like Enron,

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World.com, Bank of Commerce and Credit International, and Parmalat raised serious questions about the financial condition of the companies and reinforced CG in industrialized and emerging countries (Sanda, Mikailu, and Garba, 2005), despite the fact that some manufacturing companies in Bangladesh, such as Hall Mark, Bismillah Group, Modern Food Ltd., an international food company, also experienced poor performance and financial collapse (Rashid, 2017). CG is a system, code, and approach by which enterprises direct and control internal and external business structures, monitor management and administrator actions, and mitigate agency risks (Opara & Alade, 2014). In order for a company to be successfully managed and to provide its shareholders and other stakeholders with value, good governance is necessary (Maher & Andersson, 2000). Sound CG is a corporate setup that leads to maximizing the value of the firm legitimately and on a sustainable basis while ensuring equity and justice to all the stakeholders (Ahmed, Alam, Jafar and Zaman, 2008). CG becomes a determinant of many subjects to identify a firm's strengths, weaknesses, and functions. Governance practices that keep the better interest of investors and other patrons can only strengthen our capital markets and expedite the capital formation and industrialization process (Saidat, 2018). Broadly, CG refers to the policies and procedures that the CEO, board of directors, and senior management use to lead and control corporations (Pucheta-Martínez & Gallego-Álvarez, 2020). According to Denis and McConnell (2003) and Mishra and Kapil (2018), several internal or external mechanisms can be used to address issues with corporate governance. The company's board of directors and equity ownership structure are the primary internal mechanisms, whilst the legal system and the takeover market are the primary external processes. The board of directors is regarded as the most significant CG mechanism since it oversees and counsels top management in carrying out their duty to safeguard the interests of shareholders (Johl, Kaur, and Cooper, 2015).

Pharmaceutical products are essential for all countries worldwide (Chowdhury, 2014). Bangladesh is an emerging market in the world in accelerating economic growth in the pharmaceutical sector. This sector in Bangladesh has made a remarkable contribution to economic growth close to the RMG sector. The pharmaceutical business contributed Tk 205.12 billion in 2018, with a growth rate of 9.36 percent; comparable statistics for 2017 and 2016 were Tk 187.56 billion and Tk 156.40 billion, with growth rates of 19.92 percent and 30.82 percent, respectively (Ahmed, 2019). Furthermore, the international wave of mergers and keen competition makes the pharmaceutical sector challenging and vulnerable to sustainability and long-term economic growth. All these issues together make it a debatable subject in CG research.

The country has achieved considerable progress in CG indicators in the last two decades. However, in reality, the state of CG in Bangladesh is not good, even though CG is a prerequisite for sustainable growth and smooth functioning of corporate entities, capital markets, and the economy. In Bangladesh, since the CG guidelines were initiated by the BSEC for the listed companies on February 09, 2006, very few studies have investigated the relationship between corporate boards and financial performance. Therefore, this

study seeks to provide new perspectives for scholars and regulators on the significance of corporate boards and company performance in terms of ROA, ROE, and TQ by examining corporate board issues such as board size, board independence, women on boards, and board meetings of DSE listed pharmaceutical companies. The results of this study will benefit several groups in Bangladesh, such as corporate entities, capital market players and regulators, corporate policy planners, corporate management, existing and potential investors, accounting professionals, academics, and future researchers in this field.

2. Literature Review and Hypotheses Development

The conflicting evidence between corporate boards and company financial performance was reported in earlier studies. The variables like board size, board independence, women on the board, and board meetings are considered to determine the effectiveness of corporate boards on company financial performance.

2.1 Board Size

Board size is considered an effective tool t**o** control the internal corporate governance of a company (Rahman & Saima, 2018). The board of directors (BODs) is an element of implementing CG successfully. The BODs must be responsive to the main functions assigned to them (Martin & Herrero, 2018). The number of directors on the board is referred to as the board's size (Haque, Arun, and Colin, 2008). The number of corporate board members specifies efficiency in managing and controlling the company ((Maniruzzaman & Hossain, 2019a, 2019b; Maztoul, 2014). There is a great deal of discussion over the board's size and whether it will be large or small. Lipton and Lorsch (1992) and Mak and Kusnadi (2005) argued that due to extensive monitoring costs, the BSIZE should not exceed 7 to 8 members, but (Ogbechie et al., 2009) asserted that the board should have between 7 and 15 directors despite carrying higher costs, even though the overall number of directors varies by nation. Regarding board size, Mustafa et al. (2017) and Amedi and Mustafa (2020) stated that due to coordination issues, smaller corporate boards may be more active than larger corporate boards. They suggested that up to 8 directors would be an acceptable number. There are no global industry-wide norms regarding the composition of boards of directors. Greater board sizes can hamper the effectiveness of boards due to major repercussions such as a lack of coordination and commitment (Eisenberg, 1998). Large boards could be more cohesive and have better communication, according to Yermack (1996). However, bigger boards can operate comfortably in problematic economic conditions or financial instability and reduce conflicts in such situations (Mintzberg, 1983). Goodstein, Gautam, and Boeker (1994) opined that extended boards have better access to the firm's outside environment, allowing much scope to utilize various resources and alleviating uncertainties. In order to address the agency problem, company boards act as inside safeguards for principals' interests (Hasan et al., 2010; Hasan, Normah, et al., 2015). It happens because boards are primarily responsible for selecting and overseeing senior management to

preserve shareholders' interests (Haque, Arun, and Kirkpatrick, 2008). Ning, Davidson, and Wang (2010) mentioned that when BSIZE increases, agency problems in the boardroom also increase, leading to internal and internal conflicts among managers. From the standpoint of the stewardship theory, the directors on a firm board are important because they have superior knowledge of the firm's operations (Nicholson & Kiel, 2003). According to condition No.6 of the 2018 recommendations from the Bangladesh Securities Exchange Commission (BSEC), a company's board members cannot be fewer than 5 (five) or more than 20 (twenty). Numerous studies on the relationship between BSIZE and financial performance have discovered mixed results for developed and developing economies. Bonn and Fisher (2005) examined a sample of 55 US-listed corporations and reported a positive association between BSIZE and financial performance. Mak and Kusnadi (2005) and Haniffa and Hudaib (2006) discovered identical outcomes. Ibrahim and Samad (2011) discovered that the performance of family businesses**,** as measured by Tobin's Q, ROA, and ROE**,** was positively impacted by smaller boards. was positively impacted by smaller boards. Yermack (1996) found a negative relationship between the financial ratio (Tobin's Q) and the size of the board in the USA large companies. Bozec (2005) and Lasfer (2004) discovered identical outcomes in large companies. In a study done in an Asian setting, BSIZE has a bad correlation with business performance (Weir, Laing & McKnight, 2002). Hansson et al. (2011) noted that larger boards are an effective governance system and have a negative effect on performance. Ng (2012) found that the BSIZE did not impact the performance of family firms in Hong Kong. Bhatt and Bhattacharya (2017) found no evidence that a large board could improve the effectiveness of a firm in India. Therefore, to confirm reality in our context regarding the pharmaceutical business in Bangladesh, the effect of BSIZE on a firm's financial performance must be assessed. Based on the findings of the above discussions, we propose the subsequent hypothesis:

H_01: There is no association between board size and a firm's financial performance.

2.2 Board Independence

Since the turn of the century, the importance of board independence (BIND) has been highlighted more by shareholders, leaders, and regulators due to the presence of independent directors or non-executives on boards (Ha, 2018). One of the reasons behind the appointment of independent directors is to confirm fairness, where they might assess and evaluate the performance and well-being of a company without any conflict of interest or undue influence (Sattar, 2018). According to the agency theory perspective, independent directors can defend shareholders' value by governing them and performing more effectively than other directors for the benefit of shareholders, protecting shareholders' interests against any self-serving behavior (Arosa et al., 2010). By discussing agency theory, Ramdani and Witteloostuijn (2010) proposed that when a firm employs outside directors, its capability to increase profitability starts. At least one-fifth of the members of a corporate board must be independent directors, according to the revised CG Guidelines published by the BSEC on June 03, 2018. Numerous studies have

examined board independence's impact on a firm's financial performance and uncovered diverse results. The number of independent directors and the firm financial performance is positively correlated, according to research by Kaplan and Reishus (1990), and Muravyev et al. (2014). Khan and Awan (2012) and Desoky and Mousa (2012) examined the relationship between the percentage of outside directors on the board and financial performance as determined by ROA, ROE, and TQ and found that having more outside directors on the board is positively correlated with firms ' financial performance. Ghosh (2006), and Bhatt and Bhattacharya (2017) found no correlation between board independence and firm financial performance. Rashid (2017) studied the effect of independent directors on a company's financial performance in Bangladesh using a sample of 135 enterprises. The conclusions showed that BIND has a negative relationship with business financial performance. The following hypotheses are developed from the above literature review discussion:

$H_0$2: There is no association between a board's independence and the firm's financial performance

2.3 Women on Board

Many scholars from both developed and developing nations are interested in moving forward with the issue of having more women on board (Qian, 2016). Gender diversity is a matter that has drawn attention from nearly all sectors and enterprises, be it private or public organizations. The urge to ensure female representation in boardrooms compels companies to include more female members on their boards (Kilic & Kuzey, 2016). According to Bonn, Yoshikawa, and Phan (2004), the board plays a crucial role in CG procedures, notably in monitoring and advising; therefore, a variety of factors, including gender diversity, may have an impact on the effectiveness of the board (Ferreira, 2015). Women's board members can make diversity and provide new ideas to the board that can result in the better financial performance of companies (Julizaerma & Sori, 2012). By 2020, the European Union wants to see 40% female non-executive directors in big enterprises. A regulation requiring non-executive directors in Germany to have a gender diversity ratio of 30% was implemented in 2016. A 40% gender quota was also implemented in Norway in 2009 (Rhode & Packel, 2014).

Agency theory and resource dependency theory are seen as the theoretical pillars that encourage higher representation of women on BODs (Low, Roberts, and Whitling (2015). Carter et al. (2003) claimed that agency theory equates female directors to outside directors. Having more women on BODs improves performance by reducing principal-agent conflict (Francoeur et al. (2008). Bennouri et al. (2018) investigated the relationship between female director posts and company accounting performance (ROA and ROE) and market-based performance (Tobin's Q). They discovered that having female board members considerably lowers Tobin's Q and increases ROA and ROE. Some research, such as those by Rose (2007), and Yasser (2012), do not find a connection between gender disparities and financial performance.

The following hypothesis is developed based on the above literature review:

$H_0$3: There is no association between the woman on board and a firm's financial performance

2.4 Board Meetings

Board meetings (BMEET) are another vital CG mechanism that can increase the effectiveness of the board (Saidat, 2018). A board can be influenced through the decisions and planning of BMEET, so a firm's managers must make strategic decisions at BMEET to oversee the conditions and oversight of the firm. Failure to attend regular BMEET indicates that the director is reluctant or incapable of discharging his responsibilities (Chou, Chung, and Yin, 2013). Boards point out problems in corporate firms and prepare a proposal for their correction (Agarwal & Singh, 2020). According to Lipton and Lorsch (1992), boards with regular meetings have a higher propensity for keeping to their commitments. Vafeas (1999) also described that BMEET is used as a measure of activity regarding decision-making and ensuring value to the board characteristics. The regularity of BMEET indicates improving boards' efficiency and monitoring efficacy (Vefeas 1999). Al-Daoud, Saidin, and Abidin (2016) conducted research that discovered a significant correlation between company BMEET frequency and firm financial performance. Aryani, Setiawan, and Rahmawati (2017) found that the firm performance is unaffected by the number of BMEET. Horvath and Spirollari (2012) and Qadorah and Fadzil (2018) revealed a negligible correlation between ROA and BMEET frequency. As for the Bangladeshi Pharmaceutical industry, it is necessary to examine the frequency of meeting relationships with firm financial performance.

The following hypotheses are developed from the above literature review discussion:

$H_0$4: There is no association between board meetings and a firm's financial performance

3. Objectives of the Study

This study aims to examine whether there is any association between corporate boards and financial performance using panel data of DSE-listed pharmaceutical companies in Bangladesh. Objectives of this study include:

1. To examine the relationship between board size and firm financial performance;
2. To examine the relationship between the board's independence and the firm financial performance;
3. To explore the impact of women on board on the firm financial performance; and
4. To find out the impact of board meetings on the firm financial performance.

4. Research design and methodology

A purposeful sample of 9 companies from the listed pharmaceutical companies in the DSE has been selected from 2007 to 2020 to investigate the effect of corporate boards on firm financial performance. The data collection process includes one hundred twenty-six (126) firm-year observations. Nine (9) companies are chosen from a group of 15 based on the DSE listing age and availability data. These nine companies became listed with the DSE before promulgating CG guidelines in 2006. The study was carried out by the researchers using secondary data from various sources such as DSE and BSEC websites and publications, the websites of the sample companies, audited annual reports, research papers, journal articles, etc. The financial statements of the sample companies have been examined to obtain the Return on Assets (ROA), Return on Equity (ROE), and Tobin's Q in order to analyze the firm financial performance. Financial statements and other sources have been used to get information on corporate boards. The data were analyzed using the IBM Statistical Package for Social Sciences (SPSS) version 20 software, Stata MP 13 (64-bit), and MS Excel 2013. Data analysis for the study has used both descriptive and inferential statistical approaches. Frequency distribution, mean, median, maximum, minimum, standard deviation, skewness, kurtosis, correlation, etc., are examples of descriptive statistics. The study has used inferential statistics, including tests of normality, multicollinearity, correlation matrix, cross-sectional dependence test, slope heterogeneity, and unit root test. The study has also used multiple linear regressions (OLS regression, fixed effect model, and random-effect model) to examine the relationships between corporate boards (board size, board independence, women on board and board meetings) and financial performance measured as ROA, ROE, and Tobin's Q (TQ) of DSE listed pharmaceutical companies in Bangladesh. The study employed a Hausman test to determine whether a fixed or random effect model was the best estimating technique. Finally, the study employed the Dynamic Ordinary Least Square (DOLS) methodology to ascertain the long-term effects between the dependent and independent variables.

5. Variables construction and explanation

Variables	Indicators	Measure
Independent Variables	Board Size (BSIZE)	The number of the board members of the company, including a chairperson and independent directors.
	Board Independence (BIND)	Percentage of independent directors of the board of directors.
	Woman on Board (WBOARD)	Percentage of women on total boards.
	Board Meetings (BMEET)	The number of meetings held by the board.
Control Variables	Firm Size (FSIZE)	The natural logarithm of total asset
	Firm Age (FAGE)	The natural logarithm of the number of years since the firm was listed
	Financial Leverage (FLEV)	Total liabilities to shareholder equity.

Variables	Indicators	Measure
Dependent variables	Return on Assets (ROA)	ROA=Operating Income/ Average Total Assets
	Return on Equity (ROE)	ROA=Operating Income/Average Shareholders' Equity
	Tobin's Q (TQ)	Tobin's Q=Equity Book Value / Equity Market Value

6. Empirical model and estimation techniques

Model: $ROA_{it} = \alpha + \beta_1 BSIZE_{it} + \beta_2 BIND_{it} + \beta_3 WBOARD_{it} + \beta_4 BMEET_{it} + \beta_5 FSIZE_{it} + \beta_6 FAGE_{it} + \beta_7 FLEV_{it} + \varepsilon_{it}$

Model 2: $ROE_{it} = \alpha + \beta_1 BSIZE_{it} + \beta_2 BIND_{it} + \beta_3 WBOARD_{it} + \beta_4 BMEET_{it} + \beta_5 FSIZE_{it} + \beta_6 FAGE_{it} + \beta_7 FLEV_{it} + \varepsilon_{it}$

Model 3: TOBIN'S $Q_{it} = \alpha + \beta_1 BSIZE_{it} + \beta_2 BIND_{it} + \beta_3 WBOARD_{it} + \beta_4 BMEET_{it} + \beta_5 FSIZE_{it} + \beta_6 FAGE_{it} + \beta_7 FLEV_{it} + \varepsilon_{it}$

Where ROA is equal to Return on Asset, ROE equal to Return on Equity, BSIZE is equal to Board size, BIND is equal to Board independence, WBOARD is equal to Women on board, BMEET is equal to Board meetings, FSIZE is equal to Firm size, FAGE equal to Firm age, FLEV equal to Financial Leverage, β_1, β_2, β_3, β_4, β_5, β_6, and β_7, are the coefficients, *i* represents the number of companies, *t* shows time, and ε is the error term.

7. Results and Discussion

7.1 Descriptive Statistics

The corporate board must include at least five members and a maximum of twenty, according to guidelines issued by the Bangladesh Securities Exchange Commission (BSEC). The highest and lowest board sizes shown in the descriptive statistics Table 1 are 11 and 4 respectively. However, the median and mean board sizes, which are 7.89 and 8, respectively, indicate that the majority of the listed sample companies have a board of directors with at least five members. The findings of this study are in line with those of Brown and Caylor (2004), who contend that a BSIZE between 6 and 15 is excellent for enhancing firm performance. While Lipton and Lorsch (1992) recommended a BSIZE of 8-9, Jensen (1993) and Jensen and Ruback (1983) asserted that a BSIZE of 7-8 members is likely to ensure efficacy since big boards are less likely to operate well and agree on specific results. Board sizes should be 7-9, claim Tornyeva and Wereko (2012), in order to provide smooth operation and enhanced performance. According to Table 1, the mean and median of independent directors are 17.98% and 20%, respectively, with a range of 0% to 35% for the years under consideration and a standard deviation of 0.07169. A minimum of one-fifth (1/5) or 20% (twenty percent) of the total number of directors on the board of the company must be independent, according to guidelines issued by the BSEC. The findings of the study revealed that it

does not entirely adhere to the BSEC requirements. The mean and median number of women on board is 1.9921 and 2, respectively, according to the descriptive statistics in Table 1. The minimum and the maximum number of women on board are 0 and 5 throughout the years examined, and its standard deviation is 1.44497. The results indicated that most of the listed companies have women on their boards, but the guidelines provided by the BSEC do not provide any guidance on having women on boards. The study demonstrates that the number of BMEET is between 4 and 20, with a mean and median of 7.62 and 7, respectively, and a standard deviation of 3.42895. It is in the best interest of the company to hold regular meetings at a time that works for the board because the minimum number of meetings that must be held is not stipulated in the law, depending on the company's situation.

Table 1: Summary of descriptive statistics

	BSIZE	BIND	WBOARD	BMEET	FSIZE	FAGE	FLEV	ROA	ROE	TQ
Mean	7.89	.18	1.99	7.62	7.94	3.21	1.55	.095	.161	4.94
Median	8.00	.20	2.00	7.00	7.97	3.22	.932	.098	.158	4.08
S.D	1.83	.07	1.44	3.43	1.94	.31	1.64	.058	.095	4.75
Skewness	-.41	-.40	.16	1.30	-.055	-.43	1.66	.142	.825	2.19
Kurtosis	-.73	.24	-.84	1.61	-1.38	-.33	1.83	-.640	2.07	6.00
Minimum	4.00	.00	0	4.00	4.24	2.40	.060	.001	.002	.130
Maximum	11	.35	5	20	11.21	3.78	6.45	.241	.531	27.03

Source: Researcher's calculations

7.2 Tests of Normality

Skewness and kurtosis statistics must be less than the absolute value of 2.0 in order to satisfy the statistical inference of normality. It is presumed that the continuous distribution is non-normal if either the skewness or kurtosis statistic is more than 2.0 in absolute value (George & Mallery, 2010). Based on the aforementioned descriptive statistics, it can be said that the data presented are normally distributed in terms of standard skewness and kurtosis.

7.3 Correlation Matrix

This section uses the Pearson correlation test to show the relationship between the CG mechanisms and financial performance measures (See Table 2). The correlation analysis reveals that the firm size negatively correlates with TQ at 1% significance levels, but there is no real connection between ROA and ROE. At a 5% level of significance, firm age significantly positively correlates with ROE, although ROA and TQ do not. Financial leverage, on the other hand, has no significant effects on ROA and ROE but has a substantial positive link with TQ at a 1% significance level. At the 5% level of significance, board size and board independence have a negative link with TQ but no meaningful correlation with ROA or ROE. At a 1% level of significance, women on corporate boards have a negative link with ROA and ROE, but no meaningful correlation with Tobin's Q. The frequency of BMEET exhibits an insignificant relationship with respectively.

Table-2: Correlation Matrix (Pearson Correlation) and **VIF**

	ROA	ROE	TQ	BSIZE	BIND	WBOARD	BMEET	FSIZE	FAGE	FLEV	VIF
ROA	1										
ROE	.942**	1									
TQ	.589**	.740**	1								
BSIZE	.088	.037	-.187*	1							2.090
BIND	-.100	-.128	-.188*	.452**	1						1.865
WBOARD	-.466**	-.362**	-.047	-.144	.112	1					1.800
BMEET	-.121	-.182*	-.243**	.386**	.320**	-.332**	1				1.511
FSIZE	.030	-.101	-.433**	.553**	.529**	-.310**	.433**	1			2.488
FAGE	.159	.187*	.018	.539**	.452**	.094	.028	.305**	1		1.684
FLEV	-.156	.086	.438**	-.126	-.100	.571**	-.220*	-.506**	-.030	1	1.924

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

*. Correlation is significant at the 0.05 level (2-tailed).

7.4 Multicollinearity Test

This multicollinearity test can be done through a correlation matrix and variance inflation factor test (VIF) (see Table 2). Table 2 shows that the VIF value for each independent value is less than 10 and more than 1; it indicates the result of the econometric model for ROA, ROE, and TQ concerning independent variables is free from multicollinearity and data is also reliable. All of the coefficients in Table 2 are less than 0.6, demonstrating that the independent variables are not strongly associated. Therefore, there are no problems with multicollinearity among the independent variables.

