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Article

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Entrepreneurial intention among university students of a developing economy: the mediating role of access to finance and entrepreneurship program

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ABSTRACT

This study addresses Bangladesh's unemployment problem and its youth's limited entrepreneurial aspiration focusing on critical factors that influence entrepreneurial intentions among university students in Bangladesh. Recognizing universities' role in fostering entrepreneurship, the study aims to identify these determinants, bridging a gap in literature in the context of Bangladesh. Built upon an extended theory of planned behavior, the study incorporates 'access to finance' and 'entrepreneurship program' as mediators. This framework examines the relationships of 'attitude', 'subjective norms', 'perceived behavioral control', 'entrepreneurship program', 'access to finance', and their collective impact on entrepreneurial intentions. Utilizing stratified random sampling, the researchers collected data from 394 students across 23 selected Bangladeshi universities offering entrepreneurship programs encompassing Faculty of Business & Entrepreneurship and Faculty of Science & Engineering. The study employed Structural equation modeling (SEM) for analyzing the data. The findings revealed that there were positive relationships between 'entrepreneurial intention' and 'attitude', 'subjective norms', 'perceived behavioral control', 'entrepreneurship program', and 'access to finance'. The findings have practical implications for Bangladesh's government and educational institutes when it comes to promoting entrepreneurship programs extensively. The empirical results clearly demonstrate that the integration of access to finance and practical entrepreneurship programs significantly boosts the entrepreneurial aspirations of university students, encouraging them to pursue entrepreneurship as a career path. This, in turn, contributes to the advancement of economic sustainability in Bangladesh. These outcomes are consistent with the overarching aims of Sustainable Development Goal 8, which strives to foster continuous economic growth, generate employment prospects, and ensure decent work opportunities, particularly for the youth.

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1. Introduction

Bangladesh is a densely populated developing country of 169.5 million people trying to overcome its unemployment problem in the pursuit of achieving the Sustainable Development Goals (Worldometers, 2023). The rate of unemployment in Bangladesh is 5%, in which unemployment rate among graduates is about 47%. Nearly 3.5 million graduates are unemployed, and Bangladesh has been ranked the second highest in the rate of graduate unemployment among the countries of South Asia (Shahriar et al., 2021). Over half of Bangladesh's population is under the age of 25 (Islam & Haque, 2020). To capitalize on the demographic dividend, country's young entrepreneurs are expected to play a paramount role in the economic development of Bangladesh. Over two (02) million graduates enter the employment market

each year. The graduate unemployment rate in Bangladesh was nearly 46% (Neazy, 2019). Because of the Covid-19 pandemic and the conflict between Russia and Ukraine, the graduate unemployment rate in Bangladesh is more presumably risen (Zaman, 2023). However, to overcome this challenge, establishing enterprises is considered one of the best solutions for generating employment in most countries across the world, either for developing nations such as Nigeria (Mahmoud et al., 2020; Owoseni, 2014), Bangladesh (Uddin & Bose, 2012), Malaysia (Sandhu et al., 2011) or for developed ones such as the United States of America (Harris, 2013). In Bangladesh nearly 10 million SMMEs (small, medium-sized and micro enterprises) exist that generate employment for 7.8 million people providing livelihood directly for 31.2 million people of the country. SMEs and micro enterprises contribute to nearly 25% of the GDP of Bangladesh, which amounts to 79 billion US dollars (Khan et al., 2020; Tasreen, 2021).

Against the backdrop of global economic challenges and rapid technological advancements, traditional education no longer guarantees employment. This has led to the introduction of entrepreneurship programs in higher education institutions aimed at fostering entrepreneurial intentions among students (Shil et al., 2020; Vanevenhoven & Liguori, 2013; Yang & Kim, 2020). Consequently, both the government and non-governmental organizations emphasize the need to nurture entrepreneurs (Uygun & Kasimoglu, 2013). Many universities are actively working to inspire students to embark on entrepreneurial ventures (Karabulut, 2014; Shil et al., 2020), aligning their efforts with the objectives of Sustainable Development Goal 8, which aims to promote sustained economic growth, generate full and productive employment opportunities, and foster decent work for all, with a particular focus on youth.

Many studies found a lack of entrepreneurial intention and inadequate innovative activities among the youth in Bangladesh. Out of 5.5 million business graduates, only 3.5 percent of students wanted to become entrepreneurs, which is quite undesirable (Israt, 2021). Hence, Bangladesh must address entrepreneurship programs that can accelerate entrepreneurial intentions among university students. Very few research studies have been carried out on the effectiveness of entrepreneurship programs and access to finance to develop entrepreneurial intention at the tertiary education level in Bangladesh. Therefore, the present study aimed to identify the effects of entrepreneurship programs and access to finance that affect the factors impacting entrepreneurial intention of university students in Bangladesh.

The underpinning theory of the study is the theory of planned behavior (TPB) which is extensively applied and found to be one of the most effective theories to predict entrepreneurial intention and behavior (Mahmoud et al., 2020). TPB comprising three factors: attitude, subjective norms and perceived behavioral control are proposed to have positive relationships with intention (Ajzen, 1991). However, a good number of studies deduced mixed findings on the association between TPB factors and entrepreneurial intention which requires further investigation of the study in the context of Bangladesh. This theoretical gap requires academic contributions which will enhance the theory and help policymakers and researchers understand the theory and its application better.

Taha (2018) and Rengiah and Sentosa (2017) empirically validated the Theory of Planned Behavior (TPB) as a reliable indicator for assessing the impact of entrepreneurship programs. Their research not only affirmed the effectiveness of TPB but also highlighted the necessity for further investigations in this field. These findings align with studies conducted by Jin (2014) and Bell (2015), providing additional support for the credibility of TPB in evaluating the outcomes of entrepreneurship initiatives.

Additionally, the study by Shamsudin et al. (2017) recommended exploring the mediating effects of entrepreneurship programs on the factors influencing entrepreneurial intentions. Similarly, Rengiah and Sentosa (2017) advocated for in-depth research into the mediating role of 'entrepreneurship programs' concerning the TPB factors influencing students' entrepreneurial intentions. Furthermore, a longitudinal study conducted by the SME Foundation showcased the significant potential of Small and Medium-sized Enterprises (SMEs) in Bangladesh for employment generation. This potential was particularly evident when combined with easy access to finance and robust entrepreneurship programs, as emphasized by Khalily et al. (2020).

Hence, the novelty of the study lies in extending the TPB theory by introducing two mediating variables: entrepreneurship programs and access to finance. This extension is not only justified by the real-world context but also aligns with the specific priorities of the Bangladesh government, as indicated by Anika (2023). Consequently, the study not only contributes theoretically but also directly addresses

practical concerns and policy priorities, enhancing the overall understanding of entrepreneurship dynamics in the context of Bangladesh.

Despite these valuable insights, it is evident from the reviewed literature that there has been limited research conducted on the subject of entrepreneurial intention among university students in Bangladesh. Furthermore, there exists a notable gap in the literature when it comes to assessing the specific roles of entrepreneurship programs and access to finance within this region. Given the context of a developing economy like Bangladesh, which heavily relies on its abundant human resources due to limited natural resources, the government places a high priority on cultivating a sustainable entrepreneurial ecosystem. In this endeavor, universities, as centers of innovation and research, are expected to play a pivotal role. The roles of entrepreneurial programs and access to finance have been acknowledged and emphasized by the Government of Bangladesh (Anika, 2023; Uzzaman, 2023). To better understand their application in the context of Bangladesh, the authors conducted an investigation into the influence of entrepreneurship programs and access to finance on factors affecting entrepreneurial intention among university students in selected universities. The aim is to empirically justify the necessity of this innovative study in the region of Bangladesh.

In light of these considerations, the research questions addressed by this study are as follows:

1. What role do entrepreneurship programs play in influencing the factors that shape entrepreneurial intentions among university students in Bangladesh?
2. What role does access to finance play in influencing the factors that shape entrepreneurial intentions among university students in Bangladesh?

The rest of the study is organized by literature review and hypotheses development, research methodology, data analysis and findings and conclusions.