7.5 Slope heterogeneity

Statistically, heterogeneity suggests that there will be differences in populations, data, surveys, samples, sample size, or findings. Heterogeneity and homogeneity are different, i.e., the opposite of homogeneity. Before using unit root testing, an econometric analysis for panel series data, a cross-sectional dependence test, and a heterogeneity test should be conducted. The following Pesaran and Yamagata slope heterogeneity test results indicate the delta and delta adjusted value and reveal $p > 0.05$ in models 1, 2, and 3. As a result, the alternative hypothesis (H_1) is rejected, and the null hypothesis (H_0) is accepted. Therefore, panel data is homogeneous for these models.

Table 3: Results of Homogeneity Tests

	Model-1		**Model-2**		**Model-3**	
Test	Test Stat.	p-value	Test Stat.	p-value	Test Stat.	p-value
Delta	0.615	0.539	-0.283	0.777	-0.023	0.982
Delta adj.	1.109	0.267	-0.510	0.610	-0.041	0.967

7.6 Cross-sectional dependence (CD) test and CIPS Unit root test

The study should first test cross-sectional independence for each variable before determining stationarity. The study employed the STATA software's Pesaran CD (cross-sectional dependence) test (Pesaran, 2004). While conducting the analysis, it is necessary to check for horizontal cross-sectional dependence in series. Using Pesaran CD (2004), the following table shows the findings of the horizontal cross-sectional dependence test results of DSE-listed pharmaceutical companies**. CD ~ N (0, 1) p**-values are almost equal to zero under the null hypothesis of sectional independence. The statistics for cross-sectional dependence and the corresponding p-values strongly refute the null hypothesis of cross-section independence. The study suggests a cross-sectional correlation between the variables since they show that cross-correlations are significant. So, the test result indicates the presence of cross-sectional dependence in most model variables except for ROA, ROE, and BSIZE.

Determining whether a series is stationary (does not contain a unit root) or not stationary (contains a unit root) is crucial when analyzing data. After estimating Pesaran's 2004 CD test, Pesaran's 2007-unit root test is employed. We conduct a CADF panel unit root test for level and initial differences variables to assess the stationarity of all inherent time series data on a cross-sectional dependent panel (Pesaran, 2007). The study conducted a second-generation unit root test to check misleading assumptions. The below table-4 shows the CIPS unit root test results. The CIPS unit root test findings clarify that the series is not stationary at levels except WBOARD and FSIZE. All variables became stationary after the first differentiation.

Table 4: Results of CD and CIPS unit root test.

CD Test			CIPS Unit Root Test	
Variable	Statistics	p-value	Level	1st Difference
BSIZE	-0.440	0.660	-2.059***	
BIND	12.650	0.000	-2.022**	
WBOARD	19.96	0.000	-1.071	1.463***
BMEET	5.780	0.000	-2.286***	
FSIZE	19.090	0.000	-1.270	-3.713***
FAGE	22.440	0.000	-3.396***	
FLEV	2.140	0.032	-3.220***	
ROA	-1.590	0.111	-2.279***	
ROE	-0.930	0.353	-2.434***	
Tobin’s Q	3.410	0.001	-2.161***	

7.7 Regression model results

The impact of corporate boards (board size, board independence, women on the board, and board meetings) on financial performance (ROA, ROE, and Tobin's Q) is shown in the following table. In table-6, looking at the Hausman test's Chi-square values for model-1 and model-2, the probability values of which are less than 5% (P-value<0.05), indicate that the study rejects the null hypothesis and accepts the alternative. The fixed-effect model is therefore thought to be more appropriate than the random-effect model, according to the Hausman test results that are related to ROA and ROE. In table-6, looking at the Hausman test's Chi-square values for model-3, the probability values of which are greater than 5% (P-value>0.05), indicate that the study accepts the null hypothesis and rejects the alternative. The Hausman test results, which are connected to Tobin's Q, thus opine that the random-effect model is preferable to the fixed-effect model.

The results demonstrate that the BSIZE significantly and negatively affects ROA, ROE at a 1% significance level, and TQ at a 5% significance level. It indicates that BSIZE flourishes to negatively impact the financial performance of DSE-listed pharmaceutical companies in Bangladesh. This inverse link suggests that as BSIZE rises, company performance will decline. The negative relationship was documented by several researchers such as Alves (2014), Fuzi, Adriana, and Julizaerma (2016), Pranati (2017), and Danoshana and Ravivathani (2019). According to resource dependence theory and agency theory, BSIZE has a beneficial impact on a firm's financial performance, while stewardship theory favors lower BSIZE and contends that greater BSIZE has a negative impact on a firm's financial performance. This negative link is most likely caused by a larger BSIZE resulting in more conflicts of interest and prolonging the decision-making process.

Board independence, on the other hand, has no significant link with TQ but a significant beneficial impact on the firm's financial performance as evaluated by ROA and ROE at 5% and 10% significance levels, respectively. Some earlier empirical research, including Fich and Shivdasani (2006), Rouf (2011), and Bhat, Chen, Jebran, and Bhutto (2018), established a relationship between board independence and firm financial performance. Based on these results, it is clear that the increased proportion of independent board members supports the perspectives of the agency and resource dependence theories since outside directors offer valuable oversight and contributions to the management team.

The table also demonstrates that having women on board has a significant and favorable impact on ROA and TQ at levels of significance of 10% and 5%, respectively, but has no meaningful impact on ROE. These findings can be explained by the fact that big boards with a high attendance of female directors are consistent with firm performance (ROA), support agencies, and resource dependency theory and are in line with the monitoring or supervision hypothesis. In numerous earlier studies, including Julizaerma and Sori (2012), Amore et al. (2014), Hutchinson et al. (2015), and Bennouri et al. (2018), significant relationships between the impact of women on board and firm financial performance. Women can develop fresh viewpoints and ideas to assist BOD in improving their problem-solving and business strategy setting, according to Agency Theory (Francoeur et al., 2008) and Resource Dependency Theory (Rose, 2007).

Last but not least, at a 10% significance level, the frequency of BMEET has a negative and significant influence on ROA but no significant impact on ROE or TQ. As a result, the quantity of BMEET would significantly enhance company performance as determined by accounting measures (ROA), rather than by market measures (TQ). Some prior studies have not found any impact of the number of BMEET on firm performance, such as Bhatt and Bhattacharya (2015), Aryani, Setiawan, and Rahmawati (2017), and Bhat, Chen, Jebran, and Bhutto (2018). However, some studies have found that a number of BMEET affect financial performance, such as Al-Daoud, Saidin, and Abidin (2016), Qadorah and Fadzil (2018), and Danoshana and Ravivathani (2019).

Table 5: Regression model results

	Model-1(ROA)		Model-2 (ROE)		Model-3(Tobin's Q)	
	OLS	FE	OLS	FE	OLS	RE
BSIZE	.175	-1.430***	-.161	-1.11***	-.550	-.408**
	(0.732)	(0.002)	(0.723)	(0.003)	(0.190)	(0.041)
BIND	.0152	.506**	.034	.326*	.329	.085
	(0.965)	(0.029)	(0.910)	(0.082)	(0.241)	(0.633)
WBOARD	-1.597***	.485*	-1.66***	.307	-1.17***	.382**
	(0.000)	(0.075)	(0.000)	(0.163)	(0.000)	(0.048)
BMEET	-.939***	-.463*	-.882***	-.259	-.456***	.029
	(0.001)	(0.069)	(0.000)	(0.209)	(0.042)	(0.878)
FSIZE	-.045	-.687***	-.044	-.722***	-.163***	-.292***
	(0.541)	(0.000)	(0.503)	(0.000)	(0.008)	(0.011)
FAGE	.940**	.687	1.18***	1.46***	.711**	.622*
	(0.013)	0.183	(0.001)	(0.001)	(0.022)	(0.100)
FLEV	.111	-.149	.301***	.216***	.387***	.280***
	(0.149)	0.136	(0.000)	(0.008)	(0.000)	(0.000)
R^2	0.3747	0.2963	0.4350	0.4390	0.308	0.2525
F-test	9.939	6.62	9.200	12.30	7.515	38.01
Prob > F	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hausman Specification Test						
Chi 2	30.42		12.34		1.83	
Prob>chi2	0.0001		0.0089		0.9685	
Hypothesis Results						
H_o1	Rejected		Rejected		Rejected	
H_o2	Rejected		Rejected		Accepted	
H_o3	Rejected		Accepted		Rejected	
H_o4	Rejected		Accepted		Accepted	

Source: Researcher's Calculations

***, **, and * represents significance at the 1%, 5%, and 10% level respectively.

7.8 DOLS Estimators Results Discussion

The results of the DOLS are in Table 6 for Model 1 (ROA), Model 2 (ROE), and Model 3 (TQ). BSIZE has a negative and significant long-term impact on financial performance as measured by ROA, ROE, and Tobin's Q. Furthermore, board independence has no substantial effect on Tobin's Q. However, it has a negative and considerable long-term impact on ROA and ROE. These results do not match those from our panel regression model estimation. However, only Tobin's Q is negatively and significantly long-term impacted by the BMEET. This outcome contrasts with the estimations from our panel regression model.

Table 6: Results of long-run estimation through DOLS

Regressors	Model-1(ROA)		Model -2 (ROE)		Model-3 (TQ)	
	Coeff.	p-value	Coeff.	p-value	Coeff.	p-value
BSIZE	-1.633	0.036	-1.741	0.002	-2.205	0.000
BIND	-0.697	0.043	-0.619	0.012	0.239	0.277
WBOARD	0.616	0.286	0.326	0.434	0.191	0.605
BMEET	0.434	0.302	0.199	0.511	-0.641	0.017
FSIZE	7.705	0.000	5.325	0.000	1.689	0.000
FAGE	1122.717	0.000	1359.792	0.000	1610.141	0.000
FLEV	-3.192	0.000	-2.838	0.000	-1.929	0.000

Source: Researcher’s Calculations

8. Summary of Research Findings

The study has reached the following findings.

- The study showed that the BSIZE had significant negative correlations with financial performance as determined by the ROA, ROE, and TQ. Thus, BSIZE growth has a detrimental effect on the performance of DSE-listed pharmaceutical companies.
- The number of independent directors in the sample companies showed an increasing trend since 2012, indicating that the revised CG Guidelines issued by the BSEC on August 30, 2012, impact the growing number of independent directors of pharmaceutical companies in Bangladesh.
- Board independence is associated with accounting measures (ROA and ROE) but not market measurements (Tobin's Q). The study also showed that the BSEC guidelines regarding BIND were not fully complied with.

- The current study revealed that women on the company board have significant positive impacts on both the accounting measure (ROA) and market measure (TQ) but little effect only ROE. The study also showed that the number of women on boards in pharmaceutical companies has an upswing trend in examined years. But, there are still not enough women on the corporate boards of Bangladeshi pharmaceutical firms.
- The findings of the regression analysis revealed that the BMEET has no discernible effect on ROE or TQ but has a significant impact on ROA, i.e., the frequency of the BMEET considerably enhances firm performance as measured by accounting measures (ROA), not by market measurements (Tobin's Q).

9. Conclusions and Recommendations

This study strives to examine the impact of board traits on both the accounting and market-based financial performance using panel data of DSE-listed 9 pharmaceutical companies from 2007 to 2020. The data was assembled from various sources, such as DSE, BSEC, and the websites of the sample companies. The fixed and random effect regression models were used to examine the associations. The study finally executed the Dynamic Ordinary Least Square (DOLS) technique to estimate the long-term impacts on dependent variables. The study found that BSIZE has a long-term adverse influence on the financial performance of DSE-listed pharmaceutical companies based on ROA, ROE, and TQ.

The study recommends that a corporate board be smaller, highly experienced, and composed of expert members in all relevant fields who can make decisions more quickly and effectively than a large board with inefficient members. The study outcomes also revealed that, in terms of board independence, corporate entities need to follow the BSEC requirements thoroughly. It has no impact on the market measure (TQ) but has considerable positive influences on the accounting performance measures (ROA and ROE). The inclusion of autonomous directors depends on political reasons, which drive no value addition. Thus, due diligence is needed while nominating an independent director. The study also uncovered that women on boards favourably impact market and accounting indicators (TQ and ROA). In Bangladesh, women's participation on the corporate board in major decision-making areas is significant. However, in the case of pharma companies, corporate boards have a low ratio of female directors compared to males. Based on ROA, the number of board meetings enhances company performance. The study recommends that pharmaceutical companies follow the norm of the frequency of BMEET in a year and that the required number of members attend the meetings. From the viewpoint of the control variable in all models, firm size has negative and significant impacts on financial performance. However, the two other variables, namely firm age and financial leverage, positively and significantly influence performance measured by ROE and TQ. To boost corporate financial performance, BSEC, the government, and politicians should work together to eliminate strict regulations that obstruct the efficient collection and use of long-term funding sources.

The study focuses only on DSE-listed pharmaceutical companies in Bangladesh but excludes unlisted companies as financial and non-financial information about such companies is not accurately available. Hence, the results of this study cannot be universal to unlisted pharmaceutical companies in Bangladesh. In terms of practical implications, the study offers essential contributions to policymakers, investors, international organizations, governments, other stakeholders, and the general public. This study suggests that future researchers can undertake comparable investigations utilizing data from Bangladeshi pharmaceutical companies that are not DSE-listed. Further studies can include other industries, emerging economies, or a comparative study between Bangladesh and other South Asian countries.

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Factors affecting travel decision: A study on urban Generation Z in Bangladesh

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Abstract

The motivation of travel decisions varies across generations indicating different demographic groups. The recent dominance of domestic tourism in Bangladesh is mainly evidenced by Generation Z population. However, factors affecting the travel decisions of this demographic group remain largely unnoticed. This study aims to explore the factors that affect the travel decisions of tourists (Generation Z) residing in urban areas in Bangladesh. In addressing the research aim, a quantitative research approach has been employed. Data were collected from 385 respondents using a questionnaire on a 5-point Likert scale. The collected data were statistically analyzed using descriptive statistics, reliability, validity, regression analysis, and variance analysis. The findings reveal that the travel decision of urban generation Z in Bangladesh is greatly influenced by several factors, including the destination's natural beauty, safety and security, accommodation, transportation, and communication system, budget and time, local cuisine, attitude of local people, availability of touristic information, technology, guiding facilities, shopping facilities, climate, cultural, religious, and indoor activities, price of the products, cleanliness, parking facilities, medical and health care facilities, experience, word of mouth, quality of the supporting services, personal emotion, and expectation. This study is expected to help the tourism industry practitioners as well as policymakers in formulating strategies to attract Generation Z category tourists in Bangladesh by considering their decision-making factors.

Keywords: *Motivation, Travel Decisions, Generation Z, Tourism, Bangladesh.*

1. Introduction

The tourism and hospitality industry contributes significantly towards job creation as well as socioeconomic and cultural development around the world (McCabe & Qiao, 2020). For many developing countries, tourism is considered as a key driver of economic development. Representing the developing countries, Bangladesh has a lot of tourism capital to attract tourists, but unfortunately, the country fails to implement the advantage through proper exploration of its tourism potential (Muneem, Avi, & Haque, 2020); as a result, the contribution of this industry to the country's

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economy is very negligible. The World Travel and Tourism Council (WTTC) (2020) reported that the tourism industry in Bangladesh is mostly dependent on domestic tourists and thus the leading portion (97%) of tourism earnings comes from domestic tourism. Within this domestic tourist segment, young travelers (aged between 20 and 30) are the main contributors (Parvez & Kashem, 2018).

At present, in Bangladesh, the younger generation covers a fourth of the total population (Rahman, 2022). Therefore, it is evident that the present demographic structure of Bangladesh is likely to bring major changes in travel and tourism demand in the upcoming years. It is crucial for hospitality and tourism professionals to carefully examine this growing market to ensure that the industry is properly addressing to its preferences (Dimitriou & AbouElgheit, 2019). Hence, understanding the factors that influence Generation Z tourists and their travel decisions is important to determine how this will affect tourism in Bangladesh. A limited number of studies attempted to comprehend Gen Z travel preferences (Bradley, 2016; Fuggle, 2017; Jain, Vatsa, & Jagani, 2014), and research into the factors influencing the travel decisions of urban generation Z in Bangladesh remains unexplored. Therefore, this study aims to explore the factors that affect the travel decisions of tourists (Generation Z) residing in urban areas in Bangladesh. The principal objective of this research is to identify the factors affecting urban generation Z's travel decisions in Bangladesh. In addressing the principal objective, the study covers some specific objectives, including exploring the relationship between factors and overall urban Generation Z's travel decisions in Bangladesh and measuring the impact of each factor on their travel decisions.

2. Literature review

2.1 Travel decision

The process of thought and consideration leading to a conclusion is known as decision-making (Qlueck, 1977). It involves identifying and selecting from among potential solutions to a problem, following the needs of the situation (Al-Tarawneh, 2012). A travel decision in tourism is the process of purchasing all the components of a trip, from locating destination information to selecting the most appropriate products to preferences (Keeney, 1993). According to Schmoll (1977), "*travel decision consists of four phases e.g., tourism need, information gathering deliberation, decision and travel preparation; and each phase has its influences and consideration on travel decision making*". Hsu et al. (2009) argued that travel decision is swayed by both internal factors (e.g., desire for escape, rest, relaxation, prestige, health and fitness, adventure, and social interaction) and external factors (e.g., the attractiveness of the destination including tangible resources, and tourist's perceptions and expectations). Similarly, Seyidov (2016) added that while travelling to different types of tourism destinations with numerous factors (e.g., attractions, available amenities, accessibility, image, price and human resources), the travel decision-making process is influenced by social, cultural, personal and psychological attributes.

2.2 Generation Z and factors influencing their travel decisions

Generation Z, also known as Gen Z, iGen, or centennials, is the demographic group born between 1997 and 2012 that succeeds Millennials and precedes Generation Alpha. This generation is perceived as the first to be digital natives having grown up with technology

(European Travel Commission, 2020; Hoque, 2018), and this tech-savvy generation cannot imagine life without the internet (Himi, 2021).

Growing up in an era of unprecedented awareness about human behavior, technology, personal health, and humanity's impact on the environment (European Travel Commission, 2020), this generation prefers to solicit feedback from others on social media while planning a trip (Altun, 2022). Dimitriou (2019) also added that they (Gen Z) seek good accommodation facilities, adequate parking facilities, medical & health care facilities, and support services through social and mobile applications when making new travel decisions. They also emphasize shopping facilities and local attitudes and also prefer experiencing different cultures (Altun, 2022). While travelling, this generation considers money and expects affordable and customized service, safety and security, upscale accommodation, good modes of transport, and locally produced food and drinks (European Travel Commission, 2020).

At this stage, based on the aforementioned works of literature, a conceptual framework has been developed which is presented in the following figure.

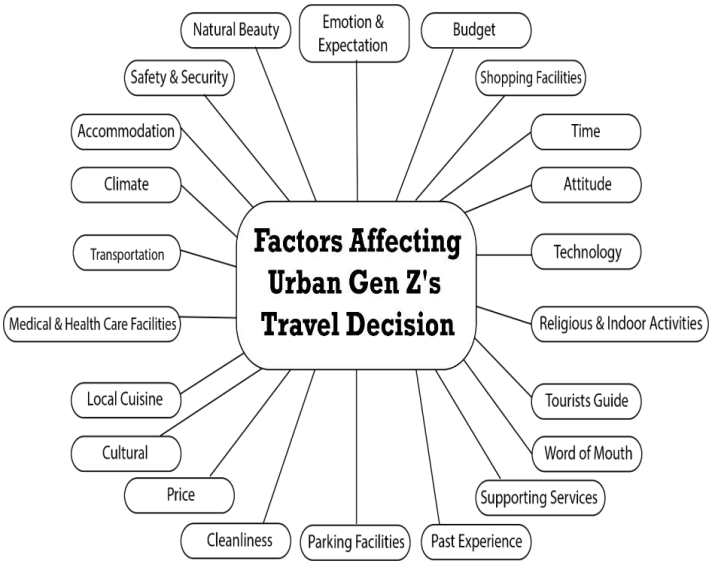

Figure 1. Factors affecting urban Gen Z's travel decision

The framework presents 21 variables (independent) which are natural beauty, safety and security, accommodation facility, transportation and communication system, local cuisine, budget, time, attitude of local people, availability of information and tourist guides, technology, shopping facilities, climate, cultural, religious and indoor activities, price of the products, cleanliness, parking facilities, medical and health care facilities, experience, word of mouth, quality of the supporting services, and personal emotion and expectation etc. that influences the travel decisions (dependent variable) of Gen Z. Using roman numerals, these variables are presented in the following tables (2 and 5).

2.3 Research hypothesis

Relying on the abovementioned factors, the following hypotheses are developed in conducting this study.

H_0: There is no significant relationship between the factors that have been identified and the overall travel decision of urban generation Z of Bangladesh.

H_1: There is a significant relationship between the factors that have been identified and the overall travel decision of urban generation Z of Bangladesh.

3. Methodology

3.1 Research method

In conducting this study, a quantitative research approach has been employed. The data collection method comprises both primary and secondary techniques. The primary data were collected utilizing an online questionnaire survey method; and several relevant articles, newspaper clippings, books, website materials, etc. were reviewed as a part of the secondary data collection technique. The target population of this study is Gen Z in urban areas in Bangladesh. According to the Bangladesh Bureau of Statistics (2022), the total population of Bangladesh is 16,51,58,616; and 39% of this total population (6,44,11,860) live in urban areas amongst 35% constitutes Gen Z. Therefore, the target population is around 22,5,44,151. Utilizing a sample size calculator (N=22544151; Z=95% confidence level, P=0.5, and e=5%), the sample size was determined. The convenience sampling method was adopted in this study and respondents were asked through social media and email to fill up the questionnaire. The respondents of the sample frame were chosen irrespective of gender and education. Respondents below 18 years were excluded.

3.2 Reliability & Validity of Data

To check the internal consistency and stability of the scales used in this survey, Cronbach's alpha was used. According to Churchill (1979), Cronbach's alpha value of 0.60 or above is interpreted as acceptable. In this study, it is found that all the variables are reliable as the range is 0.863 which indicates a very good internal consistency among the variables (Nunnally, 1978). Besides, for measuring the validity of the data set, the Pearson R method has been followed in this study. In the table 2, the correlation which is significant at 0.01 level is flagged as (**) double star and the correlation which is significant at the level of 0.05 is flagged as (*) single star. The value of correlation ranges from +1 to -1. The correlation at +1 is positively perfect and the correlation at -1 is negatively perfect. In the correlation table 2, all the variables are interconnected and significant as they are flagged as double star (**) or single star (*). So, all the variables should be included while working with the population. The following tables (table 1 and 2) justifies the reliability and validity of the data used in this study.

Table 1: Cronbach's Alpha

Cronbach's Alpha	No of Items
.863	21

Table 2: Correlation

	TD	I.	II.	III.	IV.	V.	VI.	VII.	VIII.	IX.	X.	XI.	XII.	XIII.	XIV.	XV.	XVI.	XVII.	XVIII.	XIX.	XX.	XXI.
TD	1																					
I.	.532**																					
II.	.626**	.411**																				
III.	.630**	.493**	.543**																			
IV.	.452**	.179*	.265**	.328**																		
V.	.471**	.147	.356**	.258**	.220**																	
VI.	.383**	.255**	.163*	.308**	.277**	.204*																
VII.	.603**	.431**	.367**	2.58**	.249**	.213*	.373**															
VIII.	.536**	.321**	.219**	.227**	.197*	.305*	.273**	.368**														
IX.	.413**	.193*	.295**	.393**	.211**	.135	.260**	.182*	.124													
X.	.309**	.089	.194*	.210**	.358**	.208*	.222**	.175	.326**	.560**												
XI.	.065	.213**	.055	.289**	.039	.021	.175*	.254**	.186*	.238**	.211**											
XII.	.340**	.475**	.297**	.415**	.243**	.105	.345**	.339**	.428**	.367**	.329**	.312**										
XIII.	.702**	.335**	.536**	.504**	.377**	.315**	.283**	.262**	.120	.328**	.268**	.076	.282**									
XIV.	.191*	.003	.308**	.230**	.396**	.105	.118	.327**	.316**	.289**	.467**	0.037	.260**	.203*								
XV.	.192*	.067	.152	.198*	.234**	.026	.242**	.269**	.186*	.158	.095	.061	.262**	.183*	.217**							
XVI.	.343**	.237**	.215**	.431**	.266**	.190*	.293**	.149	.127	.290**	.089	.431**	.305**	.216**	.183*	.214**						
XVII.	.524**	.288**	.302**	.422**	.470**	.340**	.309**	.379**	.294**	.267**	.303**	.144	.231**	.535**	.212**	.097	.308**					
XVIII.	.442**	.400**	.439**	.340**	.304**	.302**	.142	.379**	.306**	.131	.152	.237**	.267**	.340**	.201*	.102	.259**	.335**				
XIX.	.312**	.312**	.136	.276**	.179*	.159	.165*	.204**	.311**	0.047	.044	.142	.222**	.248**	0.086	.051	.041	.122	.249**			
XX.	.415**	.268**	.387**	.313**	.270**	.222**	.260**	.353**	.271**	.239**	.269**	.254**	.335**	.319**	.264**	0.108	.184*	.313**	.395**	.102		
XXI.	.292**	.282**	.104	.252**	.257**	.112	.184*	.243**	.194*	.049	.107	.045	.306**	.204*	.098	.240**	.117	.043	.116	.205*	.123	1

4. Results and discussions

The following table 3 reveals that there exist strong relationships between the actual and predicted values of the outcome variable (R =. 817). The value of R square is .668 which shows that around 67% of the dependent variable is explained by the independent

variables. Adjusted R square indicates that 60.3% variance in travel decisions was explained by the model. According to Cohen (1988), this is a large effect and indicates a strong relationship.

Table 3: Model summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.817a	.668	.603	.830

The ANOVA table (table 4) shows whether there is a statistically significant difference between means, and compares the p-value to the significance level to assess the null hypothesis. Here, the significance level (0.00) is lower than the p-value which reveals that there is a statistically significant difference between means and not all of the population means are equal and the null hypothesis is rejected.

Table 4: ANOVA

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	172.503	24	7.188	10.431	.000b
	Residual	86.137	125	.689		
	Total	258.640	149			

a=Dependent Variable (Travel Decision); **b=Predictors** (Constants)

Table 5 is presenting the coefficient value. The significance level determines whether the variables are important or not and whether there is a change in the dependent variables due to the independent variables. If the significance level is below 0.05 ($p<0.05$), then it is considered an important variable, and if the significance level is greater than 0.05 ($p>0.05$), then it is considered less important.

Table 5: Coefficient

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	Beta	Std. Error	Beta		
1 (Constant)	.304	.603		.504	. 615
I.	.247	.101	.179	2.453	.016
II.	.158	.061	.191	2.603	.010
III.	.201	.078	.239	2.825	.006
IV.	.142	.071	.157	2.221	.038
V.	.089	.39	.096	2.282	.024
VI.	.236	.157	.163	2.507	.023
VII.	.193	.087	.129	2.258	.034
VIII.	.112	.084	.141	1.883	.044
IX.	.118	.050	.171	2.346	.021
X.	.221	.022	.146	1.787	.029
XI.	.139	.056	.144	2.473	.015
XII.	.182	.080	.168	2.453	.027
XIII.	.119	.046	.129	2.568	.011
XIV.	.133	.046	.146	2.902	.004
XV.	.108	.059	.145	1.824	.047
XVI.	.133	.063	.149	2.129	.035
XVII.	.079	.040	.081	1.984	.049
XVIII.	.163	.070	.157	2.322	.022
XIX.	.156	.064	.136	1.966	.049
XX.	.130	.057	.146	2.282	.024
XXI.	.131	.057	.154	2.299	.023

a. Dependent Variable: Travel Decision

From the table 5, it is well evident that all the predictors included in the study i.e., natural beauty (p=.016), safety and security (p=.010), accommodation facility (p=.006), transportation and communication system (p=.038), local cuisine (p=.024), budget (p=.023), time (p=.034), attitude of local people (p=.044), availability of information and tourist guides (p=.021), technology (p=.029), shopping facilities (p=.015), climate (p=.027), cultural, religious and indoor activities (p=.011), price of the products (p=.004), cleanliness (p=.047), parking facilities (p=.035), medical and health care facilities (p=.049), past experience (p=.022), word of mouth (p=.049), quality of the supporting services (p=.024), and personal emotion and expectation (p=.023) significantly and positively influence the travel decision of the Gen Z. The beta weight value indicates that the accommodation facility of the destination is the highest contributor followed by destinations' safety and security, and natural beauty. Therefore, this research rejects the null hypothesis.

The findings confirm that the development and assurance of the aforementioned variables at any tourism destination in Bangladesh can easily attract the Gen Z category tourists in particular those who live in the urban areas. As Gen Z shares the maximum portion of domestic tourists in Bangladesh, so it is very crucial to consider the preferences they seek for making a travel decision. The key policymakers of the tourism industry in Bangladesh i.e., the tourism ministry, tourism corporation, and tourism board etc. may emphasize these variables while policymaking and planning. Besides, destination owners or managers may focus on these variables to attract more tourists from this category.

5. Conclusion

Urban generation Z constitutes the largest portion of domestic tourists in Bangladesh, as a result, this generation contributes the most to the tourism industry as well as to the economy of Bangladesh. Therefore, it is significant to know which factors influence their travel decisions. Therefore, this study aimed to explore the factors that influence travel decision or destination selection of Gen Z tourists from the urban areas in Bangladesh. Based on the existing literature relevant to this study, a framework was developed comprising 21 variables which were statistically tested later. The variables are natural beauty, safety and security, accommodation facility, transportation and communication system, local cuisine, budget, time, attitude of the locals, availability of tourist guides, technology, shopping facilities, climate, cultural, religious and indoor activities, price of the products, cleanliness, parking facilities, adequacy of medical and health care facilities, experience, word of mouth, quality of the supporting services, personal emotion and expectation.

The study findings reveal that all these variables significantly influence Gen Z tourists in making their travel decisions. In particular, this category of tourist is very concerned about the accommodation facility of the destination, the destination's safety and security, and natural beauty. This paper endorses that the aforementioned variables should be emphasized and considered by the industry practitioners (e.g., tour operators, travel

agents, accommodation provider, etc.) and key policymakers of the tourism industry. Inclusion of these factors will help to shape the tourism product and service offerings in such a way that eventually provides a leverage to destination owners or managers in attracting and satisfying tourists from this promising demographic segment.

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Impact of Capital Structure on Firms Performance-A Study on Non-Banking Financial Institutions and Insurance Companies in Dhaka Stock Exchange (DSE)

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Abstract

This paper intends to analyse the impact of capital structure on DSE listed Non-Banking Financial Institution and Insurance company's performance. This study uses the secondary data collected from the annual reports over the five years from 2015 to 2019 of 20 samples Non-Banking Financial Institutions and Insurance companies in the Dhaka Stock Exchange. This study employed four performance indicators as dependent variables: earnings per share (EPS), return on equity (ROE), return on asset (ROA), and net profit after tax (NPAT), and three capital structure ratios as independent variables: total debt to total assets ratios, leverage ratio, and long-term asset ratio. The fixed asset rate and the firm's size are considered as control variables. The findings of the study show both positive and negative effects of capital structure on firm's performance. Regardless of the direction of links and implications, capital structure indicators have been proven to have a significant impact on firm's performance in Bangladesh. Instead, the impacts and relationships are weaker in ROE, higher on EPS, ROA and NPAT. These finding suggest that further research should be done to determine more accurate impacts and linkages. Studies should also be done to determine how the influence of capital structure might be amplified to enhance the performance of DSE listed Non-Banking Financial Institution and Insurance Companies. Further studies can be conducted with combining more industry data from extended time period to arrive at a more realistic scenario in future.

Keywords: *Capital structure, earnings per share (EPS), return on asset (ROA), return on equity (ROE)*

1. Introduction

Financial performance is a critical issue in organizations, and all firms must strive for the best financial performance possible. There are several aspects that influence a company's financial performance. These elements might be either internal or external in nature. Many studies have been conducted to demonstrate the influence of capital structure on the financial performance of firms; nevertheless, the results are not consistent. Furthermore, because each company sector has its unique features as well as capital management, the amount of influence is also highly diverse.

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The capital structure of a company is comprised of its long-term debt, common equity, and preferred equity, which are utilized to fund its overall operations and growth. Capital structure is a critical financial choice since it is directly tied to a firm's risk and return. Any immature capital structure choice can lead to a high cost of capital, decreasing the firm's value, whilst an effective capital structure decision can have the opposite impact. Some academics characterized capital structure in their own ways as well.

Weston *et al.* (1979) describes capital structure as the firm's long-term financing represented by long-term debt, preferred stock, and net worth. According to Van Horne and Wachowicz (1995), capital structure is the combination of a company's long-term debt, preferred stock, and common stock equity. According to the preceding explanation, capital structure consists mostly of stock and long-term debt. Traditionally, short-term debt is not considered in capital structure, but we do in our analysis.

The classic Modigliani-Miller theorem (1958) says that the debt-to-equity ratio asserts irrelevance on business value. However, because the authors analysed the Arrow-Debreu setting (full markets, no taxes, no transaction and bankruptcy costs), the idea of debt irrelevance is unlikely to be realistic. Modigliani and Miller (1963) later loosened the no-tax assumption and produced a theory on the tax advantages of debt. That work sparked a substantial academic debate on capital structure theory.

A firm might profit from debt in two ways. The first is a tax shield: interest payments are normally not taxed; therefore, debt can raise the firm's worth. Managers might also benefit from debt control (Jensen, 1976). Managers utilize the company's free cash flows to invest in projects, pay dividends, or keep cash on hand. However, if the company is not committed to some fixed expenditures, such as interest charges, managers may be tempted to "squander" extra free cash flows.

As a result, in order to penalize management, shareholders incur debt. Furthermore, it is common practice in debt agreements between banks and borrowers to include financial covenants for companies (minimal level of the free cash flow, debt-to-EBITDA ratio, EBITDA-to-interest expenses ratio etc.). Managers are unable to violate these covenants and, as a result, are obligated to be more effective. Furthermore, the law usually gives a right to partial information disclosure to the company's debt holders, which acts as a tool for further managers' monitoring. As a result, managers' activities become more open, and they have greater incentives to produce greater value for the owners. This is the essence of capital structure's "Free Cash Flow Theory" (Jensen, 1986).

Excessive investments are one manner in which managers may not act in the best interests of the owners. This is known as a "hazard problem" Jensen. (1988). A common example is the massive exploration expenditure by oil company executives in the late 1970s, when it was cheaper to buy oil on Wall Street than to explore for or pump it. Furthermore, executives at oil corporations spend a big portion of their spare wealth in non-core businesses. Blanchard. (1994) shown that managers of enterprises that got financial windfalls frequently spent it on purchases of unrelated firms and other activities

that added little value to shareholders. These and other data demonstrate the existence of a conflict of interest between management and owners.

According to the agency cost theory (Jensen and Meckling, 1976), higher levels of debt are correlated with better company performance. Agency costs are expenses incurred as a result of agency dispute. High leverage can lower agency costs and hence boost company value through a variety of processes, including:

- Keeping track on debt holders' activities.
- Managers' fear of corporate collapse and liquidation as a result of financial mismanagement, which might result in reputation and salary losses.
- Reducing overinvestment.

There are, without a doubt, alternative avenues for shareholders to censure executives. Owners may, for example, obligate managers to pay dividends, reducing the amount of free cash flow available to management. As a result, companies with clear management and ownership separation should pay bigger dividends (Damodaran, 2010). However, in this study, we will only look at debt as a means of self-discipline.

Because a business's worth is directly proportional to its performance (the better a firm performs, the greater its value), economists investigate the link between leverage and firm performance to test Jensen's (1986) hypothesis. Empirical investigations on the link between leverage and company performance have yet to come to a consensus. Coricelli *et al.* (2011) found a hump-shaped association between debt levels and productivity development in their EBRD research of Central and Eastern European enterprises. Majumdar and Chhibber (1999) discovered a strong negative effect of debt on business performance, demonstrating the inadequacy of western corporate governance processes in transitional economies. Harris and Raviv (1991) and Titman and Wessel (1988) conduct two famous empirical investigations that provide contradictory empirical outcomes, even on basic facts about capital structure. As a result, empirical proof of the link between leverage and company performance is still lacking.

There may also be an inverse relationship between corporate performance and leverage. According to the efficiency-risk theory, better business efficiency decreases expected4 bankruptcy costs, and such firms may attract more debt. According to the franchise value theory, more efficient businesses would prefer to safeguard the economic rent gained from their efficiency and may select lesser leverage (Berger and Bonaccorsi di Patti, 2006).

Furthermore, it may anticipate that the relationship between leverage and firm performance would not be immediate, and that temporal gaps may exist. This notion is confirmed by pecking order theory, which expressly asserts that previous business performance, rather than present firm performance, may have an influence on capital structure.

One of the most comprehensive studies on African marketplaces, including South Africa, done by Gwatidzo and Ojah (2009), discovered that enterprises in these markets tend to follow a modified pecking order. Their research looked at five African markets in total (Ghana, Kenya, Nigeria, South Africa, and Zimbabwe). Gwatidzo and Ojah (2009) investigated capital structure dependency on variables such as plus materiality, company tax, gain, size, and business age in their study.

Very limited research work is available on this issue in Bangladesh especially in the field of Non-banking financial institutions and Insurance companies. The current study adds to the existing body of knowledge by empirically investigating the impact of capital structure on the financial performance of Non-Banking Financial Institutions and Insurance companies listed in Dhaka Stock Exchange.

2. Objective and Scope of the Study

The objective of this study is to analyse the impact of capital structure on the financial performance of Non-Banking Financial Institutions and Insurance companies listed in Dhaka Stock Exchange.

This study has covered the level of capital structure practiced, performance of the firms, relationship of among the indicators of capital structure and firm's performance along with the impact of capital structure on the performance of the listed Non-Banking Financial Institution and Insurance Companies in the Dhaka Stock Exchange of Bangladesh. Besides, the study has collected data from limited number of companies from annual reports from the year 2015 to 2019. Firms that did not have precise information for the time period were removed from the study. As a result, data availability largely influenced the sample size and duration of the study.

3. Literature Review

3.1 Empirical Evidence

There has been a lot of study done on company performance. It should begin with Krishnan and Moyer (1997), who conducted an empirical examination of company performance and capital structure in four Asian economies. The research sample included 81 organizations from Hong Kong, Singapore, and South Korea from 1992 to 1997. The research measured the firm's performance using four dependent variables: ROE, ROIC, PTM, and RETURN. Leverage is measured using two metrics: debt on the market value of equity and long-term debt on the market value of equity. The findings revealed that the nation of origin has an impact on both financial performance and capital structure. Enterprises in Hong Kong, in particular, will have a higher ROE, and the influence of various overseas companies is not statistically significant. According to the survey, South Korean enterprises have larger financial leverage than companies from other nations. According to the findings, leverage has no effect on the financial success of the organization.

Some scholars discovered a positive association; others discovered a negative relationship; and yet others discovered a mixed or no relationship between capital structure and company performance. The following section discusses some of the main contributions to the literature on this issue.

Since Modigliani and Miller's (1958) "irrelevance theory of capital structure," finance economists have been interested in capital structure theory. Extensive study has been conducted in several countries to explore the link between capital structure and business performance, with Bangladesh making very little addition to the literature. The conduct of firms in industrialized nations may differ from that of firms in underdeveloped ones. Because Bangladesh is a developing country, it is sense to discuss earlier efforts from other developing countries.

Majumdar and Chhibber (1999) investigated the link between the debt level of a company's capital structure and its performance in India between 1988 and 1994. The findings show that there is a statistically significant adverse association between capital structure and financial performance in Indian firms. The author highlights the capital market structure in India, where both short-term and long-term lending institutions are government-owned, and confirms that Western corporate governance systems will be ineffective in the Indian environment. Gleason, Mathur, and Mathur (2000) investigated the connection between capital structure and performance. Data from 198 retail enterprises in 14 European nations were utilized in the study, which was divided into four research clusters. ROA was utilized as the dependent variable, while debt-to-assets ratio was employed as the independent variable. The results revealed that the debt-to-total-assets ratio had a negative impact on the ROA. Furthermore, firm size has a favourable link with business performance.

Roden and Lewellen (1995) studied 48 U.S. enterprises from 1981 to 1990 and discovered a favourable relationship between profitability and capital structure. Champion (1999), Ghosh *et al.* (2000), and Hadlock and James (2000) all found similar findings. They all concluded that organizations with high levels of profitability employ a high degree of debt.

Arbor (2005) investigated the impact of capital structure on the profitability of 20 Ghana Stock Exchange-listed firms. ROE was utilized as the dependent variable, with debt-to-assets, short-term debt-to-total-assets, and long-term debt-to-total-assets as the independent variables. The regression analysis approach was utilized by the author to estimate the association between ROE and capital structure. The findings revealed that debt-to-assets and short-term debt-to-total-assets ratios have a beneficial influence on ROE. Long-term debt, on the other hand, has a negative relationship with ROE. The study also demonstrates that debt has a favourable impact on a company's profitability. Berger and Patti (2006) investigated the connection between company performance and capital structure. The sample consisted of stores in the United States from 1990 to 1995. The study presented a novel way for demonstrating causal link by employing a

simultaneous model of two equations. According to the findings of the study, the larger the leverage, the better the profit of the firm.

According to Margaritis and Psillaki (2010), there is a considerable positive relationship between leverage and business performance. They examined a sample of both low and high growth French enterprises from 2003 to 2005 and discovered that leverage had a beneficial influence on company efficiency across the board.

Amjed (2007) explored the connection between capital structure and company financial performance. From 1999 to 2004, the sample included 100 businesses in Pakistan's textile industry that were listed on the Karachi Stock Exchange. The ROE was the dependent variable, while the independent variables were short-term debt, long-term debt, and total debt. The findings revealed a positive and substantial association between short-term debt and profit, as well as a negative and significant relationship between long-term debt and profit. Because short-term debt lowers the cost of capital, deploying more of it in the capital structure enhances profitability. However, because long-term debt raises expenses, the larger a corporation's long-term debt, the lower the degree of return that firm receives. Between 1989 and 2003, Zeitun, Tian, and Keen (2007) investigated the link between capital structure and company performance in 167 Jordanian enterprises. The ROA, ROE, and Tobin's Q were the dependent variables. Debt-to-assets, short-term debt to total assets, and long-term debt to total assets were the independent variables. The findings revealed that capital structure had an inverse relationship with company performance as evaluated by ROA and ROE. Furthermore, the short-term debt-to-total-assets ratio, long-term debt-to-total-assets ratio, and total debt-to-total-assets ratio all have the opposite effect on the Tobin's Q.

Fosu (2013) evaluated the relationship between capital structure and company performance using panel data from 257 South African enterprises from 1998 to 2009. He employed the GMM regression technique to assess the link and discovered a positive and substantial relationship between financial leverage and company performance. In the Tehran Stock Exchange, Aliakbar *et al.* (2013) discovered a substantial positive relationship between capital structure and business performance.

Gill *et al.* (2011) investigated the influence of capital structure on the earnings of 272 New York Stock Exchange service and manufacturing enterprises. The ROE was utilized as the dependent variable in the study, with the independent factors being short-term debt to total assets, debt-to-assets, and long-term debt to total assets. According to the findings, there is a positive association between debt and ROE, whereas long-term debt is adversely connected to ROE. Moradi and Salehi (2011) analysed panel data from 320 businesses registered on the Tehran stock exchange between 2002 and 2009. ROA, ROE, EPS, and Tobin's Q were used to assess the firm's financial performance.