2. Literature review & hypotheses development

2.1. Entrepreneurial intention

According to Kabir et al. (2017), entrepreneurial intention can be defined as the effort or zeal any individual demonstrates to manifest a set of characteristics or attributes that behave an entrepreneur. Past researchers have argued that any instances of entrepreneurship could not be a matter of chance or accident but rather the result of a pre-determined set of actions and behaviors, which could only manifest because of the development of entrepreneurial intention (Zimbroff & Jorgensen, 2019). Owoseni and Akambi (2010) also revealed that entrepreneurial intention leads to entrepreneurial actions. So, this study will further analyze the determinants that impact entrepreneurial intention among university students in Bangladesh and use entrepreneurial intention as the dependent variable.

2.2. Theory of planned behavior (TPB)

The theory of planned behavior (TPB) proposed by Ajzen (1991) comprising three factors 'attitude', 'subjective norms' and 'perceived behavioral control' are believed to affect intention and subsequent behavior positively. It proposes intention as a significant determinant of behavior. Ajzen (2015). TPB has been regarded as one of the most popular models that has been applied successfully in determining entrepreneurial intentions among students. This theory proposed by Ajzen and Fishbein (1980) and Ajzen (1991) is a modified version of the theory of reasoned action (TRA) introduced by Sheppard et al. (1988). Ajzen also refuted the allegation for Sniehotta et al. (2014) negative findings of poorly conducted studies as proof against TPB. However, Khalifa and Dhiab (2016) revealed that TPB is widely applied in determining entrepreneurial intention. Rasli et al. (2013), Malebana (2014), Mahmoud et al. (2020) and many other researchers validated TPB in measuring entrepreneurial intention. Rengiah and Sentosa (2017) and Taha (2018) empirically proved that TPB is one of the best conceptual bases in determining students' entrepreneurial intentions. Ogundipe et al. (2012) also found out that TPB is the most comprehensive of all other models in entrepreneurship action. Hence, the current study utilized TPB as the underpinning theory.

2.2.1. The relationship between attitude and entrepreneurial intention

According to Ajzen (1991), 'attitude' has direct and positive relationship with intention. Attitude is the characteristic that depends on feelings, trust, and behavioral tendency towards pertinent social objectives and group events (Ryu et al., 2010). Attitude towards behavior is the positive or negative evaluative response assessed towards forming a new enterprise (Liñán et al., 2011). It reflects the overall gut feeling of a person towards a particular thing (Tadesse & Batra, 2015). Attitude was found to be one of the prominent factors influencing entrepreneurial intentions among university students in South Africa (Malebana, 2014). Moreover, Taha (2018) conducted research among the students of Universiti Malaysia Perlis (UniMap) and Universiti Utara Malaysia (UUM) and found that there was a significant positive association between attitudes and entrepreneurial intentions among the students. There is a gap in the literature conducted in Bangladesh that explores empirically the relationship between attitude and entrepreneurial intention. However, studies from various countries, such as one undertaken in Nigeria by Mahmoud and Garba (2019), have shown that a positive attitude is likely to increase students' intention of becoming entrepreneurs. Hence, the study proposes the following hypothesis:

H1- There is a significant positive relationship between 'attitude' and 'entrepreneurial intention'.

2.2.2. The relationship between subjective norms and entrepreneurial intention

As noted by Hassan et al. (2021), 'subjective norms' are the social support and motivation for a person to become an entrepreneur. As observed by Farrukh et al. (2018), 'subjective norms' could be one of the biggest determinants of human behavior, and entrepreneurs are not also outside the sphere of influence of such socially acceptable behaviors. Mahmoud et al. (2020) showed that subjective norms do not increase students' intention of becoming entrepreneurs. However, the reality of Bangladesh is that most of the young entrepreneurs belong to the families, who have traditionally been involved in business activities, confirm the validity of this theoretical proposition. This particular observation could be corroborated from a research work done for Debre Tabor University, Ethiopia (Students, 2021). Family background was found to be the biggest variable that determined the presence of EI among the 348 students who participated in this research project. Hence, it is likely that the influence of subjective norms can enhance students' intent in becoming entrepreneurs and the study proposes the following hypothesis:

H2- There is a significant positive relationship between 'subjective norms' and 'entrepreneurial intention'.

2.2.3. The relationship between perceived Behavioral control and entrepreneurial intention

According to Ajzen (1991), 'perceived behavioral control' denotes the perceived hardship or ease of performing a particular behavior. Ajzen pointed out that there is a high propensity of having high perceived behavioral control of a person if s/he believes that a certain behavior is easy to accomplish and vice versa. Shabbir et al. (2016) revealed that there was a significant mediating effect of perceived behavioral control on the association between entrepreneurial personal skills and entrepreneurial intent of Pakistani IT professionals in Punjab. Furthermore, it was revealed that PBC influenced the entrepreneurial intentions of university students in South Africa (Malebana, 2014) and the same results echoed in the findings among the Spanish and British university undergraduate students among whom the British students showed much stronger PBC than the Spanish students did on developing EI (Linan et al., 2013). Moreover, among the students of 17 European countries, perceived behavioral control was found to be significantly related to developing entrepreneurial intentions (Kuttim et al., 2014). On the other hand, Mahmoud et al. (2020) found negative relationship between perceived behavioral control and entrepreneurial intent. There have been very few studies conducted in Bangladesh that have empirically explored the relationship between perceived behavioral control and entrepreneurial intention. Nevertheless, findings from various studies in different countries suggest that perceived behavioral control is likely to positively influence students' intention to become entrepreneurs.

Hence, the study proposes the following hypothesis:

H3- There is a significant positive relationship between 'perceived behavioral control' and 'entrepreneurial intention'.

2.2.4. The relationship between attitude and entrepreneurship program

Seepana et al. (2021) conducted a study involving students from reputable public and private universities, demonstrating that classroom-based teaching processes significantly contribute to entrepreneurial creativity. Again, in Malaysia, it was found that the availability of entrepreneurship programs for the students would not be effective unless they have developed entrepreneurial attitude in prior through socio-economic circumstances. As stated by BecoraceWambua et al. (2020), entrepreneurship educational program could play a paramount role for instilling the right mix of attitude and behavior among the business school students, which would indelibly aid them in becoming self-employed through the creation of new ventures or startups. Hence, it is likely that there is positive association between attitude and entrepreneurship program and the study proposes the following hypothesis:

H4- There is a significant positive relationship between attitude and entrepreneurship program.

2.2.5. The relationship between subjective norms and entrepreneurship program

The Government of Bangladesh has announced to launch 'University Innovation Hubs' in 10 universities to support startups and youth entrepreneurship (Anika, 2023). The increased support from parents, peers, society and the government encourage launching entrepreneurship programs in Bangladesh. The diminishing influence of subjective norms indicates that societal barriers are decreasing. As universities and the government actively promote entrepreneurship programs, the traditional societal constraints that may have discouraged such pursuits are weakening. This trend signifies a broader acceptance and endorsement of entrepreneurship education, creating a more favorable environment for aspiring entrepreneurs across the country. Hence, the study proposes the following hypothesis:

H5- There is a significant positive relationship between subjective norms and entrepreneurship program.

2.2.6. The relationship between perceived Behavioral control and entrepreneurship program

Though there is very little literature available that identifies the association between perceived behavioral control and entrepreneurship programs in Bangladesh, Farrukh et al. (2018) illustrated that behavioral traits, as outlined in the theory of planned behavior, significantly impact a person's inclination toward pursuing entrepreneurship programs and an entrepreneurial profession. Their research revealed that Perceived Behavioral Control (PBC) notably predicts an individual's commitment to engaging in entrepreneurship education. Underscoring the influential role of PBC in predicting entrepreneurial self-confidence and the choice to pursue a career in entrepreneurship for prospective graduates, the study proposes the following hypothesis:

H6- There is a significant positive association between perceived behavioral control and entrepreneurship program.

2.2.7. The relationship between attitude and access to finance

Urban and Ratsimanetrimanana (2019) found that access to finance influences attitude, subjective norms and perceived behavioral control positively to aid the students to become entrepreneurs. In Bangladesh, where entrepreneurship is increasingly becoming a viable career choice, a positive attitude toward entrepreneurship is pivotal. Entrepreneurs with a positive attitude are more likely to seek out opportunities, take calculated risks, and persevere in the face of challenges. This optimistic mindset is essential for navigating the complexities of the business landscape. At the same time, access to finance is a fundamental factor that can either empower or hinder entrepreneurial endeavors. In Bangladesh, where financial barriers often limit entrepreneurial initiatives, having access to adequate funding can transform entrepreneurial aspirations into tangible ventures. When a positive attitude is coupled with access to finance, it creates a synergy that fuels entrepreneurial innovation and growth. Entrepreneurs who believe in their ideas and have the financial means to execute them are more likely to embark on entrepreneurial ventures. Hence, the study proposes the following hypothesis:

H7- There is a significant positive relationship between attitude and access to finance.

2.2.8. The relationship between subjective norms and access to finance

The relationship between subjective norms and access to finance in Bangladesh becomes evident in how societal perceptions influence financial institutions and potential investors. When entrepreneurship is positively regarded within society, financial institutions may be more inclined to offer favorable loan terms and credit facilities to entrepreneurs. Investors, too, are more likely to support ventures that align with positive societal norms, leading to increased opportunities for entrepreneurs to secure funding. In Bangladesh, a positive relationship between subjective norms and access to finance can create a conducive environment for entrepreneurship. When the govt. supports entrepreneurial endeavors, entrepreneurs are more likely to receive the encouragement, backing, and financial resources needed to turn their ideas into successful businesses (Uzzaman, 2023). So, the study proposes the following hypotheses:

H8- There is a significant positive relationship between subjective norms and access to finance.

2.2.9. The relationship between perceived Behavioral control and access to finance

Entrepreneurs with a strong belief in their abilities are more proactive in seeking financial opportunities, while financiers are more inclined to support entrepreneurs who exhibit confidence and competence. This relationship emphasizes the importance of fostering entrepreneurial self-efficacy to enhance access to finance, thereby promoting entrepreneurial initiatives and economic growth in Bangladesh. Kijkasiwat (2021) discovered that individuals possessing enhanced financial knowledge and planning skills are better equipped to establish and manage successful ventures. So, when entrepreneurs have firm conviction in pursuing their entrepreneurial initiatives, they are more likely to have access to finance. Hence, the study proposes the following hypothesis:

H9- There is a significant positive association between perceived behavioral control and access to finance.

2.2.10. The relationship between access to finance and entrepreneurial intention

Chowdhury (2017) demonstrated that access to funding has a positive impact on factors influencing entrepreneurial mindsets and intentions. Similarly, Islam (2021) revealed that funding opportunities can positively affect 'entrepreneurial intention'. Khalily et al. (2020) found that small and medium-sized enterprises (SMEs) in Bangladesh could significantly contribute to employment generation if they have easy access to finance. It is evident that the influence of access to finance on fostering entrepreneurial aspiration among young university students is substantial. Hence, the study proposes the following hypothesis:

H10- There is a significant positive association between access to finance and students' entrepreneurial intention in Bangladesh.

2.2.11. The relationship between entrepreneurship program and entrepreneurial intention

Kabir et al. (2017) discovered that entrepreneurship programs strongly predict an individual's 'entrepreneurial intention'. A meta-analysis conducted by Hassan et al. (2021) demonstrated that in Bangladesh, students studying Science & Engineering are more inclined to adopt attitudes and behavioral traits conducive to budding entrepreneurs. Additionally, a notable finding by Adedeji (2021) revealed that while science education significantly contributes to entrepreneurial inclination, business students exhibit higher responsiveness in both learning and applying practical skills necessary for establishing a new business. This suggests that a well-structured entrepreneurship program could enhance students' entrepreneurial attitudes and intentions, as highlighted by Said et al. (2021).

In the present context, it is crucial to mention that educational policies in countries like Bangladesh play a pivotal role in driving widespread adoption of entrepreneurial activities (Abubakar & Yazeed, 2018). This argument is supported by the observation that entrepreneurship programs are essential in cultivating the human capital necessary to support entrepreneurship endeavors. Although Khalifa and Dhiaf (2016) identified an insignificant relationship between entrepreneurship programs and entrepreneurial intention in the context of the UAE, studies by Taha (2018) and Herman and Stefanescu (2017) explored the influence of entrepreneurship programs on entrepreneurial intention and found a significant relationship between the two variables in Malaysia and Nigeria, respectively.

In view of the discussion above, it is likely that 'entrepreneurship program' will increase the students' intention of becoming entrepreneurs. So, the study proposes the following hypothesis:

H11- There is a significant positive association between entrepreneurship program and students' entrepreneurial intention in Bangladesh.

2.2.12. Mediating effects of access to finance on the association among attitude, subjective norms, perceived behavioral control and entrepreneurial intention

Shamsudin et al. (2017) established that access to finance significantly influences the relationship between attitude, subjective norms, perceived behavioral control, and entrepreneurial intention. Establishing a new venture undeniably requires substantial funding, a fact that cannot be disregarded despite any opposing arguments. A survey conducted by researchers in developing Asian countries highlighted that access to finance poses a major obstacle for aspiring entrepreneurs. Chowdhury (2017) emphasized that limited access to finance is a significant deterrent for young graduates in Bangladesh who aspire to pursue self-employment. Furthermore, the absence of 'collateral securities' prevents young business graduates in Bangladesh from initiating new businesses. Consequently, many financial institutions and banks in Bangladesh decline to provide capital to these aspiring entrepreneurs, compelling them to abandon their business ideas or entrepreneurial intentions.

It is essential to note that past researchers have emphasized the vital role of both external and internal sources of finance for the success of any entrepreneurial venture (Zimbroff & Jorgensen, 2019). Numerous studies have confirmed that access to finance is indispensable for launching a start-up. Direct access to finance provides the necessary capital for initiating a new enterprise. Without this, graduating students might lack the means to invest in developing a minimum viable product to launch in the market. In Bangladesh, the government perceives access to finance as an essential investment for businesses, serving as a prerequisite for launching a new enterprise.

In light of these observations, this study employed access to finance as a mediating variable between TPB variables and entrepreneurial intention, leading to the formulation of the following hypotheses:

H12- Access to finance mediates the association between attitude and entrepreneurial intention of university students in Bangladesh.

H13- Access to finance mediates the association between subjective norms and entrepreneurial intention of university students in Bangladesh.

H14- Access to finance mediates the association between perceived behavioral control and entrepreneurial intention of university students in Bangladesh.

2.2.13. Mediating effects of entrepreneurship program on the association among attitude, subjective norms, perceived behavioral control and entrepreneurial intention

An entrepreneurship program is an enterprise approach to education where entrepreneurship curricula, mentoring, and support system develop the knowledge, skills, behavior, and mindset of a student towards the aim of creating an enterprise through experiential learning (Fayolle & Gailly, 2015). In the present research, entrepreneurship program is termed as the process and method of providing university students with managerial and entrepreneurial knowledge, skill sets and mindset that can affect their entrepreneurial intention towards starting a new enterprise.

A good number of studies revealed that entrepreneurship programs affect the factors that influence the entrepreneurial intentions of university students. Furthermore, Islam, 2019 found out entrepreneurial attitude, subjective norms, perceived behavioral control, access to finance and knowledge of business management to be crucial factors in becoming entrepreneurs for the Bangladeshi graduates. Akter and Rahman (2020), observed that if the university students of Bangladesh could be made to adopt 'entrepreneurial attitude', receive conducive 'subjective norms' and be inspired by 'perceived behavioral control', with the entrepreneurial courses, the birthing of entrepreneurial skills among these graduates could be much more achievable than it is currently.

In the last few years, several studies have indicated that becoming an entrepreneur is genetic. A study done by 'the Department of Twin Research & Genetic Epidemiology, King's College London' revealed that

37 to 48% of the propensity to become an entrepreneur is hereditary (Heitzman, 2015). On the other hand, another study conducted at Babson College, USA based on a sample of three thousand seven hundred fifty-five (3755) alumni who graduated from 1985 to 2009 revealed that 'entrepreneurship program' has a great influence on the factors that develop students' 'entrepreneurial intention' and students who completed two or more courses on entrepreneurship showed a higher level of entrepreneurial intent to become entrepreneurs (Brush, 2021). A good number of research studies show that universities can play a vital role in creating cultures of innovation and to develop students' problem-solving skills. Martin et al. (2013) proposed that an entrepreneurship program is essentially important in the association of TPB factors that affect students' entrepreneurial intention. Furthermore, Taha (2018) also found the positive effect of entrepreneurship programs in the relationship of TPB factors influencing entrepreneurial intentions. As revealed by Adedeji (2021), entrepreneurship program with the influence of TPB factors enhance entrepreneurial intentions.