In contrast, Rajan and Zingales (1995) conducted a comprehensive analysis on the capital structure of 48 US firms between 1981 and 1990. According to the findings of the study, there is a negative association between profitability and debt level, and the

relationship will become more obvious as company size increases. They also stated that if the return on shares and investments is set in the near term and debt is the primary source of external funding, there is a negative association between performance and leverage. Short-term debt, long-term debt, and overall debt were all independent factors. The study's findings revealed that EPS and Tobin's Q are favourably connected with capital structure, while there is a negative association between capital structure and ROA, and the relationship between capital structure and ROE is not statistically significant.

Pratheepkanth (2011) investigated 30 Sri Lankan firms that traded on the Colombo Stock Exchange between 2005 and 2009. The findings revealed an inverse association between capital structure and business performance. According to the findings of the study, the majority of businesses in Sri Lanka rely on debt and pay a high premium for the privilege of doing so. Khan (2012) investigated the association between financial leverage and firm financial performance. From 2003 to 2009, the sample comprised of 36 enterprises in Pakistan. The dependent variables in the study included ROA, gross margin, and Tobin's Q. Short-term debt to total assets and overall debt to total assets were the independent variables. Khan (2012) employed the OLS regression model in his study, which revealed that financial leverage is inversely connected to financial success as evaluated by dependent variables. Furthermore, company size as measured by asset has a statistically minor influence on ROA and gross margin but has a statistically significant reverse effect on Tobin's Q.

Fama and French (2002) both observed a negative relationship between capital structure and company performance. They discovered that highly profitable enterprises with a reduced risk of financial trouble are less leveraged, which violates the trade-off assumption.

San and Teh (2012) investigated the link between capital structure and business performance. From 2005 to 2008, the study focused on 49 Bursa Malaysia-listed construction businesses. The dependent variable was the ROA. The debt-to-equity market capitalization, EPS, and long-term debt to equity were the independent factors. The findings revealed a link between capital structure and company performance. For big firms, there is a positive association between ROA and debt on equity market capitalization, as well as between EPS and long-term debt to equity. Smaller corporations, on the other hand, have an inverse connection between EPS and debt to total assets.

Noreen (2019) collected data from eleven banks between 2006 and 2016. Except for bank size, the data revealed that the capital structures of both types of banks were identical. Furthermore, the capital structure of both conventional and Islamic banks was adversely connected with ROA. In contrast, the capital structure of both conventional and Islamic banks was positively connected with ROE. This result contributes to the literature as well; however, it concentrates on the financial sector rather than the general business.

Nani and Mustafa (2012) attempted to investigate the influence of debt and equity financing on the performance of Bursa Malaysia-listed enterprises. They found a statistically significant negative relationship between capital structure and business performance using a sample of 130 firms from 2001 to 2010, coupled with multiple regression analysis.

Manawaduge *et al.* (2011) stated that most Sri Lankan enterprises utilize short-term borrowed capital rather than long-term debt, and that the usage of debt has a detrimental impact on company performance. Furthermore, they demonstrated that corporations first employ retained earnings, then debt, and ultimately equity.

Chowdhury and Chowdhury (2010) used a cross-sectional tie series fixed effect model to investigate the relationship between capital structure and business value in Bangladesh. They discovered that maximizing shareholder wealth necessitates a perfect balance of debt and equity, but the cost of capital has a negative correlation with this decision and must be as low as feasible. In Bangladeshi enterprises, Alom (2013) observed a substantial negative relationship between profitability and leverage.

However, other authors' findings were mixed. Kinsman and Newman (1998) investigated the association between debt level (including three measures of debt level) and company performance and discovered a variety of outcomes. According to this study, earnings are adversely connected with short-term debt but positively correlated with long-term debt. Mesquita and Lara (2003) discovered a similar finding in Brazil.

Tianyu (2013) investigated the impact of capital structure on company performance in established and emerging economies. In his analysis, he examined a sample of 1200 listed enterprises in Germany and Sweden, as well as 1000 listed firms in China, from 2003 to 2012. Using the OLS regression approach, he demonstrated that capital structure had a considerable negative influence on company performance in China, but a significant positive effect in two European nations, namely Germany and Sweden, prior to the 2008 financial crisis.

Saeedi and Mahmoodi (2011) discovered that company performance, as measured by EPS and Tobin's Q, is favourably connected to capital structure, but capital structure and ROA are negatively associated. They did not, however, see a substantial link between ROE and capital structure.

Abor (2005) evaluated the relationship between capital structure and profitability of enterprises listed on the Ghana Stock Exchange from 1998 to 2002. Using regression analysis, he discovered a substantial positive relationship between ROE and the short-term and overall debt ratios, as well as a negative relationship with long-term debt.

Some researchers, on the other hand, found little to no correlation. Phillips and Sipahioglu (2004) found no meaningful relationship between capital structure and company performance for publicly traded UK lodging enterprises; lodging firms appear to prefer external sources since capital return is poor.

Ebaid (2009) also investigated the impact of capital structure selection on company performance in Egypt. His study employed multiple regression analysis on a sample of non-financial listed corporations from year 1997 to 2005. According to the findings, company performance has little to no link with capital structure selection. Al-Taani (2013) discovered a negative and negligible association between short-term and long-term debt ratios, as well as ROA and profit margin.

3.2 Background Theories

3.2.1. Modigliani – Miller Theory (M&M)

Modern financial theory is founded on the research of two Nobel Prize-winning economists, Modigliani and Miller, on the financial system (M&M theory). Modigliani and Miller's (1958) is the starting point for current capital structure theory. According to the M&M theory, the decision between debt and equity is unrelated to the worth of the firm. The optimal capital structure is one that balances risks and earnings and so optimizes the share price of the firm. Initially, M&M theory stated that there is no optimal capital structure for enterprises in a 1958 research that did not consider the influence of corporate income tax. In a follow-up study in 1963, Modigliani and Miller (1963) demonstrated that the value of the company with debt is greater than the value of the company without debt by the tax rate multiplied by the value of debt, implying that M&M theory states that increasing the use of financial leverage will increase the value of businesses. Thus, according to the M&M theory and the optimum capital structure theory, we can understand how the choice and use of capital affects enterprise business and financial performance.

3.2.2. The Trade-Offs Theory

Kraus and Litzenberger (1973) pioneered the trade-off hypothesis, which was later expanded by Myers and Majluf (1984) and other investigations. The trade-offs hypothesis was developed to refute Modigliani and Miller (1958), because the advantages of utilizing debt are often zero or negative. For example, when a business becomes inefficient and insolvent (or bankrupt). The capacity of a company to declare bankruptcy is determined in part by its business risks, but it is also determined by its capital mobilization, management, operation, and utilization policies. According to Kraus and Litzenberger (1973), optimal financial leverage indicates a trade-off between the tax advantages of debt and the cost of bankruptcy.

3.2.3. The Pecking Order Theory

According to Myers and Majluf (1984), there is no optimal capital structure for a corporation and no explanation for the precedence of internal capital over borrowed capital when enterprises increase capital. They divide finance into two categories: internal capital (retained earnings) and external capital (equity and debt issues). The capital structure choice is made not on the basis of the ideal debt/total assets ratio, but on the priority of capital usage in the following order: Internal financial resources

(particularly retained earnings), then debt and final and equity capital. This hypothesis is based on the asymmetry of knowledge among managers, investors, and creditors. Managers understand the true worth and dangers of firms better than outside investors.

3.2.4 Agency Cost Theory

A conflict of interest between stockholders and debt holders This sort of issue stems from the conceptual distinction between shareholders and debt holders. The former is more risk-averse and wants a larger return, whereas the latter is less risk-averse and accepts a lesser return. As a result, shareholders may opt to take on higher-risk initiatives than debt holders. In the event that these initiatives are successful, stockholders will get an additional return, and in the event that they fail, all losses will be shared by loan holders and stockholders (Jensen and Meckling, 1976). As a result, more leveraged corporations pursue lower-risk ventures. Myers and Majluf (1984), on the other hand, demonstrated that disparities in aims between debt holders and shareholders might lead to underinvestment. As a result, higher leverage might as well lead to poorer corporate performance.

3.3 Conceptual Framework

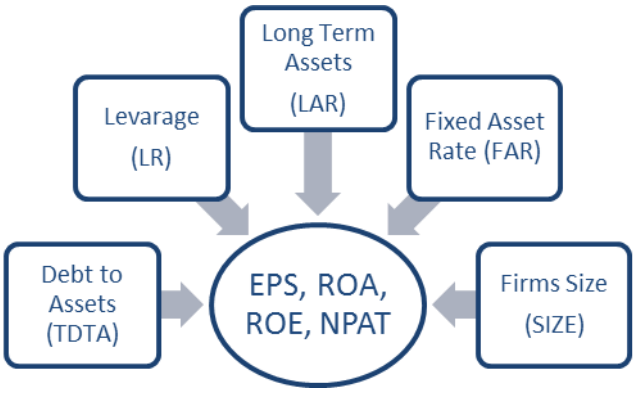

Figure 1: Conceptual Framework of the study

3.3.1 Definition of Capital Structure and Financial Performance

Many distinct perspectives exist on capital structure. Stephen *et al.* (2003), a firm's capital structure is the mix of debt and equity used to finance the enterprise's production and commercial operations in a certain proportion. To put it another way, a company's capital structure refers to the mix of debt and equity it utilizes to support its activities. To put it another way, the enterprise capital structure is a balance of long-term debt and equity. As a result, the correlation ratio's structure is frequently proportionate to a company's debt and equity. In terms of financial performance, it is commonly understood that financial performance is the result of an enterprise's mobilization, use, and management of capital. The amount of utilization of factors in the manufacturing process is reflected in the level of business performance of companies. As a result, business

efficiency is an integrated economic indicator that reflects the extent to which an enterprise's material and financial resources are used to achieve maximum efficiency. One of the most controversial and discussed topics in financial management is assessing and monitoring business financial performance. It is critical to utilize any instrument to evaluate a company's financial performance. There are several indications for assessing an organization's financial success, however the most generally used criteria in studies may be split into two categories:

I. It is the ratio between the outcomes obtained and the inputs such as ROA, ROE and EPS, calculated using accounting procedures employed by many authors in prior research.
II. Use market-based economic models like the Marris coefficient (MBRV) and Tobin's Q.

3.3.2 Return on Assets (ROA)

Return on Assets is regarded as a performance measuring metric. It measures a company's profitability in relation to its total assets. This ratio is derived by dividing the firm's net income by its total assets. It informs a manager about the efficiency with which a company's management uses its assets to create earnings (Al-Taani, 2013).

3.3.3 Return on Equity (ROE)

Return on equity measures a company's profitability in relation to its book value of shareholder equity. ROE is calculated by dividing net income by the book value of the equity. This ratio is calculated using after-tax net income. The entire equity of a company may be calculated by subtracting net assets from liabilities. It is a measure of how well a firm can apply its investment to generate earnings growth. ROE is particularly useful for evaluating the performance of firms in the same industry. In the case of stock valuation, ROE is employed in conjunction with other financial ratios. The ROE ratio might be relatively high or low, depending on the industry. In general, a ROE ratio of 15-20% is regarded desirable for any firm (Amidu's, 2007).

3.3.4 Earnings Per Share (EPS)

Earnings per share refers to the portion of a company's profit that is distributed to each share of common stock. EPS is used as a measure of a company's profitability. It is computed by dividing net income less preferred dividends by the weighted average common share. In its income statement, every firm discloses earnings per share that have been adjusted for unusual events, including possible share dilution (Desai and Dharmapala, 2007).

3.3.5 Net Profit After Tax (NPAT)

On their income statement, companies must declare their net income after taxes. Net income is calculated by deducting all expenditures and losses from all revenues and profits. The corporation will then subtract the taxes paid for the year to calculate net

profit after taxes. Companies often prefer a bigger net income after taxes since it demonstrates the company's profitability (Harris, and Raviv, 1991).

3.3.6 Debt to Assets Ratio

Total-debt-to-total-assets is a leverage ratio that describes a company's total debt in relation to its total assets. Analysts can use this statistic to compare a company's leverage to that of other firms in the same industry. This information might indicate a company's financial stability. The higher the ratio, the greater the degree of leverage (DOL) and, as a result, the greater the risk of investing in that firm (Mathur and Mathur, 2000).

3.3.7 Financial Leverage

Financial leverage ratio (LR): The leverage ratio shows the financial autonomy of the enterprise. (Chu *et al.*, 2015)

3.3.8 Long-term asset ratio (LAR)

This is computed by dividing long-term assets by total assets, and it shows an enterprise's capital structure. There are studies throughout the world that employ long-term assets to depict capital structure. (Berger and Patti, 2006),

3.3.9 Fixed Asset rate

Fixed assets as a percentage of total assets indicates how much of asset is covered by fixed assets. This ratio reflects the assets strength of the firm. (Trang Thu *et al.*, 2020)

The following Table 1 summarizes the indicators of capital structure and firm's performances.

Table 1: Summary Indicators of capital structure and performance

Authors	**Origin**	**Capital Structure Indicators**	**Performance Indicators**
Trang Thu *et al.*, (2020)	Vietnamese	TDTA, LR, LAR	ROE
Hasan *et al.* (2014)	Bangladesh	STDTA, LTDTA and TDTA	ROE, ROA, Tobin's Q, EPS
Mahafuja and Yadav (2012)	Malaysia	STD, LTD, TD	ROA, ROE, EPS,
Ebaid (2009)	Egypt	Leverage level	ROE, ROA
Lavorskyi (2012)	Ukrain	Return on invested capital, Debt to equity	ROA, EBIT, ROE
Noer and Maulana (2014)	Indonesia	Debt to equity, Debt to total assets	ROA, ROE

Sources: Authors Compilation.

4. Data and Methedology

4.1 Population and Sample Size

The study focuses mostly on companies listed on the Dhaka Stock Exchange (DSE). Until January 20, 2022, 75 companies from the Insurance and Non-Banking Financial Institutions are listed on the Dhaka Stock Exchange. The Insurance sector has 52 companies and the Non-Banking Financial institution sector has 23. So, the population of the study is all Non-Banking Financial Institutions and Insurance companies listed on the DSE.

It is critical to collect enough data in order to create a valid regression model. Actually, the needed sample size is determined by the size of the predicted performance. This is due to the fact that the estimate of R is affected by the sample size and the number of predictors. There are several guidelines for determining sample size. And the most common rule is that the larger the better. A minimum of 30 observations for each variable is required to generate a valid multiple linear regression model. Otherwise, there is a good possibility that collinearity prevails. In this study, a purposive sampling technique is employed in selecting non-banking financial institutions and Insurance companies. The sample comprises of 20 firms, 10 from Insurance and 10 from Non-Banking Financial Institutions listed in Dhaka Stock Exchange (DSE). These firms are monitored over the year 2015–2019 time period, permitting the formation of a canister of panel data with 100 observations.

4.2 Sources of Data

The data of this study has been extracted from the year 2015 to 2019 from a total of 20 company's published annual reports. Due to Covid-19, which greatly impacted the firm's performance, the years 2020 and 2021 were neglected. Annual reports were gathered from the websites of the companies that were chosen. The annual report was gathered once again for the period ending June 30 or December 31, depending on the financial year of the various companies.

4.3 Data Analysis

First, a descriptive analysis to determine which variable is more impacted by capital structure by determining the higher mean. The basic objectives of the study are met by these analyses. Then, using correlation analysis, determine how these variables are connected to one another. Whether or not these connections are substantial. Then, using multiple regressions, determine the capital structure's influence on the firm's performance. ANOVA is also used to evaluate hypotheses in this case. The data are analysed by the statistical package SPSS.

4.4 Variables Measure

The capital structure and firm performance are two critical components of this research in a broader sense. For this study, financial performance parameters are employed as

dependent variables, whereas capital structure (financial structure) is used as an independent variable. Dependent variables include total debt to total assets, leverage ratio, and long-term assets. Firm performance is measured using independent variables such as return on equity, return on assets, earnings per share, and net profit after tax. Because the study uses a causal design, there are a few aspects or variables to examine that may indirectly impact the company's performance, therefore the size of the firm and the fixed asset rate are the selected as control variables supported by literature.

Dependent Variable (Performance Factors)			
S. L		***Symbol***	***Measurements***
1	Earnings Per Share	EPS	$\frac{\text{Net Income}}{\text{Number of Share Outstandins}}$
2	Return on Asset	ROA	$\frac{\text{Net Income}}{\text{Total Assets}}$
3	Return on Equity	ROE	$\frac{\text{Net Income}}{\text{Total Equity}}$
4	Net Profit After Tax	NPAT	Net Profit – Tax Paid

Independent Variables (Capital Structure)			
S. L		***Symbol***	***Measurements***
5	Total Debt to Total Assets Ratio	TDTA	$\frac{\text{Total Debt}}{\text{Total Assets}}$
6	Leverage Ratio	LR	$\frac{\text{Total Asset}}{\text{Total Equity}}$
7	Long Term Asset	LAR	$\frac{\text{Non Current Asset}}{\text{Total Asset}}$

Control Variables			
S. L		***Symbol***	***Measurements***
8	Firm Size	SIZE	Revenue, Total Assets
9	Fixed Asset Rate	FAR	$\frac{Fixed\ Asset}{Equity}$

4.5 Model Specification

In this study, we used four regression model based on the above variables specified to justify our objective.

Model 1

$$EPS = \alpha_0 + \beta_1 TDTA + \beta_2 LR + \beta_3 LAR + \beta_4 SIZE + \beta_5 FAR + \varepsilon$$

Model 2

$$ROA = \alpha_0 + \beta_1 TDTA + \beta_2 LR + \beta_3 LAR + \beta_4 SIZE + \beta_5 FAR + \varepsilon$$

Model 3

$$ROE = \alpha_0 + \beta_1 TDTA + \beta_2 LR + \beta_3 LAR + \beta_4 SIZE + \beta_5 FAR + \varepsilon$$

Model 4

$$NPAT = \alpha_0 + \beta_1 TDTA + \beta_2 LR + \beta_3 LAR + \beta_4 SIZE + \beta_5 FAR + \varepsilon$$

Where, β_1, β_2, β_3, β_4 and β_5 represents the regression coefficient for the variable *LTDTA, LR, LAR, SIZE* and *FAR.* α_0 is constant and ε is denoted as the error of this model.

4.6 Research Hypothesis

To examine the influence of capital structure on firm performance, the study utilized the following hypothesis:

Model 1 (EPS)

Hypothesis: There is no significant impact of capital structure on earnings per share (EPS).

Model 2 (ROA)

Hypothesis: There is no significant impact of capital structure on return on asset (ROA).

Model 3 (ROE)

Hypothesis: There is no significant impact of Capital Structure on Return on Equity (ROE).

Model 4 (NPAT)

Hypothesis: There is no significant impact of capital structure on net profit after tax (NPAT).

5. EMPIRICAL RESULTS AND DISCUSSION

5.1 Descriptive Statistics

Table 2 provides a summary of the descriptive statistics for all the dependent and independent variables included in this study. Table 2 reports the range, mean, standard deviation, number of observations, minimum and maximum of all variables to give an overall description of data used in this study.

Table 2: Descriptive statistics of all variables *(N=100)*

Variables	Range	Mean	Minimum	Maximum	Std. Deviation
EPS	9.62	1.8319	-3.49	6.13	1.50395
ROA	12.66	3.4770	-3.64	9.02	2.75253
ROE	21.76	9.0023	-.47	21.29	4.48998
NPAT	2682.38	229.7603	-405.38	2277.00	411.35083
TDTA	1.12	.5744	.18	1.30	.29075
LR	15.62	4.8722	1.24	16.86	4.01019
LAR	.60	.1252	.00	.60	.13114
FAR	.86	.2760	.02	.88	.18602
SIZE	5.50	22.3947	19.99	25.49	1.42515

The earnings per share (EPS) of selected companies range from -3.49 to 6.13, with a mean of 1.8319 and a SD of 1.50395. Return on asset (ROA) ranges from -3.64 to 9.02, with a mean of 3.4770 and a SD of 2.75253. Return on equity (ROE) ranges from -.41 to 21.29, with a mean of 9.0023 and a SD of 4.48998. The range of net profit after tax (NPAT) is -405.38 to 2277.00, with the mean being 229.7603 and the SD being 441.25083.

Selected firms' capital structure indicators are also included in Table 2. The ratio of total debt to total equity (TDTA) ranges from .18 to 1.30, with a mean of .5744 and a SD of .29075. Leverage (LR) ranges from 1.24 to 16.86, with a mean of 4.8722 and a SD of 4.01019. The Long-term asset (LAR) ranges from .00 to .60, with a mean of .1252 and a SD of .13114.

Table 2 also provides a summary of the firm-specific characteristics which have been used as the control variables in this study. The Fixed asset rate (FAR) ranges between .02 and .88, with a mean of .2760 and a SD of .18602. SIZE ranges from 19.99 to 25.49, with a mean of 22.3947 and a SD of 1.42515.

5.2 Correlation Matrix

In order to identify the relationship of Capital Structure and Firm's Performance among DSE listed Non-Banking Financial Institutions and Insurance Companies of Bangladesh, Pearson's linear correlation has been used.

Table 3: Correlation Matrix

Variables	EPS	ROA	ROE	NPAT	TDTA	LR	LAR	FAR	SIZE
EPS	1	.498**	.700**	.716**	-.195	-.213*	.363**	.232*	.179
ROA	.498**	1	.363**	-.055	-.845**	-.769**	.527**	.212*	-.670**
ROE	.700**	.363**	1	.616**	.026	.056	-.103	-.213*	.213*
NPAT	.716**	-.055	.616**	1	.268**	.236*	-.122	-.166	.574**
TDTA	-.195	-.845**	.026	.268**	1	.863**	-.656**	-.344**	.838**
LR	-.213*	-.769**	.056	.236*	.863**	1	-.641**	-.388**	.831**
LAR	.363**	.527**	-.103	-.122	-.656**	-.641**	1	.844**	-.463**
FAR	.232*	.212*	-.213*	-.166	-.344**	-.388**	.844**	1	-.214*
SIZE	.179	-.670**	.213*	.574**	.838**	.831**	-.463**	-.214*	1

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

*. Correlation is significant at the 0.05 level (2-tailed).