In light of the above discussion on the mediating role of entrepreneurship program, the study proposes the following hypotheses.

H15- Entrepreneurship program mediates the association between attitude and entrepreneurial intention of university students in Bangladesh

H16- Entrepreneurship program mediates the association between subjective norms and students' entrepreneurial intention in Bangladesh.

H17- Entrepreneurship program mediates the association between perceived behavioral control and students' entrepreneurial intention in Bangladesh.

In the research framework, 'attitude', 'subjective norms', 'perceived behavioral control' are proposed as independent variables while 'entrepreneurial intention' is the dependent variable. 'Access to finance' and 'entrepreneurship program' are the mediating variables.

Figure 1 demonstrates the research framework proposed by the study.

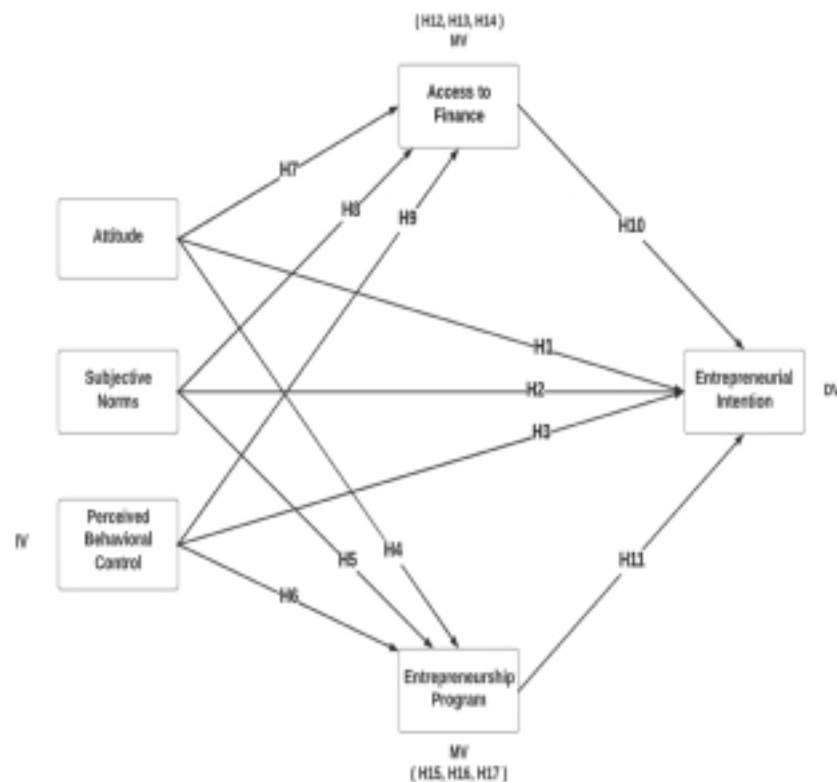


Figure 1. Research framework.

3. Methodology

A quantitative survey design was employed to assess the impact of TPB components, entrepreneurship programs, and access to finance on entrepreneurial intention among students across 23 selected universities in Bangladesh. The measurement items were specifically designed to obtain responses related to the levels of attitude, subjective norms, perceived behavioral control, entrepreneurship program influence, access to finance, and ultimately, entrepreneurial intention, following a literature review from previous studies such as Dohse and Walter (2011), Aykol and Gurbuz (2008), Leong (2008), Linan and Chen (2009), Malebana (2014), Ooi et al. (2011), Paço et al. (2011), Keat et al. (2011), Rengiah (2013). The measurement items are available in the Appendix section. The study employed a 7-point Likert scale.

3.1. Population and sample size

The population of this study was selected from the students of 23 leading universities out of 158 universities (UGC., 2022) from Bangladesh that offer entrepreneurship programs in the form of either taught entrepreneurship courses or entrepreneurship training/mentorship/entrepreneurial activities in the disciplines of Business and Science and Engineering as part of their academic or co-curricular activities. The population of the study is 182497 (obtained as of April 2023), consisting of business and science students from North South University, BRAC University, East West University, American International University-Bangladesh, University of Liberal Arts Bangladesh, Daffodil International University, Green University, Independent University Bangladesh, United International University, Bangladesh University of Professionals, University of Dhaka, Jahangirnagar University, University of Rajshahi, Cumilla University, Jagannath University, Ahsanullah University of Science and Technology, Shahjalal University of Science and Technology, University of Chittagong, Bangladesh University of Engineering and Technology, University of Khulna, University of Asia Pacific, Southeast University and Eastern University. From the total population, the established sample should be 384 (Krejcie & Morgan, 1970). Finally, 394 responses were received for further data analysis.

3.2. Data collection method and data analysis

The study sample was collected from October 2022 to April 2023 through a stratified random sampling method. Students graduating from business and science backgrounds tend to pursue entrepreneurial paths more frequently in the context of Bangladesh. This observation is in line with general trends seen in entrepreneurship programs, where students with business education often possess practical skills applicable to starting and managing businesses. Similarly, those with science backgrounds might leverage their technical expertise for innovative entrepreneurial ventures. So, the samples were proportionately collected from two strata, the Faculty of Business and Entrepreneurship (FBE) and the Faculty of Science and Engineering (FSE), as per their population. Primary data were collected from the students at selected universities in Bangladesh using an adapted questionnaire containing nine questions in Section A (demographic profile), and thirty measurement items of variables in Section B. The survey questionnaire included a separate section of the informed consent and participants were assured that the response would be kept confidential and only used for study purposes. Written informed consent were received from the participants who participated in the study voluntarily. This study includes the researchers selecting, distributing, and gathering the survey using the 'personally administered questionnaire survey method', and the 'drop off and pick up survey method' because of its convenience and saving time and response rates. The researchers engaged research associates to distribute and pick up the questionnaires from the students at remote universities. Finally, 394 university students responded to the survey questionnaire. Partial least square structural equation modeling (PLS-SEM) was used to analyze the data in SMART PLS 3.2.9.

4. Data analysis and findings

4.1. Respondents profile

Table 1 shows the Study Program and Respondents. It can be noted that most of the survey participants were from the Bachelor of Computer Science & Engineering/Science study program with a significant number of them belonging to the programs of Bachelor of Business Administration, Entrepreneurship, and Master of Business Administration. Among the respondents 51% belong to the faculty of business and entrepreneurship and 49% belong to the faculty of Computer Science & Engineering/Science. A total of 53.55% respondents were male and the rest of 46.45% were female. About 66.24% students were in their 3rd and 4th year of their Bachelor's degree and the rest of 33.76% were studying in 1st and 2nd year.

4.2. Measurement model assessment

4.2.1. Reliability & convergent validity analysis

The measurement items' validity and reliability are confirmed by the measurement model. Based on the generalization made by Bagozzi and Yi (1988) and Hair et al. (2011) that the Cronbach alpha and composite reliability co-efficient should be at least 0.7, the internal consistency of reliability was interpreted using the composite reliability coefficient. The reliability of the data is confirmed by Table 2 below, which shows that all of the composite reliability and Cronbach alpha values for independent, mediating, and dependent variables are higher than 0.70. The outer loadings should typically be above 0.708, and the construct has convergent validity if the Average Variance Extended (AVE) value is 0.50 or higher (Hair et al., 2019). Table 2 shows the values of reliability analysis and convergent validity scores, and Table 3 shows the outer loadings. The values indicate that all the constructs have met the minimum threshold value except the outer loadings of PBC3. However, Hair et al. (2019) suggest that rather than just automatically removing an indicator with a loading below 0.70, researchers should think about doing so only if doing so boosts the composite reliability (CR) and AVE. As a result, the deletion depends on the AVE and CR's increment in order to maintain a specific indicator, which requires the loading to be between 0.40 and 0.70.

4.2.2. Common method bias

The investigation employed three distinct approaches to validate the potential presence of common method bias that could arise during PLS-SEM verification. Following the method proposed by Podsakoff et al. (2003), an evaluation was undertaken to ascertain how a singular factor explains the variance across all observed variables in path analysis using principal component analysis. In line with Harman's single-factor technique, a principal component analysis was performed on 26 observation variables, confirming the explanation at 46.88%, a value below the 50% threshold. Secondly, following the PLS-SEM verification procedure outlined by Kock (2015), multicollinearity was assessed amidst latent variables. The outcome indicated that the variance inflation factor (VIF) remained within acceptable limits, ranging from the minimum value of 1.246 to the maximum of 2.495 without exceeding the threshold of 3.3.

Table 1. Study program and participants.

	Entrepreneurship Programs	No. of Participants
Study Program	Bachelor of Entrepreneurship	40
	Bachelor of Business Administration	100
	Master of Business Administration	60
	Total students from the Faculty of Business & Entrepreneurship	200
	Bachelor of Computer Science & Engineering/ Science	194
Gender	Male	211
	Female	183
Bachelor's Degree	1 st Year	55
Education Status	2 nd Year	78
Ongoing	3 rd Year	123
	4 th Year	138

Table 2. Reliability analysis and convergent validity.

	Cronbach's Alpha	Composite Reliability	Average Variance Extracted (AVE)
AF	0.874	0.913	0.725
ATT	0.899	0.926	0.713
EI	0.804	0.885	0.719
EP	0.826	0.896	0.741
PBC	0.768	0.852	0.593
SN	0.846	0.891	0.621

Table 3. Outer loadings.

	AF	ATT	EI	EP	PBC	SN
AF1	0.854					
AF2	0.853					
AF3	0.875					
AF4	0.824					
ATT1		0.854				
ATT2		0.836				
ATT3		0.851				
ATT4		0.845				
ATT5		0.837				
EI1			0.866			
EI2			0.859			
EI3			0.817			
EP1				0.849		
EP2				0.842		
EP3				0.890		
PBC1					0.805	
PBC2					0.825	
PBC3					0.618	
PBC4					0.815	
SN1						0.813
SN2						0.841
SN3						0.705
SN4						0.802
SN5						0.772

4.2.3. Discriminant validity

For determining the discriminant validity, Fornell-Lacker criteria and HTMT scores were checked. Whether the square root of the AVE of a certain construct is bigger than other constructs is determined using the Fornell–Lacker criterion (Fornell & Larcker, 1981). Table 4 indicates that all the diagonal values are higher for a particular construct than for other constructs, which meets the Fornell–Lacker criterion. In addition, the HTMT scores are utilized to check the discriminant validity. According to Henseler et al. (2016), the HTMT statistic's confidence interval for all construct combinations should not contain the value 1. Therefore, all these outcomes suggested that the constructs in this model have achieved discriminant validity requirements shown in Table 5.

4.2.4. Model fitness

Model fitness was measured by using NFI (normed fit index), and SRMR (standardized root mean squared residual). As proposed by Hair et al. (2019), SRMR must be less than 0.08 and NFI value should be more than 0.90. The result presented that indices were satisfying (see Table 6), suggesting the model's fitness.

Before assessing the structural model, it is important to examine the multicollinearity problem. Variance inflation factor (VIF) for exogenous variables was examined to detect multicollinearity. As a rule of thumb, VIF values of 5 or less are required to avoid the collinearity problem (Hair et al., 2019). It was found in this study that the variance inflation factor (VIF) values for all exogenous variables were lower than 5. This indicates that there are no multicollinearity problems in the data. Table 7 shows the VIF values.

4.3. Structural model assessment

The coefficient of determination or assessment of the level of R-square is another often used measure of the evaluation of the relationships in the PLS-SEM model, in addition to the assessment of significance

Table 4. Fornell-Lacker criteria.

	AF	ATT	EI	EP	PBC	SN
AF	0.852					
ATT	0.690	0.844				
EI	0.721	0.659	0.848			
EP	0.753	0.562	0.657	0.861		
PBC	0.705	0.671	0.685	0.608	0.770	
SN	0.632	0.569	0.617	0.584	0.603	0.788

Table 5. Heterotrait-Monotrait ratio (HTMT).

	AF	ATT	EI	EP	PBC	SN
AF						
ATT	0.775					
EI	0.858	0.773				
EP	0.880	0.645	0.801			
PBC	0.855	0.795	0.863	0.754		
SN	0.735	0.651	0.750	0.695	0.749	

Table 6. Model fitness.

Indices	Recommended Criteria	Default Model
SRMR	Less than 0.08	0.058
NFI	More than 0.90	0.91

Table 7. Test of multi-collinearity (VIF).

	VIF
AF1	2.199
AF2	2.225
AF3	2.378
AF4	1.961
ATT1	2.495
ATT2	2.329
ATT3	2.493
ATT4	2.338
ATT5	2.285
EI1	1.850
EI2	1.881
EI3	1.576
EP1	1.693
EP2	1.938
EP3	2.226
PBC1	1.684
PBC2	1.797
PBC3	1.246
PBC4	1.633
SN1	2.044
SN2	2.275
SN3	1.499
SN4	1.910
SN5	1.858

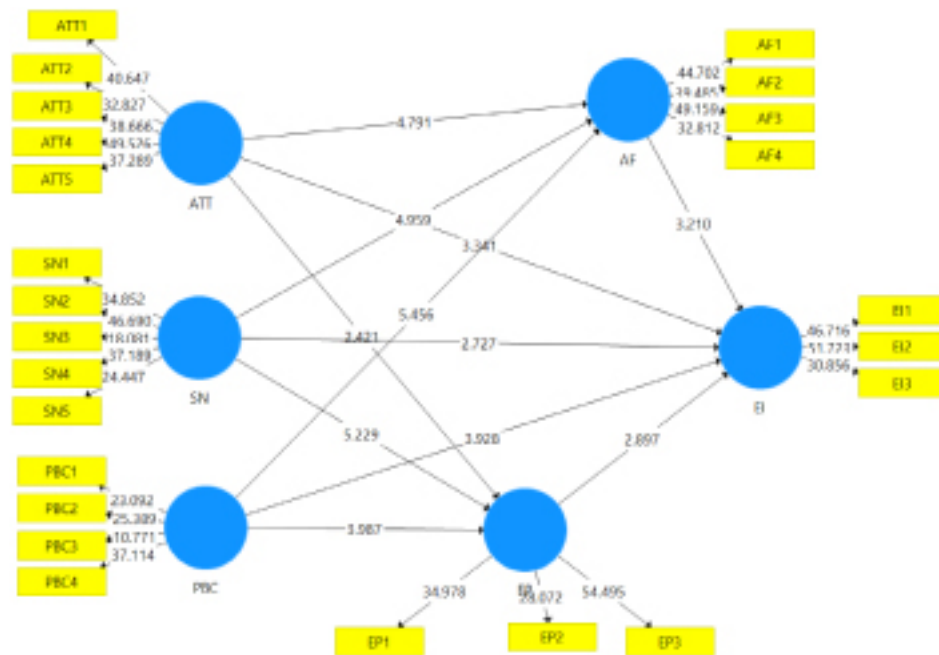
and relevance. The combined effects of the exogenous latent variables on the latent endogenous variable are represented by the R^2 value (Hair et al., 2014). The coefficient of determination data is displayed in Table 8.

As shown in Table 6, the exogenous latent constructs of this study (i.e. attitude, subjective norm, perceived behavioral control, entrepreneurship program, and access to finance) explain a 63.0 percent variance in Entrepreneurial Intention. On the other hand, three TPB constructs can explain (attitude, subjective norm, and perceived behavioral control) 61.7% variation in access to finance and 46.3% variation in entrepreneurship program. In addition, after running the Q^2 predict, the Q^2 values of AF, EI, and EP were respectively 0.602, 0.568, and 0.442 greater than 0. That means the model has a predictive relevance.

The study utilized a bias-corrected and accelerated (BCa) bootstrapping procedure using a 5000-sample size in SMART PLS 3.2.9 where the confidence interval upper limit (UL) is 97.5% and lower limit (LL) is 2.5%. This allowed the researchers to inspect the standardized path coefficients and the significance level. The

Table 8. Coefficient of determination.