Table 3 provides, return on assets (ROA), return on equity (ROE), net profit after tax (NPAT), long term assets (LAR), and fixed asset rate (FAR) has positive correlation with earnings per share (EPS). ROA, ROE, NPAT, LAR are significant at 0.01 level. FAR is significant at 0.05 level. However, Leverage (LR) has negative relation with EPS. This relationship is significant at 0.05 level. Firm size and total debt to total assets (TDTA) has no significant influences on EPS.

ROA has positive correlation with EPS, ROE, LAR and FAR. TDTA, LR, and Size are negatively correlated with ROA. The relationship of ROA and other variables are significant at 0.01 level. FAR is significant at 0.05 level.

ROE has positive relationship with EPS, ROA, NPAT, and Firm Size. On the other hand, FAR has negative relationship with ROE. The relationship of ROE and other variables are significant at 0.01 level. FAR and Firm Size is significant at 0.05 level.

NPAT has positive relation with LR, EPS, ROE, TDTA and Firm Size. There is no negative correlation with other variables. The relationship between NPAT and other variables are significant at 0.01 level.

TDTA has positive relationship with NPAT, LR and Firm Size. Total TDTA has significant negative correlation with ROA, LAR and FAR. This relationship is significant at 0.01 level.

LR has positive correlation with NAPT, TDTA and Firm Size. LR has negative correlation with EPS, ROA, LAR and FAR. The relationship between LR and other factors are significant at 0.01 level. EPS and NPAT is significant at 0.05 level.

LAR has positive correlation with EPS, ROA and FAR. LAR has negative correlation with TDTA, LR and Firm Size. The relationship between LAR and other variables are significant at 0.01 level.

FAR has positive correlation with EPS, ROA and LAR. FAR has negative correlation with ROE, TDTA, LR and Firm Size. The relationship between FAR and other factors are significant at 0.05 level. On the other hand, the relationship between FAR and remaining factors are significant at 0.01 level.

Firms size has positive correlation with ROE, NPAT, TDTA and LR. However, it has negative correlation with LAR, FAR and ROA. The relationship between Firm Size and other factors are significant at 0.01 level. ROE and FAR is significant at 0.05 level.

5.3 Impact of Capital Structure on Firms' Performance

5.3.1 Impact of capital Structure on Earnings Per Share (Model 1)

Table 4 indicates that there is strong positive relationship between capital structure and EPS. Together the indicators of capital structure have a multiple correlation value of R = .770. In combination, TDTA, LR, LAR, FAR and Size of the firm accounted for 59.3% of the variability in firms' performance.

Table 4: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.770[a]	.593	.571	.98493	.593	27.365	5	94	.000
a. Predictors: (Constant), Firm Size, Fixed Asset Rate, Total Debt to Total Asset, Leverage, Long Term Asset									
b. Dependent Variable: Earnings Per Share									

From Table 5, since F = 27.365, p < .000 implies that the regression model fits and is statistically significant. Also, it means that the data fit the model, or that the capital structure model enhances the capacity to forecast the outcome variable or profits per

share considerably. In other words, this conclusion implies that capital structure has a considerable influence on earnings per share.

Table 5: ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	132.736	5	26.547	27.365	.000[b]
	Residual	91.189	94	.970		
	Total	223.925	99			
a. Dependent Variable: Earnings Per Share						
b. Predictors: (Constant), Firm Size, Fixed Asset Rate, Total Debt to Total Asset, Leverage, Long Term Asset						

From Table 6, the tolerance for independent variables in collinearity statistics is > 0.1, and the VIF < 10. As a result, the suggested model is free of collinearity problems.

Table 6: Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	-27.406	2.900		-9.450	.000		
	Total Debt to Total Asset	-2.658	.873	-.514	-3.046	.003	.152	6.571
	Leverage	-.274	.056	-.729	-4.899	.000	.195	5.117
	Long Term Asset	5.338	2.112	.465	2.528	.013	.128	7.827
	Fixed Asset Rate	-2.657	1.168	-.329	-2.276	.025	.208	4.814
	Firm Size	1.436	.146	1.361	9.810	.000	.225	4.442
a. Dependent Variable: Earnings Per Share								

Regression result indicates that TDTA, LR, FAR has negative influence on EPS, in other words if TDTA, LR, FAR increases then EPS decreases. LAR and Firm size have positive influences on EPS, that means if LAR and Firm size can be increased then the EPS also like to be increased.

5.3.2 Impact of Capital Structure on Return on Assets (Model 2)

According to Table 7, there is a significant positive relationship between capital structure and return on assets. The capital structure indicators have a multiple correlation value (R) of 0.866 and a multiple regression value (R Square) of 0.751 when integrated. It implies that the change in capital structure may explain about 75.1 percent of the change in return on assets.

Table 7: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
2	.866[a]	.751	.737	1.41036	.751	56.617	5	94	.000
a. Predictors: (Constant), Firm Size, Fixed Asset Rate, Total Debt to Total Asset, Leverage, Long Term Asset									
b. Dependent Variable: Return on Asset									

From Table 8, F = 56.617, p = .000 indicates that the regression model fits and is statistically significant. It also signifies that the data fit the model, or that the capital structure model significantly improves the ability to estimate the outcome of return on assets. In other words, this study indicates that capital structure has a significant impact on return on assets.

Table 8: ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	563.089	5	112.618	56.617	.000[b]
	Residual	186.977	94	1.989		
	Total	750.065	99			
a. Dependent Variable: Return on Asset						
b. Predictors: (Constant), Firm Size, Fixed Asset Rate, Total Debt to Total Asset, Leverage, Long Term Asset						

From Table 9, We find that the tolerance for independent variables in collinearity statistics is > 0.1, and the VIF < 10. As a result, the suggested model is free of collinearity problems.

Table 9: Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	-1.985	4.153		-.478	.634		
	Total Debt to Total Asset	-7.556	1.250	-.798	-6.046	.000	.152	6.571
	Leverage	-.217	.080	-.316	-2.713	.008	.195	5.117
	Long Term Asset	2.304	3.024	.110	.762	.448	.128	7.827
	Fixed Asset Rate	-3.264	1.672	-.221	-1.952	.054	.208	4.814
	Firm Size	.512	.210	.265	2.443	.016	.225	4.442
a. Dependent Variable: Return on Asset								

Regression result indicates that TDTA, LR, FAR has negative influence on ROA, in other words if TDTA, LR, FAR increases then ROA decreases. LAR and Firm size have positive influences on ROA, that means if LAR and Firm size can be increased then the ROA also like to be increased.

5.3.3 Impact of Capital Structure on Return on Equity (Model 3)

Table 10 represents that, there is a weak positive correlation between capital structure and ROE. Together, the indicators of capital structure have a multiple correlation value (R) of 0.475 and multiple regression value (R Square) of 0.225. It indicates that, about 22.5% change in return on equity can be explained by the change in capital structure.

Table 10: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.475[a]	.225	.184	4.05517	.225	5.474	5	94	.000
a. Predictors: (Constant), Firm Size, Fixed Asset Rate, Total Debt to Total Asset, Leverage, Long Term Asset									
b. Dependent Variable: Return on Equity									

From the Table 11, the regression model fits and is statistically significant (F = 5.474, p =.000). It also indicates that the data fit the model or that the capital structure model greatly enhances the capacity to estimate the ROE. In other words, the results of this study show that capital structure has a considerable influence on ROE.

Table 11: ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	450.060	5	90.012	5.474	.000[b]
	Residual	1545.775	94	16.444		
	Total	1995.835	99			
a. Dependent Variable: Return on Equity						
b. Predictors: (Constant), Firm Size, Fixed Asset Rate, Total Debt to Total Asset, Leverage, Long Term Asset						

From Table 12, the tolerance for independent variables in collinearity statistics is > 0.1, and the VIF < 10. As a result, the suggested model is free of collinearity problems.

Table 12: Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	-41.184	11.940		-3.449	.001		
	Total Debt to Total Asset	-6.517	3.593	-.422	-1.814	.073	.152	6.571
	Leverage	-.366	.230	-.327	-1.593	.114	.195	5.117
	Long Term Asset	6.110	8.695	.178	.703	.484	.128	7.827
	Fixed Asset Rate	-11.100	4.807	-.460	-2.309	.023	.208	4.814
	Firm Size	2.590	.603	.822	4.298	.000	.225	4.442
a. Dependent Variable: Return on Equity								

Regression results indicates that TDTA, LR, FAR has negative influence on ROE, in other words if TDTA, LR, FAR increases then ROE decreases. LAR and Firm size have positive influences on ROE.

5.3.4 Impact of Capital Structure on Net Profit after Tax (Model 4)

Table 13 represents that, there is a strong positive correlation between capital structure and NPAT. Together, the indicators of capital structure have a multiple correlation value (R) of 0.794. And multiple regression value (R Square) of 0.630. It indicates that, about 63.0% change in NAPT can be explained by the change in capital structure.

Table 13: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.794[a]	.630	.611	256.61064	.630	32.079	5	94	.000
a. Predictors: (Constant), Firm Size, Fixed Asset Rate, Total Debt to Total Asset, Leverage, Long Term Asset									
b. Dependent Variable: Net Profit After Tax									

From Table 14, since F = 32.079, p = .000 implies that the regression model fits and is statistically significant. Also, it means that the data fit the model, or that the capital structure model enhances the capacity to forecast the outcome variable NAPT considerably. In other words, this conclusion implies that capital structure has a considerable influence on NAPT.

Table 14: ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	10561933.427	5	2112386.685	32.079	.000[b]
	Residual	6189807.732	94	65849.018		
	Total	16751741.159	99			
a. Dependent Variable: Net Profit After Tax						
b. Predictors: (Constant), Firm Size, Fixed Asset Rate, Total Debt to Total Asset, Leverage, Long Term Asset						

From table 15, the tolerance for independent variables in collinearity statistics is > 0.1, and the VIF < 10. As a result, the suggested model is free of collinearity problems.

Table 15: Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	-8335.751	755.555		-11.033	.000		
	Total Debt to Total Asset	-439.466	227.383	-.311	-1.933	.056	.152	6.571
	Leverage	-69.156	14.547	-.674	-4.754	.000	.195	5.117
	Long Term Asset	1092.678	550.216	.348	1.986	.050	.128	7.827
	Fixed Asset Rate	-1147.985	304.200	-.519	-3.774	.000	.208	4.814
	Firm Size	416.834	38.142	1.444	10.929	.000	.225	4.442
a. Dependent Variable: Net Profit After Tax								

Regression result indicates that TDTA, LR, FAR has negative influence on NPAT, in other words if Total TDTA, LR, FAR increases then NAPT decreases. LAR and Firm size have positive influences on net profit after tax.

6. Conclusion

The capital structure is a critical issue in today's business environment. Developed countries have previously attempted to comply with the principles of a sound capital structure. In response to global demand, developing and emerging nations are also attempting to implement capital structure mechanisms in their businesses. Bangladesh is a promising country that is growing quickly in terms of economic growth. In this approach, the country is also attempting to develop a capital structure system in companies in order to enjoy the benefits of it. The goal is to improve business performance and, eventually, the economy's development. In Bangladesh, capital structure regulations and recommendations are expected to be followed by companies. Firms are likewise attempting to stick to these requirements. However, the issue remains: is compliance with such guidelines improving or affecting business performance? This study was carried out in order to find the answer to this question.

This study aims to examine the influence of capital structure on firm’s performance using a sample of 20 Bangladeshi Non-Banking Financial Institution and Insurance companies for the period 2015–2019.

This study discovered both positive and negative effects of capital structure on firms performance. Regardless of the direction of links and implications, capital structure indicators have been proven to have a significant impact on company performance in Bangladesh. Instead, the impacts and relationships are weaker in ROE, Higher on EPS, ROA and NPAT. These finding suggest that further research should be done to determine more accurate impacts and linkages. Studies should also be done to determine

how the influence of capital structure might be amplified to enhance the performance of DSE listed Non-Banking Financial Institution and Insurance Companies. Further studies can be conducted with combining more industry data from extended time period to arrive at a more realistic scenario in future.

7. Limitation of the Study

There may be some limitations to this study. The internal operations of a corporation are influenced by its capital structure and performance. As a result, most businesses do not disclose their actual financial information. On the other side, there is a time limitation and, for these reasons, research is organized hastily, which does not produce high accuracy. Due to a lack of relevant information, one is bound to assume. The aspects of these study may be lacking. Again, because this study is based on secondary sources of data, the majority of the data is collected from the firms' annual reports. Some of the data is not widely obtainable in the annual report, and the firm may not reflect the actual information honestly in some situations.

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Incumbents' Ability to Delegate Power and Authority and its Impact on Succession Planning in Family Owned Firms of Bangladesh

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Abstract

The present study focuses on incumbents' ability to delegate power and authority affecting succession planning in family owned firms of Bangladesh. Case studies have been conducted on a few second or subsequent generation family owned firms. Incumbents and successors have been interviewed to understand the corresponding incumbents' ability to delegate power and authority and its impact on their succession planning behavior. Interviews have been transliterated and analyzed using suggested tools. In some cases further investigations have been made to explain the specific type of relation of the variables in the case(s). Findings of the study may be helpful in understanding the importance of ability of the incumbents to delegate power and authority in succession planning in family owned firms of Bangladesh.

Key words: *family owned firms, succession planning, incumbents, delegation of power and authority.*

1. Introduction

In the new global economy family owned firms play significantly important role (Ibrahim, Soufani and Lam 2001). It has been observed that family owned firms account for the majority of the whole businesses in different countries. They also have strong contributions in the growth of the national economies (Chrisman, Chua and Steier 2005; Gallo 1995; Ibrahim and Ellis 1994; Lank et al. 1994; Nordqvist 2005; Poutziouris, O'Sullivan and Nicolescu 1997; Poza 1995). In every small and medium sized family owned firm succession is a common phenomenon and it is considered as the most critical issue in those firms (Ibrahim, Soufani and Lam 2001). Therefore, a proper succession process is important in selecting the most appropriate leaders for the firms and their survival in long run (Ibrahim et al. 1999; Ward 1987).

Succession is a very complex issue in family businesses (Dyer 1986; Lansberg 1999; Miller, Steier and Le Breton-Miller 2003). It has been observed from studies that succession plan helps in successful succession (Ibrahim, Soufani and Lam 2001; Lambrecht 2005). Despite of importance, many family owned firms lack succession plan, which might be caused by resistance of the incumbents. Lansberg (1999) shows that those incumbents are reluctant to empower their offspring in the family businesses in fear of losing control. Because of this nature of the incumbents, most of the family firms

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lack succession plan, which could be responsible for the failure of the family owned firms in many instances (Ibrahim, Soufani and Lam 2001).

Therefore, it is important to understand factors that are responsible for resistances of the incumbents in making a sound succession plan that is needed for successful succession in the business. This paper examines incumbents' ability to delegate power and authority and its impact on succession planning in family owned firms in Bangladesh.

2. Definition of Family Owned Firms

Organizational types are generally identified by industry, sector, structure (Mintzberg 1979), or strategy (Miles and Snow 1978; Miller 1983). But according to Nordqvist and Boers (2007) family firms should not be attempted to classify under the form of concentration or dominant ownership structure such as, sole proprietorship or partnership, state ownership or private, bank or non-bank organizations, etc. They may be viewed instead as an alternative organizational typology that crosses all these segments (Craig and Moores 2006).

The definition of family owned firm is ambiguous and scholars have not reached at consensus in fixing suitable criteria for defining them (Hienerth and Kessler 2006; Handler 1989). Shanker and Astrachan (1996) has defined family owned firm from three different views. In a broader type of definition they have recognized those as family owned firms in which the family has some degree of effective control over strategic direction and which is intended to remain in the family. In the middle level of definition, they have added further criteria that the founder or descendent(s) runs the company. The narrowest definition given by them says that the business should have multiple generations' involvement; direct family involvement and more than one member(s) from that family have significant managerial responsibility.

Cronqvist and Nilsson (2003) & Andersson and Nyberg (2005) stated that when a descendant or other member of the family of the founder has at least 25% of the ownership and/or control of the firm, then the firm will be regarded as a family owned firm. Miller and Miller (2006) consider one as family owned firm that is partly owned by one or more family members who together control at least 20% of the total votes outstanding. Single proprietorship firms have been defined as family firm by Santarelli and Lotti (2005) in their study. For distinguishing family firms Lin and Hu (2007) have used a criteria that consist of (a) the largest group of shareholders in a firm is a specific family, and (b) the stake of that family is no less than 10 per cent of the voting shares. On the other hand, Astrachan and Shanker (2003) have mentioned several criteria for defining family firms. Two vital criteria of them are (i) how much percentage of ownership the founder family has in the firm and (ii) if the family has strategic control over the firm.

The present study considers firms with the following criteria as family owned firms:

(i) If the founder (or the founders of the same family, in case of multiple founders) or descendant(s) of the founder (or founders of the same family) or their spouses hold more than 50% of ownership of the business;

And/or

(ii) If the founder (or any of the founders, in case of multiple founders) or descendant(s) of the founder(s) or their spouses serves as Chief Executive Officer (CEO) or Chief of the Business (COB).

3. Succession Plan and its Importance

Succession often considered as 'the most important and critical issue in the family business.' It is a proper succession planning process that provides the family owned firms with the opportunity to select effective leaders (Ibrahim et al. 1999). A study shows that the tension and conflict typically plague family owned firms due to the absence of proper succession planning (Ibrahim, Soufani and Lam 2001). According to Barry and Jacobs (2006), succession planning is the process through which companies plan for the future transfer of ownership. According to Lambrecht (2005), family business and succession have a close relationship and planning can play a key role for successful succession in the firm. Most of the researchers commonly believe that there is need for a long term 'formal succession plan' in the family owned firms (Danco 1982; Kets de Vries 1993; Ward and Aronoff 1992; Ward 1987; Williams 1992).

4. Delegation of Power and Authority and the Research Question

A few studies indicate a relation between the failures of the succession in the firms with the desire of the incumbents for authority. Sonnenfeld (1991) introduces four types of retirement styles of founders of the family owned firms. 'Monarchs' are one of those four types where the founders do not leave until they are forcefully ousted or die. 'Generals' also leave the positions of the firm only when they are forced out. But they maintain a desire to return in the name of rescuing the company from an 'inadequate successor'. 'Ambassadors' have a succession plan and they leave the firm willingly though afterwards they act as advisors to the firm. 'Governors' rule for a term and then they move on to pursue other ventures. 'Monarchs' and 'Generals' are responsible for problematic succession, while 'Ambassadors' and 'Governors' help in successful succession in family owned firms, where both type of incumbents leave the firm to successors. Therefore, for a successful succession, timely delegation of power and authority is essential. Lambrecht (2005) shows that incumbents' ability to delegate power and authority that they enjoyed the business, significantly increases the chance of a successful succession. But it has been mentioned earlier that many incumbents are reluctant to empower their offspring in the family business in fear of losing control over the business that ultimately makes the succession planning difficult (Lansberg, 1999).

According to De Massis *et al* (2016) knowledge about antecedents of intention of the incumbents in intrafamily succession is fragmented. Authors suggested examinations of those antecedents in more depth. According to De Massis, Chua and Chrisman (2008) for a successful succession incumbent must have intention to transfer leadership to the next generation who is known as successors. Very few researches have focused on incumbent related factors that affect succession planning behavior of the incumbents (De Massis *et al*, 2016). Therefore, it is important to study incumbent related factors and their impact on succession planning in family owned firms. The present study aims at exploring *how the incumbents' ability to delegate power and authority does affect succession planning in family owned firms of Bangladesh*.

5. Methodology

Researchers in the area of family business largely use qualitative method (Shanker & Astrachan, 1996) and this method suits best in this area of research (Haberman & Danes, 2007). Case study is considered as the best strategy of research when 'how?' and 'why?' questions are asked about the set of events (Chetty, 1996). It has been mentioned earlier that this paper explores 'how' the incumbents ability to delegate power and authority does affect succession planning in family owned firms of Bangladesh. Therefore, case study is the most suitable strategy for the present study. The study applies multiple case studies where six cases have been selected, three from Rajshahi district and remaining three from Naogaon district. The outcomes of the six cases have been compared to test whether the findings from the one replicate in the others or not.

Interview method has been used as primary means of data collection. Semi structured questionnaire was prepared with an objective to use them as a guideline to conduct the interview session. Because the fact that the interviewees of the study are the incumbents and/or the successors of the firm and as a result it was difficult to manage more than one session of interview with them, the study requested a comprehensively long session of interview from them. Five out of six interviews have been audio taped with permission of the incumbents of the respective firms. In one case permission to audio tape of the interview session was not granted by the interviewee and hence the interview was transliterated at the time of interview. In all cases interviews have been conducted in the business or factory premises of the respective cases. For analyzing the interview data the model suggested by Walker *et al.* (2008) has been used. As part of research ethics the original name of the firms have not been used here but presented as case numbers and industries they belong. Because of the same reason the interviewees' full names have not been disclosed.

6. Discussion

Case 1: Silk Factory

From the study it is observed that the incumbent of this case Mr. Ali has a clear planning about which responsibilities to be delegated to others and which to retain with him. The factory was started with a single loom and during those days he used to sell his products

by himself from door to door. At one stage when the factory gradually expanded to 100 looms and many showrooms outside the country during heydays of sericulture industry of Bangladesh, he had to delegate some basic works by deploying workers. The study finds that the incumbent has high ability to delegate power and authority in management related works. But those delegations are well assessed by the incumbent. He has introduced his elder son (the successor) in the management of the business in 2002 after his MBA graduation. The successor is responsible for managing supply chain of the firm. The successor is also responsible for managing almost everything outside the factory. Mr. Ali has also introduced his daughter in law, spouse of the elder son, for managing the showroom. Mr. Ali says,

"I want that my daughter in law should not only be my son's life partner, but also a business partner."