	R Square	R Square Adjusted	Q ²
Access to Finance	0.617	0.614	0.602
Entrepreneurial Intention	0.630	0.625	0.568
Entrepreneurship Program	0.463	0.459	0.442

**Figure 2.** PLS structural model.

direct relationships between independent variables (IVs) and the dependent variable (DV) are discussed below. Figure 2 shows the PLS-SEM Structural model and Table 9 shows the path co-efficient results.

4.4. Hypotheses testing for mediating effect

In this study mediating effect of access to finance and entrepreneurship program was tested in the relationship between attitude, subjective norm, perceived behavioral control and entrepreneurial intention among the university students in Bangladesh. To test mediation, bootstrapping was run to find the indirect effect of the mediating variables as recommended by Baron and Kenny (1986). The result of mediation effects are given below in Table 10.

As depicted in Table 10, all confidence intervals for the paths were devoid of the value 0, signifying the noteworthy presence of the mediating effect. Specifically, the indirect impact of AF exhibited significance within the sequence ATT → AF → EI ($\beta=0.036$, $SE = 0.024$, $p<0.05$), PBC → AF → EI ($\beta=0.077$, $SE = 0.030$, $p<0.05$), and SN → AF → EI ($\beta=0.054$, $SE = 0.022$, $p<0.05$). The mediating effect of EP in the PBC → EP → EI path also displayed significance ($\beta=0.052$, $SE= 0.024$, $p<0.05$) and SN → EP → EI ($\beta=0.050$, $SE = 0.019$, $p<0.05$) except ATT → EP → EI ($\beta=0.033$, $SE = 0.018$, $p>0.05$) (Sobel, 1982). The results of Table 10 showed that all the hypotheses related to mediation are accepted except H12 because the p-value is greater than 0.05. There exists partial mediation of access to finance between TPB variables and EI. In addition, partial mediation of EP exists between SN and EI and PBC and EI.

4.5. Discussion

Hypothesis H1 proposes positive relationship between attitude and entrepreneurial intention which supports prior findings reported by Taha (2018), Iakovleva et al. (2011) and Rengiah and Sentosa (2017). The

Table 9. Direct path co-efficient results.

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (O/STDEV)	P Values
AF -> EI	0.226	0.225	0.070	3.210	0.001
ATT -> AF	0.322	0.318	0.067	4.791	0.000
ATT -> EI	0.183	0.185	0.055	3.341	0.001
ATT -> EP	0.193	0.189	0.080	2.421	0.016
EP -> EI	0.172	0.173	0.059	2.897	0.004
PBC -> AF	0.343	0.347	0.063	5.456	0.000
PBC -> EI	0.214	0.212	0.054	3.928	0.000
PBC -> EP	0.303	0.306	0.076	3.987	0.000
SN -> AF	0.241	0.242	0.049	4.959	0.000
SN -> EI	0.141	0.140	0.052	2.727	0.006
SN -> EP	0.292	0.292	0.056	5.229	0.000

A significant relationship exists to be accepted if it is significant at a 5 percent ($p < 0.05$) level or if the t statistics is higher than 1.96 (Hair et al., 2014). Table 7 shows that all the p-values are below 0.05. So, all the direct path hypotheses are accepted. Among the variables access to finance showed the highest impact on EI followed by PBC, ATT, EP, and SN.

Table 10. Mediation effects.

Mediation Path	Indirect Effect (β)	Standard Error (SE)	z-value	p values
ATT -> AF -> EI	0.073	0.024	2.692	0.003
PBC -> AF -> EI	0.077	0.030	2.783	0.009
SN -> AF -> EI	0.054	0.022	2.699	0.013
ATT -> EP -> EI	0.033	0.018	1.886	0.068
PBC -> EP -> EI	0.052	0.024	2.379	0.032
SN -> EP -> EI	0.050	0.019	2.555	0.007

result indicates that attitude is a positive and significant predictor of entrepreneurial intention in both developed and developing nations. The same result holds true for the study reported by Malebana (2014), Linan et al. (2013) and Linan and Chen (2009). There is a gap in the literature conducted in Bangladesh that explores empirically the relationship between attitude and entrepreneurial intention. However, this study reveals that when students perceive entrepreneurship as attractive, exciting, and rewarding, they are more likely to start their own business.

The acceptance of H2 also shows that the subjective norms lead to 'entrepreneurial intention'. The same conclusions were drawn by Taha (2018), Heuer and Liñán (2013) and Fitz-Koch et al. (2018). Although Mahmoud et al. (2020) found negative association between subjective norms and intention but the overall results showed that family members, friends, relatives, peers and opinion leaders' positive views along with societal norms on entrepreneurial activities significantly influence entrepreneurial intentions among university students in Bangladesh.

Acceptance of Hypothesis 3 supports many studies such as Adu et al. (2020), Taha (2018) that 'perceived behavioral control' (PBC) has a significant positive association with 'entrepreneurial intention' as it has been theoretically conceptualized and measured as 'an individual's belief about being able to execute the planned behavior and the perception that the behavior is within the individual's control'. The result of the hypothesis indicates students having a sense of control over their entrepreneurial ambitions were more likely to express the tell-tale signs of entrepreneurial intentions.

Hypothesis 4 being accepted suggests that university educational program focused on entrepreneurship have a positive impact on developing a favorable attitude towards venture creation. This finding aligns with Yousaf et al. (2021) who emphasized the necessity of entrepreneurial program for developing business acumen and cognitive skills. Von Graevenitz et al. (2010) found that as students progressed in their business courses, their entrepreneurial intention grew stronger, indicating a notable change in their belief system. Considering these psychological antecedents, it can be concluded that entrepreneurship programs in various universities in Bangladesh play a vital role in inspiring entrepreneurial attitudes among students. This supports the current finding that entrepreneurship program has a significant influence on developing entrepreneurial attitudes.

The acceptance of Hypothesis 5 indicates that subjective norms (SN) play a significant role in determining the type of entrepreneurship program students are interested in pursuing. This finding aligns with the theoretical notion that the socioeconomic environment in which individuals are raised influences their choice of business education in Bangladesh. This hypothesis provides unique insights into the

rise of women entrepreneurs in the country. Previous research suggested that due to sociocultural prejudices and negative influences from peers and family members, students might not pursue entrepreneurial education programs. However, a shift in subjective norms in Bangladeshi society has been observed, with an increasing number of male and female business and entrepreneurial educational admissions each year. One could argue that in developing nations like Bangladesh, where the middle-class population is growing, graduating students from such socioeconomic backgrounds find it easier to access entrepreneurship education and subsequently create self-employment, rather than encountering entry barriers in the country's labor market.

In the Hypothesis 6, the relationship between PBC and EP was found to be statistically significant, which is consistent with previous literature. Farrukh et al. (2018) demonstrated that behavioral traits explained by the theory of planned behavior strongly influence an individual's desire to pursue business education and an entrepreneurial career. They found that PBC is a good predictor of an individual's determination to pursue entrepreneurship education. Subsequent studies have supported these findings, highlighting the strong predictive role of PBC in entrepreneurial self-efficacy and the pursuit of an entrepreneurial career. The validation of this hypothesis aligns with the existing literature.

Acceptance of Hypothesis 7 can be interpreted simply by the fact that all of the research participants were well aware of the circumstantial limiting factors about venture creation. In other words, the power of capital investment to determine the viability of entrepreneurial journeys was a concept too well known amongst the participants. The fact that attitude to entrepreneurship was found to be well correlated with access to finance simply shows that as these students were in knowledge that they had financial support centers for their entrepreneurial ambitions, it was not completely impractical to decide on such career choice after their education had been completed. There are previous studies that came to the same conclusion. According to Hossain and Asheq (2019), one of the greatest challenges for entrepreneurs in Bangladesh to establish and grow a firm is a lack of infrastructure. This is also noted in recent research studies, which demonstrate that entrepreneurs in Bangladesh confront a variety of challenges, including a lack of institutional support, a lack of financial assistance and so on.

The acceptance of Hypothesis 8 signifies that certain socio-economic factors offer greater access to entrepreneurial capital. In other words, certain socio-economic groups who took part in this study have a significant association with 'access to finance'. This finding can be corroborated by other studies where it has been shown that subjective norms are a significant determinant of 'access to finance' (Taha, 2018). This indicates that students from affluent backgrounds or with business connections were more likely to have an access to finance for creating startups.