It is observed that Mr. Ali is satisfied with the performance of his elder son and the daughter in law. He showed his dependence on them for the roles that they perform in the firm. But when it is asked why he did not give his son the responsibility of the factory, he replied,

"He is still not sufficiently prepared to manage production. It is very difficult…. He will not be able to handle production as efficiently as he can handle the government offices and external problems."

Therefore, Mr. Ali is satisfied with the responsibilities he has assigned to his son. But still he does not want to give responsibilities like production to his son and he believes that his successor will not be able to handle that properly at the moment. Therefore, Mr. Ali uses planned and calculated delegation of power and authority to the successor.

For office management and accounting, he has employees. A General Manager is responsible to look after those tasks. He said,

"I don't spend that much time for accounting. My General Manager looks after them and he is very honest."

This part of interview shows that Mr. Ali has ability to delegate power and authority not only to his successors but also to his managers whom he thinks reliable enough. Thus the study infers that the ability of Mr. Ali to delegate power and authority is high.

Case 2: Readymade Garments

It has been observed that the Incumbent, Mr. Sazu, has resistance in delegation of power and authority. He has delegated only those powers and authorities which he feels he is bound to delegate due to increased volume of his tasks. He said,

"I work as the chief of the business. Actually it is important to keep all responsibilities with myself. None of them can be delegated properly. But a few of them such as marketing have to be delegated. I have given the responsibility of procurement and marketing to others."

According to him, CEO position of the firm is not to be delegated. He feels that everything of the business depends on that position. Thus this position should not be delegated. He said,

"I never want to delegate the administrative responsibility to others as everything of the business depends upon this."

It is found from the study that Mr. Sazu has delegated procurement and marketing related responsibilities to his brothers and relatives. Therefore, he relies less on employees who are not members of the family. Again he did not delegate accounts related matters to others. He manages that part of the responsibility by himself with assistance of his one long tested employee who is not from his relatives.

Again his expectations about performance from his employees are also low. He said,

"I never expect that my employees will fulfill 100% of my expectations from their work. I expect achievement of 65-75% from them."

When it was asked "do you take the responsibility back?" he replied,

"Yes. I always monitor after giving any responsibility to anyone. I take them back if I find that they failed to achieve the desired target. But I provide them with all support if they are in any sort of trouble as it is my responsibility."

From above analysis the study concludes that Mr. Sazu has lower ability of delegation of power and authority to his employees. Incumbent has selected his elder son as the successor of the business who is at present in the post graduation level of business education. The successor has not been introduced in the business yet and as a result the incumbent's ability to delegate power and authority to his successor could not be examined.

Case 3: Garments

Delegation of power and authority has been evident in this firm. Most of the operations at present are supervised by the successors. The incumbent Mr. Alif monitors the performances of the successors. In special situations the incumbent performs some activities related to operations on an irregular basis. One of the successors Mr. Arif says,

"The delegation of power has been gradual. Once he (incumbent) used to do the works of tailoring. At present this has come down to monitoring and in some cases purchasing of a few specific type of raw materials."

The most sensitive function of the business, i.e., maintaining accounts has been given at the control of the successors. Mr. Arif added,

"The responsibility of accounts is fully on us. We look after that part. In addition, supervising the managers to workers to customers, these are all our responsibilities. Father has delegated these areas on us in full. He does not even interfere in these matters. We feel that there is no difference between our role and an owner's position in a business…."

As the incumbent does not interfere in those matters and the successor asserts his position like the owner, this indicates that the incumbent has successfully assigned those responsibilities to his successors and he feels confidence on his successors about their performances on those assigned roles in the business. But a few roles are still at the control of the incumbent. Mr. Arif says,

"The only difference is that he has kept a few things in his hand such as selection and firing of employees, salary related matters, expansion of business, decoration of business, etc."

When it was asked 'did the incumbent ever took back any responsibility from you' Mr. Arif said,

"…. I should add that before I joined my present job in the Bank, I had full authority in procuring raw materials, especially for the readymade unit. But after joining the Bank, father does it by himself. He used to take me to Dhaka for purchasing cloths. He showed me all such as from where to buy, how to select good quality cloths, how to deal with price and payments, etc. Now I have to remain busy in the bank that's why he has taken that responsibility back. I can understand this."

Therefore, it is observed from this part of interview that the incumbent Mr. Alif has good ability to delegate power and authority to his successors. He has delegated powers and authorities to his successor(s), not to employees. Again, once he took back delegated authority from his successors. But that withdrawal of delegation of authority was because of the successor's involvement elsewhere from the business. That did not happen due to the fact that the incumbent was not confident or satisfied with the performance of the successors. By considering all these, the study infers that the incumbent of this firm has high ability to delegate power and authority to his successors.

Case 4: Trading Firm

It is observed that the incumbent Mr. Mondol has ability to delegate power and authority to his partner and subordinates. Operations of his firms are managed by his managers. He said,

"I have a manager for each sector. They are employees. They are responsible for their department."

But it is noticed that Mr. Mondol is very cautious in his selection of those managers and he believes in them. He said,

"They (managers) are selected from our nearest ones such as my own relatives, brother or son of my friends. The benefit is, they are very reliable. Our investment in every sector is very high. A little mistake will cause huge loss. That's why we have to take this caution in the selection of people."

From this part of discussion, it is observed that Mr. Mondol relies more on known people than on paper based skill of unknown people. His monitoring on the managers is also

very close. Mr. Mondol did not delegate accounting related responsibility to managers. But his partner looks after that and he is fully confident on his ability. Mr. Mondol said,

"….but I was never happy in giving the accounting to others. I have given that responsibility to Shushen (partner). I don't like that others take that responsibility."

Dependence of the incumbent on his partner has been observed. At one stage Mr. Mondol said,

"Shushen is my partner. We are together from the beginning. I shall not be able to do anything without him and he will not be able to do anything without me."

From above discussion it is evident that Mr. Mondol has high ability to delegate power and authority to his reliable employees and partner.

Case 5: Automatic Rice Mill

The incumbent of this firm Mr. Mukul provides contradictory statements in response to questions intended to test his ability of delegation of power and authority. When it was asked which responsibilities he has retained with him, he said, *"I am involved with planning only. I make plans and they (workers) execute my plans."* Later it was understood that he has kept operations, accounts and other important matters to himself. When it was asked 'which responsibilities have you delegated to others', he said,

"I have delegated nothing. I have retained everything to myself. But during my early age I used to procure rice from source riding on my own bike, which is not a case now. Now my quality manager performs those tasks. But I still negotiate with the suppliers. I personally deal with the financial matters and selling the products."

By analyzing these two contradictory statements it is found that Mr. Mukul supervises every major activities of his business. He has assigned managers who perform tasks like procurement of raw materials or marketing of finished goods. He has delegated those tasks that have become difficult for him to perform by himself. Despite of this delegation, he still supervises those tasks.

It is found that Mr. Mukul has delegated tasks to his employees who are not his relatives. He relies on skill of his employees. He said, *"I tell the seller of rice that I am sending my employee. Give him the type of rice that he wants. I shall pay through banks."* He has confidence that his employees will be able to procure his desired quality rice.

But he does not believe his employees on financial matters. In response to the question 'which responsibility do you not like to delegate', he said, *"I shall keep financial matters and marketing in my control."* He does not want to give financial matters to his employees because he thinks that his employees are not honest enough in this respect. He is much cautious on this matter.

Therefore, it has been observed that Mr. Mukul has delegated a few power and authority to a few of his trusted employees. Still he does not believe in their honesty. And Mr.

Mukul retained most of the important matters of the business with him. Even he did not give up continuous monitoring of those tasks which he has delegated to others. Thus the study concludes that Mr. Mukul has low ability to delegate power and authority to his employees. But as he has not introduced his successors in business, his ability to delegate power and authority to his successors could not be studied. It is observed that Mr. Mukul wants his elder son in the business but does not want to bring him or second son in the business soon. When it was asked, "whom do you want to see as successor of the business?", he said, *"My elder son... I shall provide for both of my sons. But I shall not bring them into business until I have ability to look after my business by myself."* From all these low ability of Mr. Mukul to delegate power and authority has been concluded in this study.

Case 6: Trading and Jute Manufacturing Firm

Incumbent of this firm Mr. Rahman has delegated many of his responsibilities to his employees/managers. He has shown satisfaction with their performance. He said,

"At this moment I have manager to supervise my other businesses. I was very careful during their appointment. They are working there for a long time. I monitored them closely after their appointment. I regularly observed their performance. The present workers' performance is satisfactory."

Despite the fact that Mr. Rahman had to delegate a few power and authorities to his employees or managers, he does not believe in their ability or honesty. He said,

"But it is not possible to depend on them in full. I cannot rely on them cent percent when I have to buy raw materials in bulk quantity. I don't believe that my managers/employees will carry the business on behalf of my family honestly or sincerely in my absence."

But it is found that Mr. Rahman could delegate power and authorities more confidently if he had already introduced his successors in the business. He said,

"There is no such problem in the case of my sons. It is the business of my sons. They are everything of the business in absence of the father. Sons must possess more attachment with the business than the employees."

It is also observed that Mr. Rahman takes back delegated power and authority from his employees when he finds lack of efficiencies in them. A contrast has been found in case of a manager who is now responsible for managing entire operations of his original trading business. He has assigned entire power and authority to that manager of trading business. He said,

"But the manager that I have in my trading business is efficient. I have assigned almost all responsibilities to him of that business. He is working for the last 15 years. I have trained him personally. During his initial years he used to make a few mistakes. But I kept patience and now he has become an expert. He supervises that business. Actually I don't have time for that business and I have to depend on him."

Considering the behavior of Mr. Rahman that he has successfully delegated power and authority of his original business to one of his employees and in contrast he cannot rely on other employees or managers in full when he assigns power and authority to them, this study concludes that Mr. Rahman has moderate ability to delegate of power and authority.

Findings

Table 1 shows that ability to delegate power and authority of the incumbent is high in Case 1, Case 3, and Case 4. It is moderate to high in Case 6 while low in Case 2, and Case 5. When this incumbent related factor is compared with succession planning and level of succession, it is found that, the incumbent of Case 1 has high ability of delegation of power and authority while there is written succession plan and the firm has achieved advanced level of progress in succession. The Case 3 also shows high ability of the incumbent to delegate power and authority and it also has well planned but not written succession plan, while the firm has achieved advanced level of succession. Another firm, Case 4, also shows high ability of the incumbent to delegate power and authority. But in this case the firm does not have any succession plan and there is no progress in succession in the firm. Case 6 shows moderate ability of the incumbent to delegate power and authority and well planned but not written succession plan with initial level of progress in succession. On the other hand incumbent of Case 2 has low ability to delegate power and authority. But the firm has well planned but not written succession plan while the firm has not achieved any progress in succession. Another firm, Case 5, also shows low ability of the incumbent to delegate power and authority. In this case the study did not find existence of succession plan and also no progress in succession has been achieved.

Table 1: Summary of the Cases

	Case 1	**Case 2**	**Case 3**	**Case 4**	**Case 5**	**Case 6**
Ability to Delegate Power and Authority	High	Low	High	High	Low	Moderate
Succession Plan	Well planned and written	Well planned but not written	Well planned but not written	Not planned	Not planned	Well planned but not written
Successor	Son	Son	Sons	Not identified	Sons	Son
Successors' involvement in the business	Advanced level	Not started	Advanced level	Not started	Not started	Initial level
Level of succession	Advanced level	Not started	Advanced level	Not started	Not started	Initial level

From Case 1, Case 3, and Case 6 it is observed that the incumbent has high or moderate ability of delegation of power and authority and the firms have succession plan and an achieved progress in succession. Exception is Case 4, where the incumbent shows high ability to delegate power and authority, while the firm does not have succession plan or any achieved progress in succession. Considering these four cases, it can be inferred that a high ability of the incumbent to delegate power and authority may positively affect the existence of succession plan and that may help achieving progress in succession in the firm. But the contrasting scenario in Case 4 may implicate that a high ability of the incumbent to delegate power and authority may not guarantee an existence of succession plan or an achieved progress in succession in the firm.

On the other hand, from the analysis of the Case 2, and Case 5 it has been found that the incumbent has low ability to delegate power and authority. Though the incumbents of these two cases commonly have low ability, Case 2 have well planned succession plan while Case 5 does not have any succession plan. In both of the cases the firms do not have any progress in achieved succession. Therefore, it can be concluded from these two cases that a low ability of the incumbent of delegation of power and authority reduces the probability of existence of succession plan. It reduces the probability of achieved progress in succession even to a greater extent. Another observation from these two cases is that, in both cases the incumbent have not introduced their son(s) in the business yet. That may be a cause of their lower demonstration of ability of delegation of power and authority. In other words there may be a social situation where incumbents of Bangladesh delegate lower power and authority to their non-offspring employees. Therefore, there may have an association between lower ability of the incumbents to delegate power and authority and delayed introduction of their offspring in the business.

It has been observed in this section that, ability of delegation of power and authority has a positive relation with succession plan and achieved progress in succession in the family owned firms. Only exception has been the Case 4, where the incumbent shows high ability to delegate power and authority, while the firm does not have succession plan or any achieved progress in succession. There is every possibility that a few other incumbent related factors might be responsible for this exception in Case 4. For this reason the study went into further investigation to explore possible causes of this outcome. This has been observed that Case 4 is a partnership business where the incumbent owns 75% and the rest is owned by his partner who is his friend. The business was established by the incumbent's father. It has also been found that the incumbent has low ability of self reflection. He has not been successful in his previous career in politics. It has also been found that the incumbent is not satisfied with his present business performance and achievements.

An important factor that has been identified is that, the incumbent of Case 4 has three offspring, first two are daughter and the youngest one is a son. First two daughters are 22 and 18 years old respectively and the son is 11 years old. The incumbent of the business is Hindu in religion while the incumbents of other five cases are Muslims. The incumbent, at one stage of the interview said, according to conventional Hindu culture, daughters are not entitled to property of their father. That might have affected the incumbent of the business for not thinking about his daughters as successor of the business. The third offspring, who is a son, is 11 years old. He is too young to think about bringing him as a successor in the business.

To understand this situation in Case 4 the study analyzed findings of previous studies on this area. In the study of Sharma, and Rao (2000) where family owned firms of India have been compared with that of Canadian firms and the study finds lower profile and role of women in Indian family owned firms. It was also found that incumbents of Indian family firms rate successors' gender and their birth order as more important factor than that of Canadian family firms. In another study Getz and Petersen (2004) show that life stage of parents and children affects succession. Findings of these two studies explain the probable cause of behavior of the incumbent of Case 4 as both India and Bangladesh belongs to South Asia which has almost a common history and cultural background for these countries. Therefore, it can be concluded that despite of high ability of delegation of power and authority, the incumbent might not have succession plan for his business because of the fact that his first two offspring are daughter and that's why he did not want to bring them in business. His son is too young in age to think about him as successor in his business. It is also possible that the present dissatisfaction of the incumbent about his business and its future may create apathy in the incumbent that may lead to non existence of succession plan and achieved progress in succession in the business.

Because of these exceptions, Case 4 may be ignored to infer on the relationship of the factor with the existence of succession plan and achieved progress in succession in the firm. Thus considering other cases and outcomes of those cases it is inferred that, ability of delegation of power and authority of the incumbent has a positive relation with succession plan and achieved progress in succession in the family owned firms of Bangladesh.

Conclusion

From observations of the study from Case 1, Case 3and Case 6 it has been observed that the incumbent has high or moderate ability to delegate power and authority. Observations also reveal that these firms have succession plan and an achieved progress in succession. Exception has been observed in Case 4, where the incumbent shows high ability to delegate power and authority while the firm does not have succession plan or any achieved progress in succession. Further investigation ensures that Case 4 has a few features that may have created differences. Thus, considering three cases, it has been inferred by the study that a high ability of the incumbent to delegate power and authority

may positively affect the existence of succession plan and that may help achieving progress in succession in the firm. But the contrasting scenario in Case 4 may implicate that a high ability of the incumbent to delegate power and authority may not guarantee an existence of succession plan or an achieved progress in succession in the firm because of other hindering factors.

On the other hand, from the analysis of Case 2 and Case 5 it is found that the incumbent has low ability to delegate power and authority. Though the incumbents of these two cases commonly have low ability, Case 2 have well planned succession plan, while Case 5 does not have any succession plan. In both of the cases the firms do not have any progress in achieved succession. Therefore, it has been found by the study that a low ability of the incumbent to delegate power and authority reduces the probability of existence of succession plan though a incumbent with low ability of delegation of power and authority may approach with succession plan in the business. The study further infers that a low ability of the incumbent to delegate power and authority reduces the probability of achieved progress in succession even to a greater extent. The present study also proposes a probable association between lower ability of the incumbents to delegate power and authority and delayed introduction of their offspring in the business. Further research is suggested to study such type of association between these factors.

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Exploring Tourism Opportunities in Protected Areas of Bangladesh: A Thematic Analysis

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Abstract

Despite having tourism potential, research on identifying and utilizing tourism opportunities for tourism development is minimal. Hence the study aims to explore tourism opportunities in protected areas of Bangladesh. The study employs in-depth interviews under a qualitative research approach to achieve the objective. A total of 34 respondents from the stakeholders of different protected areas have been selected purposively. The forest department staff, NGO representatives, local community leaders, hotel and restaurant owners, and tourists are the respondents of this study. Thematic analysis has been applied to analyze the collected data. After analyzing respondents' responses collected through in-depth interviews, five main themes and 15 sub-themes of tourism opportunities have been identified. Based on the findings, the notable theme, information and communication technology, has been explored as a new dimension of tourism opportunity. The study findings will benefit the concerned authority in understanding tourism opportunities and help to take necessary steps for tourism development.

Key words: *Tourism opportunities, Protected area, Ecological environment, Physical facilities, Socio-cultural environment, Information and Communication Technology (ICT)*

1. Introduction

In many countries around the globe, tourism, especially in protected areas, has been recognized as a tool for community development and biodiversity conservation due to the diverse features of protected areas (Melita & Mendlinger, 2013; Spenceley et al., 2021; Zachrisson et al., 2006). Protected areas are considered sustainable and suitable tourism destinations (Bhammar et al., 2021). Due to the COVID-19 pandemic, people are more conscious about health & hygiene and avoid gatherings and crowded places. As people were restricted from going out for an extended period, now they are looking for a natural, genuine, and secure place to refresh themselves individually or with friends and family. In addition, an increase in domestic visits to the protected areas has been noticed as people have been choosing parks for their overall well-being during the pandemic (Spenceley et al., 2021). Protected areas in different countries are attracting tourists as the safest tourism destination.

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Tourism in protected areas plays a role in community development as it is considered a tool to generate foreign exchanges for countries with protected areas, national parks, wildlife, and forests (Bhammar et al., 2021). Protected area tourism contributes to GDP and is a source of revenue and local livelihood (Balmford et al., 2015; S. L. Snyman, 2017). Countries dependent on tourism are now emphasizing physical facilities, economic restructuring, socio-cultural issues, and nurturing ecological characteristics of protected areas to attract tourists and give maximum satisfaction (Bhammar et al., 2021). Furthermore, the potential for protected area tourism expansion could be significant and increase local income and meet ecological development if managed properly (Ahmed & Bartlett, 2018).

Different countries have been earning a handsome amount of foreign currency and solving the unemployment problem. In East Africa, Vietnam, Tanzania, Malaysia, and New Zealand, job opportunities have been created due to protected area tourism development, reducing the communities' dependence on natural resources. Hence, protected area tourism is considered a key component of export income for such countries (Markowski et al., 2019a). In addition, a study conducted in the Andes in South America reveals that although it is a protected area, it has become popular with increased tourism, recreation, and visitation (Barros et al., 2015). Thus, it is important to recognize the tourism opportunities in protected areas and utilize them for tourism development. However, opportunities may vary based on the features and characteristics of the country and the protected areas.

The protected area of Bangladesh is full of different species and habitats and has the potential for tourism development (Dey et al., 2020a; Hossain & Khanal, 2020). However, studies undertaken in the protected areas of Bangladesh mainly focus on biodiversity conservation, forest land concession, land rights, governance, forest dependency, co-management, and local communities' perceptions towards tourism (K. Islam et al., 2019; K. K. Islam & Hyakumura, 2019). There is some evidence of a few more studies that mainly focus on the present and future of tourism, a quick look at the economic contribution of the tourism sector, and tourism marketing in Bangladesh (Al-Masud, 2015; Roy & Roy, 2015), while research on identifying and utilizing tourism opportunities in the protected area for tourism development is limited. Therefore, this study is undertaken to locate and explore diversified tourism opportunities that may attract tourists and fill the existing literature gap. Thus, the main objective of the present study is to identify and explore the tourism opportunities in protected areas of Bangladesh. Due to its abundance of tourist attractions, protected areas are crucial for national tourism. Therefore, analyzing its tourism potential can help to effectively foresee demands, fill up gaps, and grow the tourism industry.

2. Literature Review

Tourism Opportunities Related to Ecological Environment

The protected areas as tourism sites offer many opportunities for tourism development (Puppim de Oliveira, 2005). Tourism in protected areas provides financial benefits for the protected areas and the local communities (Bushell & Bricker, 2017; S. Snyman & Bricker, 2019). Among diversified attractions, excursions**,** wildlife watching, sightseeing, pleasure and adventure trips, exploring indigenous culture, and observing various mammal species are most common (M. W. Islam, 2010; Lyngdoh et al., 2017; Markowski et al., 2019a). Moreover, the protected areas' rich biodiversity attracts tourists to such places. Pirkko Siikama¨ki et al. (2015) find a positive relationship between biodiversity and the number of visits. They also mention that the protected area with high biodiversity, species and habitat richness is highly visited. Thus, the biodiversity values of the national parks are rated high (Siikamäki et al., 2015). Moreover, along with rich wildlife tourists often visit protected areas to relieve their daily boring life or feel the calm and quietness of nature that is only possible in protected areas (Ghosh & Uddhammar, 2013; Zachrisson et al., 2006).