Hypothesis 9 being accepted indicates that certain attitudes toward the utilization of money are reflective of entrepreneurial intentions. This can also be interpreted as students having a better understanding of how to use retained earnings for forming new start-ups are more aware of their entrepreneurial opportunities. Kijkasiwat (2021) also found that individuals with better knowledge of financial matters and planning are more capable of forming a venture successfully.

A good number of previous studies have shown that the availability of capital is one of the deciding factors of successful entrepreneurship. Acceptance of H10 can be supported by the research studies conducted by Khalily et al. (2020), Islam (2021), Chowdhury (2017), Zimbhoff and Jorgensen (2019) and Zanabazar and Jiggjiddorj (2021). According to Urban and Ratsimanetrimanana (2019), access to finance influences the factors that can increase entrepreneurial intention. Thus it can be stated that access to finance is indispensable to ensure strong entrepreneurial intention among the students in Bangladesh.

The acceptance of Hypothesis 11 aligns with prior research indicating that entrepreneurial programs inspire students to embark on entrepreneurial endeavors. A study conducted by Ramadani et al. (2022) demonstrated that well-designed entrepreneurial courses, tailored to the socioeconomic contexts of students, serve as effective tools in fostering entrepreneurship.

Rejection of Hypothesis 12 articulates that an entrepreneurial attitude does not lead to the financial access necessary for entrepreneurship. This also suggests that the indicators of attitude are not suitably poised to ensure financial literacy and management which reflects poorly on the markers of entrepreneurship intention. Ahmad and Abdel-Aziz (2015) showed that a group of young entrepreneurs in Egypt

got successful access to crowd-funding on account of their social media skills and their attitude was always accompanied with financial literacy enabling them to secure venture capital. From this finding, the researchers suggest that mere attitude would not act as a gateway to funding if certain skills like financial management and social media networking remain absent.

H13 being accepted indicates that the marker of subjective norms concerning entrepreneurship in Bangladesh ensure financial knowledge as well as access to it. It can be inferred that if the subjective norms of students support their engagement with funding in entrepreneurial activities, they are more likely to engage in performing entrepreneurial ventures. Thus in a country like Bangladesh, access to finance provided by the ecosystem such as university, family, friends, peers or teachers will certainly influence the entrepreneurial intention of the university students.

Acceptance of Hypothesis 14 indicates access to finance mediates the association between 'perceived behavioral control' and 'entrepreneurial intention'. That means when students have storing belief and conviction in their abilities in pursuing their entrepreneurial initiatives, they are more likely to become entrepreneurs. Taha (2018) showed that PBC leads to entrepreneurial skill development opportunities in all cases and when access to finance is present, the intention to act or achieve the goal of developing a venture is significantly amplified.

Previous studies show that entrepreneurship programs moderate the relationship between attitude and entrepreneurial intention. However, acceptance of Hypothesis 15 reveals that entrepreneurship programs create work-readiness among the students which finally converted into a positive and proactive attitude towards entrepreneurial intentions (Akter, 2020; Rengiah, 2016). This finding underscores the transformative impact of entrepreneurship programs that play a paramount role not only in shaping the mindset and actions of aspiring entrepreneurs but also equip them with the practical skills and knowledge needed for entrepreneurship.

The acceptance of Hypothesis 16 slightly aligns with findings from prior studies, reinforcing the observed moderating effect of entrepreneurship programs between subjective norms (SN) and entrepreneurial intention (EI), a phenomenon noted by Taha (2018). However, H16 being accepted reveals that entrepreneurship program mediates the relationship between subjective norms and entrepreneurial intention. In the Bangladeshi context, entrepreneurship programs act as intermediaries between subjective norms and students' entrepreneurial intentions. By providing a supportive environment, these programs influence students' perceptions of social approval and encouragement, translating subjective norms into a concrete intention to pursue entrepreneurship. Through mentorship, peer interactions, and exposure to successful entrepreneurial role models, these programs reinforce positive social cues, fostering a strong entrepreneurial mindset among students in Bangladesh.

The acceptance of Hypothesis 17 signifies that entrepreneurship programs serve as crucial intermediaries between students' perceived behavioral control and their entrepreneurial intentions in the context of Bangladesh. By offering structured guidance, practical training, and mentorship, these programs enhance students' confidence in their abilities, bridging the gap between intention and action. Consequently, the mediating role of entrepreneurship program becomes vital, facilitating the transformation of perceived control into tangible entrepreneurial aspirations among students in Bangladesh.

The results of the hypotheses revealed that TPB factors have positive significant association with 'entrepreneurial intention' while 'access to finance' and 'entrepreneurship program' mediate among those relationships. Thus, the findings strongly validate the objectives of this study, which aimed to articulate arguments regarding the essentiality of TPB factors for consideration by Bangladeshi universities in nurturing future entrepreneurs. It can be stated with confidence that TPB components with the mediating role of 'entrepreneurship program' and 'access to finance' can certainly develop students' entrepreneurial aspiration in Bangladesh. All these factors that influenced entrepreneurial intention should be taken in consideration in designing entrepreneur programs in Bangladesh. Thus, the current findings, which were obtained from a sample of 23 universities in Bangladesh, have strong implications for the concerned stakeholders. The results may also serve as a definitive guide for educators and decision-makers in terms of encouraging entrepreneurial behaviors and activities among university students.

5. Conclusions

This study aimed to identify the critical factors that influence the entrepreneurial intention of university students in Bangladesh. The study extended the TPB model and proposed 'access to finance' and 'entrepreneurship program' as mediating variables which revealed that there is a high level of intention among university students in Bangladesh to become entrepreneurs who have completed entrepreneurship programs and have access to finance. Thus, it can be inferred that university students in Bangladesh are more likely to start an enterprise when they have a positive entrepreneurial attitude, receive supportive encouragement from the society, and if they hold a strong belief in their ability to manage the intricacies of operating a venture. One of the other findings is that most of the students would like to share their entrepreneurial journey with their university students once they become entrepreneurs. This suggests how universities in Bangladesh can keep a record of the number of successful entrepreneurs and calculate the conversion rate, i.e. the number of students who completed entrepreneurship program becoming entrepreneurs. Hence, the findings of the study are expected to contribute to the theory of entrepreneurial intention in which policymakers and educators can make better and more informed decisions in developing entrepreneurs in Bangladesh.

Thus, this study will be useful for formulating policy on the further development of entrepreneurship programs for the youths in Bangladesh. This aligns perfectly with the objectives of the United Nations General Assembly report on Entrepreneurship for Sustainable Development, which aims to promote sustained economic growth, full and productive employment, and decent work for all, especially focusing on the youth, as delineated in Sustainable Development Goal 8. Entrepreneurship, as emphasized by Apostu and Gigauri (2023), exerts a significant influence on sustainable development and its associated goals. Entrepreneurs have the potential to play a pivotal role in driving social transformation towards the creation of more sustainable products and services. In light of this, comprehending the impact of entrepreneurial programs on students' entrepreneurial intentions holds substantial significance. It empowers universities to take proactive measures in nurturing a culture of entrepreneurship and producing graduates who possess an entrepreneurial mindset, thereby contributing to the broader goals of sustainable development and economic growth within the country.

5.1. Theoretical Implications of the study

The fundamental Theory of Planned Behavior (TPB) comprises three key factors: attitude, subjective norms, and perceived behavioral control, all of which are known to have positive direct relationships with intention. However, the findings of the present study emphasize the pressing need to enhance the TPB framework to comprehensively address the intricate challenges identified in the specific context of Bangladesh. The lack of accessible avenues for financial support emerges as a significant hurdle in nurturing entrepreneurial initiatives. This challenge is further compounded by the unfortunate reality that a substantial number of small-scale ventures initiated by graduates encounter setbacks in the country. Despite being supported by meticulously crafted business and marketing plans, these ventures struggle due to the absence of a robust financial foundation (Islam, 2021). This underscores the critical importance of addressing the financial aspect comprehensively within the TPB framework to promote sustainable entrepreneurship in Bangladesh.