Many authors declared that protected area conservation and tourism are conflicting (aduabuchi Ijeomah, 2012; Zachrisson et al., 2006), whereas others claimed tourism is a tool for conservation because there is an enormous scope of generating alternative income along with creating awareness regarding natural resources conservation (Islam 2010). So tourism in protected areas has been encouraged, taking into consideration of carrying capacity.

Tourism Opportunities Related to Physical Facilities (Infrastructure, health, hotel/restaurant)

Before deciding to visit any destination, tourists consider different facilities such as infrastructure, washrooms, and safety. Protected areas should have some basic facilities and core tourism opportunities to attract tourists (HOSSAIN, 2020). Cape Range National Park, Australia, permits overnight stays along with day through camping with limited facilities (Moore & Polley, 2007). A. S. A. Ferdous Alam (October 2014) claims that respondents prefer a destination with proper transportation, accommodation, and available health and hygiene facilities. Moreover, tour guides and tour operators play crucial roles and act as a bridge between tourists and destinations. They utilize their knowledge and resources to provide the best services and motivate tourists to responsible tourism (Chan & Tay, 2016). However, tour operators need to have their own motivation. Many researchers concluded that avoiding a negative image or building a positive reputation is a motivator for tour operators (Adriana, 2009; Khairat & Maher, 2012).

Socio-economic opportunities

The availability of socio-cultural and economic opportunities attracts tourists to visit a destination. A. S. A. Ferdous Alam (October 2014) discovered three factors, namely, economy, environment, and community, which are important to develop tourism. Economic elements include money exchange facilities, tourist shopping, availability of gift and souvenir shops that attract tourists to visit. Community factors mostly focus on host-guest interaction, easy access to the local community, and good cooperation where local culture is exchanged. HOSSAIN (2020) revealed that safety and security are important when visiting a destination, whether solos or group visits.

Tourism Opportunities Related to ICT

Information and communication technology (ICT)is also important in tourism in this modern era. All credits go to technology; nowadays, people can access all needed information before visiting a place. Therefore, rich internet facilities are prerequisites, along with infrastructure and convenient communication for sustainable tourism (A. F. Alam et al., 2014). As ICT has offered a new platform for the tourism sector, the application of ICT has increased in this sector. The tourism distribution channels are now trying to improve their business performance by increasing communication across the channel members (Berné et al., 2015).

3. Research Methods

Interpretivism has been applied in the present study to explore and understand different tourism opportunities in protected areas from the point of view of participants (Cohen et al., 2007). The present study is descriptive and exploratory in nature. In this study, researchers attempted to uncover and evaluate respondents' views on envisioning tourism prospects in protected areas of Bangladesh. Hence, the sample was chosen from the three designated protected areas; the Sundarbans, Lawachara National Parks, and Satchari National Parks. A sample size of 10 is acceptable for qualitative research (Haque et al., 2016). A qualitative inquiry might also be carried out with the help of twenty respondents (Sandelowski, 1995). The researchers used a non-probability purposive selection strategy to pick 34 respondents. Respondents were selected from the protected area's key stakeholders as representatives of (the forest department, NGOs, community leaders, tour operators/guides, hotel/restaurant owners, and experienced tourists). The data were collected through face-to-face in-depth interviews with the respondents. A prior brief regarding the research topic was presented before the respondents, and oral and written consent was signed before starting the interview. The question paper was distributed before the interview so the respondents could mentally prepare themselves. The average duration of the interview was approximately 35 minutes. The entire interviews have been recorded with the due consent of the interviewees. Furthermore, in addition to obtaining prior consent from the participants before each interview, they had the freedom to discontinue their participation at any moment. After conducting 34 interviews, the researchers decided to stop as the information saturation took place.

As the study is qualitative in nature, the analysis of data follows inductive data analysis methods. The taped interviews were promptly transcribed into Bengali and subsequently into English. Following that, English language specialists reviewed the translated transcripts for reliability and validity, as well as to determine the genuine meaning of the participants' points of view. Later, the six stages of conducting thematic analysis were used to analyze the data. The researchers conducted the thematic analysis process manually. First, the researchers were gone through the transcripts line by line. The researcher used highlighters in different colors to identify every similar, dissimilar, relevant, and seemingly unrelated item and coded them based on respondents' references to different tourism opportunities and facilities to develop tourism in the protected areas. Here, various themes were identified based on the data collected. Verbatim quotations have been inserted instead of participants' real identities using pseudonyms to maintain confidentiality and anonymity.

4. Findings and Discussions

After analyzing respondents' responses collected through in-depth interviews, several issues regarding tourism opportunities in protected areas have been found. A detailed list of items of tourism opportunities has been presented in Table 1 below.

Table 1: Items of Tourism Opportunities

Items	Items
Vegetation	Availability of parking spaces
Soil	Conditions of walking trails
Water	Washroom, rest room and changing rooms
Fresh air/Oxygen	Waste disposal facilities
Carrying Capacity	Jetties for boats
Natural and Scenic Beauty	Food and beverage service provisions
Sightseeing	Tourist center, souvenir shops
Pleasure trip	The extent of use of transport
Sustainability of ecosystem	Shelters and leisure spot
Hiking	Cafeteria
Enjoyment	Safari park
Study tour	Eco-vehicle
Family tour	Signage
Corporate Picnic	Lack of onsite interpretation and animation
Seasonality	Information and signposting
Honey Collection	Security and safety
Houlok Gibbon	Health and governance
Wildlife	Exchange of cultural view
Bird watching	Indigenous community supports
Migratory birds	Conflicting tourists' behavior
Angling	Overcrowding

Items	Items
Calm and Quite an Environment	Tourists' experience, satisfaction & expectation
Pollution of water via human wastes	Money Exchange
Quality of roads	Tourists' shopping
Quality of existing maps and guides	The overall financial condition of the locality
Accommodation facilities	Sources of revenue
Restaurants and other shops	Contribution of tourism to the economy
Travel agencies	Profitability and satisfaction of tour operators
Transportation services	Tourists purchase a local commodity
Tour operating organizations	Economic benefits to the community
Convenient communication	Easily accessible information
Local community support	Mobile network

A total of 64 items were discovered primarily. Afterwards, based on the outcomes of the 34 in-depth interviews with key stakeholders, as well as the secondary literature study, all 64 items were consolidated and updated into 51 items, which were then grouped into five themes and fifteen sub-themes to explore tourism opportunities in the protected area of Bangladesh. Table 2 below represents the respondents' responses during the interview session and relevant themes related to tourism opportunities in the protected areas.

Table 2: Revised Tourism Opportunities and Relevant Themes

SL	Main items	Main themes
1	Vegetation Soil Water Fresh air/Oxygen Carrying Capacity Pleasure trip Hiking Enjoyment Study tour Family tour Corporate Picnic Honey Collection Houlok Gibbon Wildlife Bird watching Calm and Quite an Environment	**Opportunities Related to the Ecological Environment**
	Quality of existing maps and guides	

SL	Main items	Main themes
2	Accommodation facilities Restaurants and other shops Transportation services Tour operating organizations Availability of parking spaces Conditions of walking trails Washroom, rest room and changing rooms Waste disposal facilities Jetties for boats Cafeteria Safari park Eco-vehicle Signage Lack of on-site interpretation and animation Information and signposting	**Opportunities Related to Physical/Other Facilities**
3	Security and safety Exchange of cultural view Indigenous community supports Conflicting tourists' behavior Overcrowding Tourists' experience, satisfaction & expectation	**Opportunities Related to Socio-cultural Components**
4	Money Exchange Banking ATM Traditional shop Entry fee Tourists' shopping The overall financial condition of the locality Profitability and satisfaction of tour operators	**Opportunities Related to Economic Benefits**
5	Easily accessible and informative website Active in social media Availability of mobile network Digital Displays Computer-assisted Problem Solving	**Opportunities Related to Technological Facilities**

The following section summarizes significant results in implementing tourism opportunities dimensions and their relevant measurement variables in protected areas across five themes and fifteen subthemes. The first theme, ecological environment, creates sub-themes such as excursions, wildlife, a break from everyday life, forest trail hiking, and carrying capacity, all of which are reasons why tourists visit protected areas. The second theme, physical and other facilities, are connected to infrastructure, health and hygiene, and hotels/restaurants/cafeterias that motivate tourists. The third theme is socio-cultural components associated with safety, cultural viewpoint sharing, and communal behavior. The fourth theme, economic benefits, concerns financial transaction facilities and the exchange of monetary benefits. Finally, information and communication technology allows access to information and internet connection in protected areas.

4.1 Opportunities Related to the Ecological Environment

The protected areas of Bangladesh, especially forest-protected areas, are famous for their ecological richness. The evergreen nature and calm, quiet environment always be the center of attraction (M. Alam et al., 2010; Dey et al., 2020b; Hossain & Khanal, 2020; Mukul et al., 2018). Moreover, the protected areas are the habitat of various known and unknown animals. From the interview, it has been found that almost all the respondents agree that ecological components are the primary motivating factor to visit the protected areas. The variety of trees attracts nature lovers. Respondents argue that the protected areas' unique and diversified characteristics offer opportunities to develop tourism. Respondents express their opinions regarding ecological diversities as,

> *One of the main attractions of the protected areas is the countless trees. The trees have disappeared in many places, but here, they still survive. There was a tree of two hundred years in the Lawachara National Park. Tourists would come to look for that* trees. *People come here to see wildlife. In the early morning, animals come near the trail. There are a lot of wild roosters, and they can be found on the road if you arrive early in the morning. They go out to eat the rice or grains that fall in the middle of the road. (Interview No. 19, 20)*

While conducting interviews, multiple ecology-related factors come in front of the researchers, which could be utilized for successful tourism development. These factors have been grouped under a few sub-themes, such as excursion, wildlife, forest trail hiking, escape from routine life, and carrying capacity.

4.1.1 Excursion

People visit national parks for multiple purposes, along with friends and family. Most respondents express that national parks are perfect for visiting with friends and family to refresh oneself. They like the fresh air and calm, quiet environment. Some of the respondents express their opinions in this regard,

> *I have come here with my family. I came to see nature; I really like the green nature around me. This kind of green nature is not usually seen. (Interview No. 30)*

> *When you arrive, you are getting pure oxygen. Many people may never get attached to the soil and never get pure oxygen. There are many benefits to walking barefoot here. (Interview No. 8, 19)*

Along with the national park, famous mangrove forests, the Sundarbans also offer outstanding features of the plantation to attract tourists. The most mentionable one is respiratory roots which are only found in saline areas. However, visiting the Sundarbans Forest Reserve at any time is difficult as it is open only for a few specific months of the year. The respondents, during the interview, describe the beauty of the Sundarbans as,

> *The tourism of the Sundarbans is mainly dependent on tides. The mangrove forest of the Sundarbans is that the evergreen forest does not shed the leaves of the trees here as the wave swells. Because the trees have access to the water it needs, their leaves do not need to be discarded. Due to high tide, they change themselves to breathe. There are some Gewa trees in Khulna, but those trees have no roots. Again, the same Gewa trees in Sundarbans have their roots. The reason is that the water of Khulna is pleasant, and tides are there, but the water is not going up and down in the locality. Due to this, the trees are not changing themselves. But inside the Sundarbans, the trees change their system to save themselves. It is a matter of observation. (Interview No. 3, 13)*

4.1.2 Wildlife

The world heritage site SFR, LNP, and SNP are filled with assorted wildlife. As the Sundarbans are famous for the Royal Bengal Tiger, the world's most endangered animal Hoolock Gibbons exists in Lawachara National Park. The wilderness of Lawachara National Park (LNP) and Satchari National Park (SNP) are pretty much the same. The notable one is the ape, which is a tailless monkey. It is not seen anywhere in Bangladesh. Respondents explain,

> *There are six species of monkeys in Lawachara National Park. Other than this, there are wild pigs, deer, bears, leopards, wild boar, meso tigers, sajaru, almost all animals, 39 species of snakes, six species of spiders, 246 species of birds are also found in Lawachara National Park. The most endangered wild animal, Hoolock Gibbons habitat, is there in LNP (Interview No. 8)*

> *About 60 to 61 species of birds are found in the Sundarbans, of which 20 are Kingfishers. A rare duck species is in the Sundarbans; whose legs are green. Then, there are three to four types of Hawks. In addition, I will say there is a rare animal, the rarest being (more than the tiger) forest rooster, and they do not come in front of tourists; they go deep inside when they understand the presence of people. Another specialty is the spotted deer; its eyes are so beautiful that it is impossible to express in words. (Interview No. 13)*

Various salted fishes, and crocodiles, are always the center of attraction for tourists in the Sundarbans. Tourists come here and enjoy the beauty of deer, monkeys, crocodiles, and dolphins. Another tourist attraction is Karamjol Crocodile Breeding Center in the Sundarbans. Crocodiles of different ages are found there. According to one respondent,

> *Since it is a crocodile breeding center, crocodiles of different ages are available. Tourists get a chance to see one year to different years aged crocodiles. Besides, it is also a deer reproduction center. The primary purpose was to rescue injured deer from illegal hunters and treat them well. However, it also turned into a deer breeding center after a certain period. It is near Mangla Port, and there is no need to take prior permission before entry. (Interview No.5)*

Though wildlife is the main attraction for some tourists to visit SNP, LNP, or the Sundarbans, it is seldom happening that they watch or feel the presence of wildlife. Even tourists rarely get a glimpse of the Royal Bengal Tiger in Sundarbans because animals are open here and do not come near the foot trail during day time. Respondents say,

> *I heard that the Sundarbans is famous for the Royal Bengal Tiger. I tried to look, but we had entered the forest in groups, and there was no opportunity to see in such an environment. It was a pity that I did not see the tiger. Although it is said that deer, monkeys, and different species of animals can be seen here, we do not see any such animals while trekking in the forest. (Interview No 29, 11)*

However, a few small creatures sometimes attract tourists as they are not spotted elsewhere. Red Crabs and a particular type of squirrel are among them who have the power to stop tourists for a few minutes. In this regard, one respondent expresses his feeling as,

> *I have seen a lot of red crabs, but the problem is that whenever I go to see them, four or five people walk by me; that is why they go into the hole and do not come out. I, too, could not see anymore. Moreover, I saw a special type of squirrel today that I haven't seen anywhere else. I have visited India, and I have visited various protected forests in Bangladesh. I have not seen such squirrels anywhere. (Interview No. 28)*

4.1.3 Forest Trail Hiking

According to respondents, tracking in the forest for a certain period is an astonishing feeling. LNP, SNP, and the Sundarbans have some specific hiking trails. The trails are categorized as 'half an hour,' 'one hour,' 'two hours,' or 'three hours.' Government officials from different protected areas say,

> *We generally have 7/8 trails here in LNP. Most of the time, tourists walk on 'half an hour's trail and don't want to walk inside the forest. (Interview No. 1)*

> *There are three specific trails in SNP, though the first one, which is the half an hour trail, has been damaged due to flood. (Interview No. 2)*

> *There is a foot trail that is 1226 meters in length, and you can walk through the Sundarbans. (Interview No. 5)*

> *The foot trail that covers a distance of one and a half kilometers takes 40 minutes, and walking around the office compound takes about 20 minutes. Our ecotourism center can be visited within an hour. (Interview No. 3)*

There is not much to see on the half an hour and one-hour track. Tourists, especially college and university students, visit protected areas for educational purposes. They loved to walk in the forest for a long time and sometimes enter the deep forest. Respondent expresses,

> *Honestly, it was wonderful! After arriving at such a location, we did not experience fatigue since the atmosphere inside the forest prevented us from noticing the passing of time. (Interview No. 34)*

4.1.4 Escape from Routine Life

Travelling is a way to keep oneself away from daily routine life. Some people visit to stay away from the workload, avoid monotonous routines, or prefer tranquility. From the interviews, it has been confirmed that sometimes people revisit the destination only to spend some time with nature. The respondents make the following statements to express the reason for a repeat visit.

> *I have come here to relax and stay away from work stress for a while. I have visited the Sundarbans six more times before. It is a great place to stay away from the workload. The whole Sundarbans is a complete package of beauty. Every time I went to the Sundarbans, I felt new. Though trekking is risky, but silence in the Sundarbans is a huge thing (Interview No. 14, 28)*

> *I have come here for five days with my family. I just wanted to break my monotonous daily routine and stay near the green nature. I like the tranquility of the place; there is no substitute for Lawachara National Park to soothe yourself for a while from the hustle and bustle of the city. I think I am successful. (Interview No.10, 31)*

4.1.5 Carrying Capacity

Several hundred people enter LNP, SNP, and Sundarbans daily as tourists. They enter protected areas individually, in groups, or sometimes with friends and family. Again, when school, college, or university students come for a picnic or study tour, the group size becomes large, though the number of tourists should be limited in the protected area. However, there is no explicit instruction from the ministry regarding the carrying capacity. Responsible persons from the forest department say,

> *Tourists should be limited here. But the number of tourists is high, so the place sometimes becomes crowded. We cannot control the number of tourists. (Interview No. 1)*

> *I do not have specific instructions from the government or Bangladesh Tourism Board about how many tourists are allowed together per square kilometer. To my knowledge, I have not yet received such a policy, or I have not seen it. Suppose we can ensure that the number of tourists visiting our national park will be determined by carrying capacity. In that case, the harmful effects can be easily controlled, and the disturbance will be less. (Interview No. 2)*

Furthermore, the Sundarbans is open only for a limited time (Nov to Feb). Tours can be done all year round, but the problem is that travel spots are very coastal. Due to the coastal location, travel spots are in dangerous conditions for most of the year. The water is turbulent and too risky to visit. Due to this, tourists visit Sundarbans during the four months from November to February. There is a little bit of pressure at this time, and not possible to maintain carrying capacity always. Moreover, being crowded may hamper the tourists' level of satisfaction.

> *Tourists travel in very limited places for a limited time. We cannot take a group of 10 people this way and another group of 10 people that way. It is not possible to make such an arrangement. However, we try to go with as few tourists as possible. (Interview No. 14)*

> *First of all, the impression is lost; why so many people? So many people destroy the calmness of the destination. Then, it seems that there is no such thing as a quiet environment, and the purpose for which I came is remaining unfulfilled". (Interview No. 32)*

4. 2 Opportunities Related to Physical/Other Facilities

Two-thirds of the respondents opined that opportunities related to physical/other facilities are essential to protected area tourism development. Infrastructure, health and hygiene, restaurants, and cafeterias could be included in those facilitating opportunities (Ho et al., 2017). Respondents further emphasize that utilizing or adding those facilities will not only ensure tourism development in protected areas but also improve the livelihood of local communities. Diverse views regarding the facilities' utilization can be found during the interview session.

4.2.1 Infrastructural Facilities

Several factors are included in the infrastructural facilities based on the respondents' opinions during the interview session. The most notable ones are walking trails, adequate signage, the number of tour guides, transportation, and accommodation. As tourists walk on the trail or go hiking for a long time and enjoy nature, the condition/quality of walking trails with adequate direction and signage is essential to tourists. One of the respondents says,

> *If there is a trail, you have to walk through it. It will not harm nature, but tourists move around here and there when there is no trail, damaging nature. So it is vital to have a specific walking trail with sufficient direction. It should be*

> *such that people can easily recognize this is the way. When we went inside, there was no marked road near the sea and no direction to go; there was a chance of getting lost. There was no signage. I have seen an arrow sign with a tin sheet lately, but nothing is written on it. It would have been better to have written directions. (Interview No. 28)*

The condition and quality of walking trails are not good in LNP, SNP, and even in the Sundarbans. Though there are 3 to 7 walking trails in LNP, and SNP, only half-an-hour and one-hour trails are usable. However, every ecotourism center in the Sundarbans has at least one waking trail. The walking trails inside the forest are not good enough to walk on and have broken at some points, made of wood. Talking about this issue, respondent expresses opinions as,

> *The quality of the walking trail is average. When walking towards Khasia community, we have to pass two small ditches. We faced difficulties as we had children with us. My 6-year-old son asks me, 'Mom, why is there no bridge? (Interview No. 30)*

One of the government officials informs in this regard,

> *The foot trails inside the forest have broken down somewhere; repairs are underway; we need to repair them twice or thrice every year. See, this is a natural forest. The walking trail here will remain the same. We will not do anything to disturb nature here. We have tried our best without disturbing wildlife. (Interview No. 4)*

It is challenging for tourists to identify the plantation as there is no or rarely used name or sign on the specific plant(s). Tourists query the guides about vegetation, sometimes to the gunmen, and answers do not always satisfy the tourists. According to one of the tourists,

> *There are many nature lovers like me. When we see a plant, the question arises about the tree. Those with me, who are also tourists, cannot talk about it; many of them are in the same situation as me. Then I ask Gunmen or a guide. They may say a local name but can't tell the botanical or scientific name. (Interview No. 28)*

According to respondents, at every entry point of the protected areas, there should be a map of that area and a skilled guide to interpreting. Maps and tour guides are vital for entering and visiting the protected areas. There are limited tour guides in the protected area; they must have gone through some training to introduce themselves to some basic activities, such as how to operate the tour, behave with the tourists and motivate them to act sustainably inside the protected area during the visit. There are 15 listed tour guides in LNP, 6 in SNP, and 126 in the Sundarbans forest reserve. They are trained enough to guide the tourists. Skilled and professional tour guides help tourists to know the park

better as they have training and knowledge about how to represent nature to the tourists. The government officials express,

> *We have 15 eco-tour guides trained and approved by the forest department. They are not salaried from FD. Their remuneration is the amount of money they receive after each guiding. (Interview No. 1)*

> *We have 126 listed tour guides who are not salaried but attached to different tourist ships and launches. Sometimes they have been called by the forest department for 1day long tour. (Interview No. 3)*

Exploring the protected areas is not possible without guides. Re-visitors are unwilling to take guides as the place is known to them and consider guides an extra expense.