Adding to this concern, the allocation of funding for entrepreneurial endeavors in Bangladesh remains remarkably low, accounting for a mere 0.04% of the GDP. In contrast, China and India allocate 0.74% and 0.51% of their respective GDPs to startup funding, underscoring the substantial gap in financial support for emerging entrepreneurs (Hasan, 2022). To address these challenges, there emerges a compelling case for the implementation of access to finance and entrepreneurship program in Bangladesh which is a strategic approach of the Govt. of Bangladesh. This context underscores the relevance of examining the mediation effects of access to finance and entrepreneurship programs within the framework of the Theory of Planned Behavior (TPB) which justifies the necessity for a robust theoretical grounding of the mediating variables.

Therefore, it can be remarked that 23 of the chosen universities could be set as models for the entire nation on how to administer entrepreneurship program that not only teach theoretical knowledge concerning entrepreneurship but also are able to instill a sense of direction toward achieving such a career choice in Entrepreneurship.

Consequently, this study significantly propels the extension of TPB theory by affirming its relevance within the context of Bangladesh. Future researchers exploring the same subject matter can potentially employ this theoretical framework for a research study tailored to specific countries.

5.2. Implications for government and policymakers

The study underscores the importance of 'entrepreneurship programs' and 'access to finance'. Policymakers should prioritize introducing formal entrepreneurial courses in universities and creating a supportive entrepreneurial environment. By enhancing students' 'entrepreneurial attitude', strengthening 'perceived behavioral control', and fostering positive 'subjective norms', there can be a significant boost in the inclination towards entrepreneurship. Government-backed financial support, improved infrastructure, and reduced market entry barriers are crucial to facilitate student-driven enterprises.

5.3. Implications for universities

Universities play a pivotal role in nurturing entrepreneurship. Providing students with relevant information and mentorship is essential for shaping their entrepreneurial mindset and increasing their attitude and perceived behavioral control. Practical-oriented entrepreneurship courses are vital, and universities can further bolster students' confidence through entrepreneurial events and projects. Mentorship programs are invaluable, and insights from this study can guide the development of tailored curricula. This is particularly relevant for universities in rural areas, offering them valuable guidance to introduce effective entrepreneurship programs and foster entrepreneurial talents.

5.4. Practical implications

The findings of the study suggest some practical steps to foster economic sustainability in the country:

5.4.1. Enhancing access to finance

Facilitating easier access to financial resources, including loans, grants, and funding opportunities, can encourage and support entrepreneurial initiatives among students. This can be achieved through collaborations between financial institutions, government agencies, and educational institutions.

5.4.2. Strengthening entrepreneurship programs

Investing in robust and comprehensive entrepreneurship programs within universities can provide students with the necessary skills, knowledge, and mentorship to pursue their entrepreneurial ambitions. These programs can encompass practical training, networking opportunities, and exposure to real-world business scenarios.

5.4.3. Shaping entrepreneurial attitudes

Efforts should be directed towards promoting a favorable attitude towards entrepreneurship among students. This could involve highlighting success stories, showcasing the impact of entrepreneurship on university campus, and dispelling common misconceptions or fears associated with starting a business.

5.4.4. Influencing subjective norms

By emphasizing the social acceptance and benefits of entrepreneurship, including job creation and economic growth, a cultural shift can be fostered where entrepreneurship becomes a respected and desirable career path for students.

5.4.5. Empowering perceived behavioral control

Offering resources and support to students in terms of training, mentorship, and guidance can enhance their sense of control over entrepreneurial endeavors. This could involve providing tools and knowledge that enable them to navigate challenges and uncertainties.

Overall, these practical implications underscore the importance of a holistic approach to nurturing entrepreneurship among students in Bangladesh. By fostering a conducive environment through accessible finance, strong entrepreneurship programs, entrepreneurial attitudes, social acceptance, and empowerment, the country can pave the way for sustainable economic growth and innovation.

5.5. Limitations of the study & future research directions

Entrepreneurial intention is the top forecaster of entrepreneurial action, but this study investigated the former without the latter as the study of both would implicate a longitudinal study. This study adopted a cross-sectional study; thus, future researchers can look into adopting a longitudinal approach for better practicality.

Moreover, the study's data were obtained from the students, not from the university graduates who had already undertaken the entrepreneurship journey, who may individually have distinct perceptions towards entrepreneurship with varied entrepreneurial intentions. Future studies could be undertaken on the respondents pursuing entrepreneurship as a career.

A longitudinal study may be conducted to examine the factors that affect university students' entrepreneurial behavior and actions. Such a study would identify the challenges encountered by the students as budding entrepreneurs for a specific time after their orientation to university entrepreneurship programs. Hence, future researchers can undertake a longitudinal study to obtain more consistent findings about actual entrepreneurial behavior and actions.

The study also didn't consider certain important factors identified in prior research that should be considered for future studies. Factors such as perceived risk, perceived opportunity, and push and pull can be considered as antecedents affecting entrepreneurial intention in the future study (Gódány et al., 2021). Additionally, the significance of family and friends-based entrepreneurial social networks in fostering entrepreneurial intentions is underscored in the literature (Ruiz-Palomino & Martínez-Cañas, 2021). Furthermore, the impact of gender, particularly the potential higher association of female gender with entrepreneurship can be taken into consideration in future research (Ruiz-Palomino et al., 2019). Addressing these gaps could further enhance the comprehensiveness and relevance of future studies.

Author's contributions statement

Mohammad Shibli Shahriar=Conception and design; drafting of the paper

Md. Sharif Hassan=analysis and interpretation of the data; drafting of the paper

Md. Aminul Islam=Conception and design; revising it critically for intellectual content

Farid Ahammad Sobhani=revising it critically for intellectual content

Md. Touhidul Islam=analysis and interpretation of the data

Disclosure statement

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Appendix: Measurement items

	Measurement Items	Resources
Entrepreneurial Intention (EI)		
EI1	I like to work in an organization for an income than become an entrepreneur.	Dohse and Walter (2011) and Malebana (2014)
EI2	I will definitely start a business during or upon completion of my entrepreneurship studies	
EI3	If I pursue a career as an entrepreneur, the chances of failure rate will be high.	
Attitude (ATT)		
ATT1	I would prefer to be my own boss than to have steady employment.	Paço et al. (2011), Liñán and Chen (2009), and Rengiah (2013)
ATT2	I will take risks to adopt entrepreneurship as a career option	
ATT3	I would be inclined to start my own startup if I had the opportunity and resources.	
ATT4	I will earn more when I am self-employed than being paid by an employer	
ATT5	I am highly pleased and satisfied that I can be an entrepreneur	
Subjective Norms (SN)		
SN1	Our family business motivated me towards entrepreneurship as a career option.	Rengiah (2013) and Leong (2008)
SN2	My parents, relatives, teachers and others often inspire me to become an entrepreneur.	
SN3	My friends believe that being an entrepreneur is a logical career choice.	
SN4	The environment and support system have increased my desire to be an entrepreneur.	
SN5	I am convinced that people important to me think that I should choose an entrepreneurial career	
Perceived Behavioral Control (PBC)		
PBC1	It would be easy for me to develop a business startup	Aykol and Gurbuz (2008) and Paço et al. (2011)
PBC2	It would be difficult for me to make my business successful	
PBC3	I am skilled and competent enough to handle the operations of an entrepreneurial venture	
PBC4	Following my studies, I could be self-employed if I wanted to be so.	
Entrepreneurship Programs (EP)		
EP1	The entrepreneurship courses/program of my university prepares students effectively to pursue an entrepreneurial career	Ooi et al. (2011) and Rengiah (2013)
EP2	The program is interesting because of its teaching of real-world situations and practical 'learning by doing' lessons	
EP3	The program covers most of the following teaching approaches: Seminar, case studies, business games, problem-solving exercises, projects, industry visits, formation of enterprise and internship	
Access to Finance (AF)		
AF1	My university provides seed money for students to start businesses.	Islam and Haque (2020) and Keat et al. (2011)
AF2	The Government and other associated companies help the students to get funds for startup initiatives.	
AF3	Financial institutions do not readily provide loans to startup companies	
AF4	My family and friends provide me with financial support.	

Note: EI1, EI3, PBC2 were reverse coded (scored) during the survey and data analysis.