> *It is impossible to represent the park in a well-organized way without the tour guides. We request tourists to take along a tour guide, but most of them deny it as they are from places adjacent to the park. I think tour guides should make tourists understand the advantages of taking a guide and the disadvantages of not taking guides with tourists while entering the park. (Interview No. 2)*

Moreover, guides are not self-motivated to perform as they do not receive any fixed monthly salary from the forest department. Their honorarium is based on the number and duration of entry into the park. They are listed but not salaried persons in the forest department. They are doing the job as part-time, not interested in taking it as a profession. Tour guides say,

> *It could be taken as a profession, but tourists do not always come, and not all tourists want to take a guide. We do not have a fixed salary system. Get an honorarium from tourists based on the duration of the trails. For example, for half an hour trail, BDT TK. 200, for one-hour BDT TK. 300, and for three hours BDT TK. 600. (Interview No. 12)*

> *I have been working in tourism since 2009, but after ten years, my saving is zero. What is happening here is that if we work, we get paid; if we don't, we don't get paid. We do not have a fixed income system. Then why should I be interested in tourism? (Interview No. 8)*

The person from government officials agrees that there is a lack of motivation and refreshment of tour guides. Visiting with a tour guide is not mandatory in other protected areas, but tourists cannot enter the Sundarbans without prior contact with tour operators/guides. The ship or launch that desires to enter the Sundarbans first must be licensed under BIWTA and separately from the forest department. Otherwise cannot enter the Sundarbans. Sometimes guides have been trained by the forest department and or tour operating organizations with whom they are working.

No accommodation facilities are available for tourists in the protected areas. There are Bungalows and dormitories, especially for government personalities and researchers, which are not open to all. People from other parts of the country or abroad want to spend a few days observing the wildlife. However, there is no hotel to provide such accommodation. Wild animals go to the deepest forest during the day and come nearest

to the trails after sunset, tourists wander around the park the whole day, yet they do not see wildlife other than nature. A person from government official says,

> *It is a national forest, a place for research; researchers and research students can stay here with limited facilities. However, we cannot allow tourists in bungalows and dormitories as these are for government officers, teachers, and students who come for research purposes. We cannot provide accommodations to those interested in staying and enjoying nature. (Interview No. 1)*

As protected areas are geographically somewhat isolated, transportation systems to reach the destinations are not sound either. However, The transportation facilities to get LNP is much better. Since it is situated near the Sreemangal-Kamalgonj highway, it is easy to reach from Sreemangal by bus, auto, CNG, or micro. Public transport is available there. One of the respondents says,

> *We have come from Sreemangal by auto rickshaw, but I have found that it is possible to come by bus or CNG. We had a little kid with us, so we wanted to come in a little more comfortably. (Interview No. 31)*

This scenery is not common in every protected area of Bangladesh. Though there is good highway condition, due to the absence of passenger-carrying public transport, tourists coming to SNP face problems. One of the respondents says,

> *Passenger transport is limited. There is no easy access to transportation here. Sometimes tourists somehow manage to come to Satchari but cannot get any other vehicle when they return. (Interview No. 21)*

4.2.2 Health and Hygiene

Under this category, the respondents have considered washrooms/restrooms/ changing rooms, prayer rooms, parking space facilities, and waste disposal systems. The availability of the washroom is more important than the restroom and changing room. Few of the protected areas have these facilities to some extent. Tourists are disturbed due to the inadequateness of the washroom. The forest department has arranged washrooms separately for male and female tourists 10 to 15 minutes away from the entry gate inside the forest in LNP. Furthermore, FD has also set up a few 'roundabouts' and a few 'benches' beside trails where tourists can sit and rest if they want. One of the respondents says,

> *I noticed separate washrooms for males and females here, but these are far from the entry. After reaching any destination, one needs to freshen up. It would be better if some washrooms were close to the entrance. There are a few benches arranged at specific distances, but there is no canopy on the benches; it can be improved. Tourists can get a little tired after walking a long way. In that case, the bench arrangement seems to help rest for a while. The seating area is tiny except for one or two roundabouts. (Interview No. 31)*

It has been observed that there are not enough dustbins for dumping the garbage. However, there are dustbins in many places, but there is indifference among tourists to use them. There are no sufficient parking spaces as well.

> *You will notice that we have bins here after a short distance for dumping garbage, but many do not use it. Tourists need to be more aware of using the dustbin instead of throwing dirt here and there. (Interview No. 4)*

> *The parks are just beside the highway. But I did not notice any specific parking there. The place was crowded. One of my friends wanted to use the washroom, but it was too dirty to use and had a water supply shortage. (Interview No. 30)*

4.2.3 Restaurant/Hotel/Cafeteria

People come from different places and usually feel hungry after spending some time in the park. There is no restaurant under the protected area authority or any other food hotel owned by locals. Two/three tea stalls are there in front of the entrance. However, there is not enough space to sit in front of the tea stall, and the staff numbers are insufficient to serve the tourists. Tourists must wait in long queues, even with small kids. According to a CEO of a tour operating group, the availability of restaurants, hotels and cafeterias are also needed for successful tourism development. He says,

> *We need to have lunch on a day trip, but there is no good hotel restaurant to eat in or around Lawachara. You have to go to Srimangal for lunch, and the hotel restaurants in Srimangal are expensive and not affordable for everyone. In addition, when tourists went inside, they saw no drinking water or restaurant, so they hurried back. (Interview No. 10)*

The forest department is not interested in setting up a cafeteria or hotel in or outside the park. Even they do not think of doing it. The government official replies,

> *No, we really don't think it's necessary to set up a cafeteria, because it's going to be dirty here, it's going to be more trouble, so it's not necessary. (Interview No. 1)*

Another interviewee adds,

> *If a restaurant is offered here, there will be much shouting. In fact, it is not right to have such a crowd. If people need food, they will bring it from outside and eat inside. There may be fast food shops but no restaurants. You will come and eat and make noise, which is not part of ecotourism. (Interview No. 8)*

4.3 Opportunities Related to Socio-cultural Components

More than half of the respondents agreed that Socio-cultural opportunities significantly influence tourism development. According to respondents, the destination should be safe enough to visit alone or with a group. Along with the destination's safety and security, other factors, such as cultural view exchange and local community behavior, are also

considered important. Under this theme, respondents emphasize safety and security, exchange of cultural views, and community behavior as opportunities to develop tourism in protected areas.

4.3.1 Safety and Security

There is no debate among the respondents on the safety issue. They agreed that the destination should be safe enough to visit. Whether on a solo or group tour, tourists want to ensure safety at any cost. As the forest-protected areas are mostly isolated, tourists could be attacked by wild animals or involved in an unwanted conflict with the local communities. Thus, there should have sufficient safety measures. The following statement has been given by a CEO of a tour operating organization that organizes regular tours in various destinations, including the protected areas.

> *When we organize a group tour, the responsibility of the whole group rests on us. Sometimes women in groups are teased by the locals or attacked by hijackers or theft. However, the situation is now improving, and I personally do not think it is unsafe in Lawachara National Park; I think the place is secure enough. That's why I think you should go in with a guide to avoid unforeseen events. (Interview No. 10)*

Another interviewee says,

> On*ce 3/4 of our team members were attacked by a group of monkeys and injured. We did not receive any primary treatment. (Interview No. 33)*

The security of protected areas is improving gradually. Every protected area has some listed tour guide. Because tour guides have training on different issues tourists may face during the visit. Taking along a tour guide is wise to ensure safety and avoid other unwanted events. In addition, a group of four to five tourists police is seen on duty in the protected areas, but it is far less than required. Though hijacking or theft incident does not occur as before, there are no official arrangements for primary medical facilities. However, some personal initiatives from the forest department are there, which are not adequate. For any unexpected incidence or accident, the victim must go to Thana Sasthay Complex, which is far from the destination. Talking about these issues, the responsible person from the forest department replies,

> *It is a safer place to visit, and tourists can enter and enjoy the natural beauty and wildlife of the park freely. There is no problem with security, and tourist police are here. The environment is secure, and incidents like hijacks and thefts do not occur. For a safe visit, there is no alternative to visiting with an eco-tour guide; he can make understand the tourists about do's and not to do's inside the protected areas. (Interview No. 1 and 2)*

Another interviewee says,

> *First of all, we want the safety and security of tourists who come here; we provide gunmen. The gunmen not only act as a guard to the tourists but also act as guides to the tourists. They instruct where to go and brief about various plants and animals. (Interview No. 3)*

Regarding primary medical facilities, the interviewee replies,

> *As for the first aid system, we have a prescription for first aid, not an official one; we do it out of our sense of responsibility. If someone suddenly has an accident like a monkey attack, then there is nothing more we can do than clean up and dress it up. There is no medical camp here, we only do it on our own initiative, but such accidents are not expected. (Interview No. 4)*

4.3.2 Exchange of Cultural Views

The forest-protected areas offer the opportunity to exchange cultural views as diverse indigenous communities live there. Communities contain Muslim, Hindu, and Christian families. However, there is no religious conflict among them. Tourists visit the indigenous community and observe their culture and way of living. One respondent says,

> *I really like the community living in the forest. People live in such places in the jungle. Life is hard, but I like the way I see them. They seem to be very happy with their life. Their houses are made of clay but beautifully painted. (Interview No. 31)*

The female members of the community prepare the clothes they wear. They have their own clothing culture. Besides, they also prepare different types of handicrafts that represent their own culture. One of the community leaders says,

> *We prepare traditional clothes and various things made of bamboo, such as Jhuri, Khara, and showpieces. There was a tremendous demand for bamboo showpieces at one time, but these have disappeared. We still prepare a few items made of bamboo for our use. (Interview No. 23)*

Furthermore, talking about this topic, a tour guide says,

> *Tourists come from different parts of the country; they exchange their views. Tourists who contact me before coming sometimes demand to enjoy Manipuri Nritya (a particular form of dance performed by the Manipuri community). I arrange for that. (Interview No. 8)*

4.3.3 Community Behavior

During the interview, it was observed that as an important stakeholder, the local community holds a positive attitude toward tourism. They welcome tourists into their community. Overall, the attitudes of the communities towards tourists are friendly enough. One of the respondents says,

> *When I visited Khasia community living inside the forest, they were very friendly and offered me betel too. (Interview No. 30)*

One of the respondents from the community expresses,

> *Yes, we support tourism if there is responsible behavior. A group of 10 to 15 people will come and see what we are doing. We feel good when people come to see us. However, 80/100 people often enter our community, enter our houses, and tear down or pull down the betel leaf. This type of incident disturbs us a lot. (Interview No. 22)*

Local communities are supportive enough as they benefit from tourism in the parks. However, they feel disturbed, too, due to some problematic tourists' behavior. One of the community leaders says,

> *The behavior of tourists is annoying wildlife. This is only because of a lack of awareness. Again, there are foreign tourists who try not to make a sound when they come to visit, even if they walk barefoot so that they cannot make a sound. The problem here is individual tourists, not tourism. (Interview No. 4)*

Another respondent replies,

> *If a person sees one thing every day, he will not like it anymore. Tourists are entering here without guides, and tourists are also entering with guides. Those who enter with a guide are going through a process. If they want to talk, they say, and if they want to drink water, they give water. But when they come in a disorderly manner, they actually feel confused; this is their home. People come to the house daily; it is natural to feel disturbed. (Interview No. 8)*

4.4 Opportunities Related to Economic Benefits

People prefer to buy locally made-traditional items when visiting protected areas. More than 70% of the respondents agree that there should be a financial transaction facility at the destination, whereas 99% of the respondents agree that economic benefits are exchanged due to tourism.

4.4.1 Financial Transaction Facilities

Now a day, people do not carry cash as various options like debit/credit cards, bkash, rocket, and or nagad services are available everywhere. Respondents agree that there should be such facilities in every destination. One of the respondents who come to visit SNP says,

> *There is no bank in the nearest of 5/6 miles. There is no mobile network at all, so services like bkash, rocket, nagad, or something like this are unavailable here. In today's age of technology, is it wise to carry too much cash? How much money is it possible for a person to carry? (Interview No. 34)*

Another respondent who comes to visit Sundarbans makes the following statement.

> *I came with a tour operating organization, so I probably didn't need much money yet. But it may be necessary because my personal expenses are not included in the tour package. No financial transaction facilities are available here. (Interview No. 28)*

4.4.2 Exchange of Economic Benefits

99% of respondents agree on the issue that tourism benefits not only the locals but also the whole economy. One respondent explains,

> *Having tourism is good and necessary for the people here. The reason is that when tourists enter the area, they benefit not only one person but also the entire community. They are renting local cars; it is benefiting many people. The shopkeepers in the area are also benefiting. So economic benefits are being exchanged. (Interview No. 6)*

The indigenous community's handmade handicrafts also have tourist demand. One of the tour guides says,

> *Occasionally indigenous girls make traditional items such as garlands, flower vases, and shawls; if tourists like, they are ready to pay three times more than the price. (Interview No. 9)*

Tourists often prefer to buy various things indigenous women prepare, especially clothes, showpieces, and shawls. Moreover, indigenous products are preferable by foreign tourists to domestic tourists. Few members of the community own a few shops beside the parks. They get excited when tourists come to see the park and visit their shops, buy cheeps, chanachur, chocolates, and drinks, and have tea and coffee. They support tourism and welcome tourists wholeheartedly as their business mainly depends on tourists. One young man from Baligaon (a village near LNP) who own a shop beside the LNP entrance says,

> *Our income solely depends on tourists. Tourist entry was restricted in the park during the Covid-19 pandemic. To be honest, we were having a hard time at that time. Our income was also cut off due to the closure of tourism. We don't want to recall that time. I had no money, could not go to the market to buy anything, and my family was starving. (Interview No.18)*

Tourism in the Sundarbans lasts for four months of the year (Nov-Feb). Many people involved in tourism have to spend the rest of the year with the income of this period. One of the respondents expresses,

> *I work on a tourist ship for four months of the year. It saves some money. I can eat with my family and live with dignity. (Interview No. 26)*

Similarly, a lot of people are related to tourism, such as launch/ship drivers, trawler drivers, tour operators, guides, and the workforce of tourist ships, who serve the tourists

wholeheartedly. Here a person does not mean a person alone; the whole family depends on him. They can take care of their family through their involvement in tourism.

4.5 Information and Communication Technological (ICT)

More than half of the respondents agreed that technological support is crucial in today's advanced world. Respondents argue that the application of technology can enrich tourism development opportunities in the protected areas of Bangladesh. Respondents also regret not fully utilizing technology in tourism, especially in protected areas. There is no well-informed website of Bangladesh Porjoton Corporation. Under technological facilities, two themes have been clustered based on the issues raised by the respondents during the interview session.

4.5.1 Easy Access to Information

There is no detailed information regarding the protected areas of Bangladesh on the government website or any strong web link at all from where people get information before visiting. Tourists who want to visit for the first time and do not know about the places want to know information regarding the location of the destination, direction to go there, communication, booking, and security of the destination. Unfortunately, no detailed information regarding such issues is available anywhere. Respondents make the following statements on easy access to information,

> *If you search on Google, you may get a few private links or blogs, but those who upload things to Google do it on their own initiative. This is what the tourism corporation has to do. If you access the tourism corporation's website, you will not find anything; often, you will not be able to access the website. (Interview No. 28)*

> *We have not received any such detailed information about Lawachara from the website. All the information I have received has come from different Facebook groups or people. But if there was a website where there would be a complete map of the Lawachara area. The map will give the direction to see which way to go. Moreover, information about how to come to Lawachara from Srimangal or Moulvibazar, there may be information about how tourists will behave, or safety issues can also be added. (Interview No. 31)*

> *I love to travel. Before visiting a new place, I search for information on the website if I get any information from the tourism corporation. There needs to be a definite source of information from which I can know that I am going there, what danger I have, what advantage I have, and what barriers are there. I started without knowing the obstacles. I got in trouble when I got there. Then these issues need to be cleared. Or, in such a situation, what should be done? (Interview No. 32)*

4.5.2 Availability of Mobile Network

Due to restrictions, the protected areas are out of mobile network coverage. Mobile networks are unavailable within a few kilometers inside or around the protected areas. A mixed opinions regarding mobile network availability can be observed during interviews. Some respondents favor the unavailability of mobile networks inside the protected areas, whereas some respondents view the unavailability of mobile networks as a problem. Respondents express the opinions as,

> *Having a mobile network was not important to me at that time. I just wanted to enjoy nature with my family for a while. I didn't notice whether there was a mobile network or not. However, the radiation may harm animals if there is a mobile network in the jungle. (Interview No. 32)*
>
> *I do not want anyone to disturb me for three or four hours during a relaxing trip. The unavailability of the mobile network makes the task easy. (Interview No. 34)*

However, some people are disheartened and worried about not having a network. They reply in this regard,

> *I do not find the mobile network. I planned to come in and have a video conference with my mother to show her the cultivation of betel. But it was not possible as there is no mobile network here. (Interview No. 31)*
>
> *I indeed wanted to take a break from work and stay out of the network for a while. It is suitable for a moment but not always. That may not be the case for everyone. I would definitely like to be connected not only within the country but also in other parts of the world. There must be a system here so that everyone can communicate. (Interview No. 28)*
>
> *We are here for three days' package. Today, three days later, I can contact my family. My family is very worried. It is normal to be worried if no one is found for three days in this age of communication. This is not a one-day affair; initiatives should be taken so that people are not faced with such problems. (Interview No. 29)*

4.6 Discussion

The study has extracted multiple opportunity variables which are clustered under five themes: ecological environment, physical facilities, sociocultural components, economic benefits, and information and communication technology. Moreover, the themes have been further grouped into 15 sub-criteria. Findings reveal that the protected areas offer substantial opportunities for tourism development mainly related to ecological balances. The study has observed that the most cited ecological opportunities are diversified plants, green nature, calm and quietness of the destinations suitable for a visit with family. People choose to visit when they want a relief from their daily monotonous routine life. Moreover, observing wildlife is also a considerable opportunity that attracts tourists to

visit protected areas. Tourists look for Royal Bengal Tiger while visiting Sundarbans, whereas they look for Hoolok Gibbons in LNP and SNP. The items identified under the ecological environment from the in-depth interviews were also supported by tourism literature (Ahammed, 2010; M. Alam et al., 2010; Dey et al., 2020b; Markowski et al., 2019b; Mukul et al., 2016).

Moreover, the study has identified important physical facilities as tourism opportunities, include walking trails, accommodation, hotels/restaurants, washrooms, waste disposal facilities, transportation and tour guides. As tourists walk in the park for a long period of time, the quality of walking trails matters. Most respondents emphasize transportation and accommodation as many tourists come from different parts of the country and even from other countries. Other opportunities, such as directions to the walking trails, and names and labels of different plants and waste disposal facilities, are also important. Along with ecological opportunities, tourism development is influenced by a destination's physical facilities (HOSSAIN, 2020). However, there is a notable lack of infrastructural and other supporting facilities for sustainable tourism development. There is no washroom facility in some places, especially for female tourists; it is challenging due to the lack of washrooms. In addition, there is no seating arrangement besides the walking trails, as the roads are one and a half to two hours. Tourists sometimes get tired and look here and there to find a place to sit.

Furthermore, this study has revealed safety and security, observing indigenous culture and local community behavior under socio-cultural components as significant tourism opportunity variables. This is because of the diverse characteristics of protected areas. In addition, financial transaction facilities, shopping facilities, available gift and souvenir shops, and economic benefits exchange are discovered as important economic opportunities for tourism development. Finally, a significant number of respondents mentioned that easy access to information and available mobile network are crucial factors and could act as considerable opportunities related to technology that make the process easy for everyone. The literature identifies and emphasizes a few variables associated with ICT in tourism in relationship building (A. F. Alam et al., 2014). However, the application of technology in tourism development in protected areas has been ignored. During in-depth interviews, respondents emphasized that adapting technology in the protected area will speed up tourism development.

5. Conclusion

People visit protected areas not only for recreation but also for research and education purposes. Moreover, people feel peace and refresh themselves in a calm, quiet environment. Based on the above discussion, it can be concluded that the Sundarbans, LNP, and SNP have potential tourism opportunities to attract tourists. However, most of these opportunities are neither utilized nor have any initiative to utilize. Hence, the performance of protected areas as tourism destinations is not at the expected level. Based on the above findings, it can be said that on the edge of technology, Bangladesh is still not ensuring the complete application of technology in the tourism sector. Tourism in

protected areas could be more attractive and enjoyable to tourists if concerned authorities consider investing in protected areas' infrastructure to support tourism. This is largely a public sector responsibility; when the government invests in its protected areas, it can be hoped to be followed by the private sector.

The research represents a practical scenario of tourism opportunities in the protected areas of Bangladesh in detail which will serve as a tool for both academic and managerial levels to better understand the tourism opportunities in the protected areas. The findings will aid academic scholars in their comparative analysis, satisfaction assessment, and measurement of the link between tourism opportunities and tourism development. On the other hand, the research indicates that tourists evaluate not only the natural habitat while visiting protected areas but also other facilities. Tourists become more concerned about accommodations, cleanliness and hygiene, and the use of contemporary technologies. The results of this investigation could assist management or the authority in identifying the significant indicators of tourism opportunities that tourists value and encourage them to visit protected areas. Moreover, the findings might assist in determining the best strategy for developing tourism in the protected areas while also conserving nature based on tourist needs and demands which will improve both the public perception and the brand values of the protected areas.

This research identified a total of 51 scale items under five dimensions of tourism opportunities based on pertinent literature and in-depth interviews. This will serve as a baseline for researchers interested in examining the relationship between tourism opportunities and tourism development, tourists' satisfaction level with protected area tourism, and the participation of different stakeholders in protected area tourism. Moreover, the study introduces ICT as a dimension of tourism opportunities based on the findings which have been ignored in protected area tourism literature. It would, however, have certain advantages and disadvantages. The advantages and disadvantages of ICT application in protected area tourism might be further investigated.

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