Research Paper

Significant factors affecting initial public offering (IPO) over-subscription (OST) and their relations with book building method (BBM) in Bangladesh

Tasnim Tamanna Subha[1]* and Sadiq Zafrullah[2]

Department of Accounting and Information Systems, University of Dhaka, Dhaka 1000, Bangladesh
[1]Present address: Rue Michelle NICOD 2, Geneva 1202, Switzerland
[2]Assistant Programme Officer, United Nations Institute for Training & Research (UNITAR), Avenue de Sainte-Clotilde 9, Geneva 1205, Switzerland
*Corresponding Author

ABSTRACT: *The study attempts to examine the factors influencing overpricing of initial public offering (IPO) performance in both fixed price method (FPM) and book building method (BBM) and find out the problems and loopholes in the system of BBM in the context of Bangladesh. For many years, the companies listed in Dhaka Stock Exchange (DSE) and Chittagong Stock Exchange (CSE) under Bangladesh Securities Exchange Commission (BSEC), are going through the process of IPO pricing following the FPM. However, in the last decade, some corporations have welcomed the latest methodology of IPO pricing, the BBM, even though the practice is still in its adolescence stage. In the present study, there are discussions about some common terminologies used to provide the readers with a comprehensive background regarding the securities market. Some statistical inference and tools were used to draw logical conclusions to prove the hypotheses and understand regression relations and the inter-dependency of the variables. This research, like all others, contains limitations, some of which were inevitable. It has used 62 samples, incorporating companies from 2015-2022 showcasing an eight-year display of their net asset value (NAV), earnings per share (EPS), lot size, and post-IPO capital (PIC) and has used a literature review and empirical research to explore the correlations and level of significance between IPO and over-subscription (OST) with companies' performance measurements where critical research analyzing tools have been used to add academic and practical values. It is also supplemented by addressing the loopholes and problems existing in the current system of the BBM and suggested some solutions and precautionary steps that are highly encouraged to be followed in order to avoid the chaotic economic and investment environment in the capital markets of Bangladesh.*
KEYWORDS: *Capital markets, BBM, FPM, IPO, OST, DSE, Under-pricing, post-IPO capital (PIC)*

I. Introduction

Capital markets can be considered as the source of fuel for a nation's infrastructural advancement as they finance economic sectors, distribute risk, and enhance economic development and stability [1]. As they play a crucial role in directing money from savers to borrowers, security or capital markets are undeniably important for the operation of the economy and the financial stability of a nation. The picture of an ideal securities market ought to showcase reliable listed corporations that try to maintain their reputation by providing promising benefits and attractive future cash flows to the investors [2]. A thriving capital market motivates investors or other market players by offering better returns, more liquidity, and fewer uncertainties and risks. The capital market in Bangladesh is still developing and expanding at a slower rate [3]. While being monitored by the Bangladesh Securities and Exchange Commission (BSEC), the market has experienced multiple operations leading to both sides of the coin- financial downturn, and ascending performance. An initial public offering denotes the action in which shares of a firm are issued to investment firms or institutional investors and a portion to retail investors for the first time [4]. Typically, one or more investment banks perform the role of an underwriter in an initial public offering (IPO) and coordinate the shares' registration on a stock exchange. In Bangladesh, there are two approaches to IPO pricing. An IPO is valued using the fixed price method (FPM) in accordance with the terms agreed upon by the issue manager and its underwriter or

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the investment banker [5]. Apart from this method, economists and financial analysts are working behind the development of a modified version of IPO pricing, the book building method (BBM), which was launched in 2010 in Bangladesh and is considered the most modern way of IPO pricing that yet has a long way to go before making a solid position in the securities markets around the world.

Sometimes there are instances where the companies receive over-subscription (OST). When an IPO attracts more investors compared with the shares that are available is known as OST [6]. In other words, it is a situation where the demand for shares is greater than their supply. The corporation has the choice to either issue additional shares for sale to the public or increase the price per unit in the event that the securities are over-subscribed [7]. To satisfy investor demand and amass more funds, the corporation may also develop a hybrid of the two strategies. However, there is a cap on how much a security's price can rise before investors become hesitant to pay more.

The BBM is a methodical approach to attaining an accurate price discovery for IPOs by utilizing investor demand for shares [8]. In other words, BBM is a strategy an underwriter uses to gauge demand from investment firms in order to decide at what rate to launch an IPO [9]. Before determining a selling price of a share that will fit both the firm providing the IPO and the market, the price discovery process entails creating and tracking investor demand for stocks. The final issue value cannot be predicted in advance. The issuer announces a price range with a floor price and a ceiling price. The cut-off price at which the shares will be offered will be set after receiving investor bids and making a weighted average of those prices [10]. Based on the bids submitted during the time when the auction is open to the public, it is possible to determine the demand for the shares every day.

Earnings per share (EPS) and net asset value (NAV) are two of the elements among all the independent variables that have been used in this study. A key financial indicator of a company's profitability is its EPS. The net profit of a business is divided by the total number of existing common shares to arrive at EPS [11]. EPS, a well-liked indicator for estimating corporate value, demonstrates how much profit a company generates per share. The most recent EPS that occurred right before the beginning of the IPO subscription on the basis of the prospectus is taken into account in the current analysis [12]. On the other hand, an investment fund's NAV is determined by dividing the number of shares currently outstanding by the net worth of the company's assets less its debts [13]. NAV is calculated at the end of each trading day using the closing market prices of the securities included in the portfolio. NAV served as a key benchmark for our calculations of IPO gains or losses. Regulators often require companies to include NAV per share in their IPO prospectus.

II. Review of literature

A previous study by made an effort to look at the significance of the BBM for offering shares in the secondary market, estimated and evaluated the results of the issues made through book building and fixed price methods over the short- and long-terms, considered the size of the companies that chose this method, and determined which method was less under-pricing [8]. In the long run, the fixed price solution appeared to be more promising than the problems caused by the book building process. The study also came to the conclusion that compared to fixed price offers, book building mechanism was chosen by the majority of larger issue sizes corporations since they saw less under-pricing.

In another study, the socioeconomic backgrounds of retail investors were analyzed, as well as their levels of confidence in succeeding on the Bangladeshi stock market before and after the 2010 market meltdown [5]. The incentive for retail participation in Bangladesh's stock market was also shown, along with an overview of the investment environment. The report investigated and evaluated retail investors' perspectives on the causes of the Bangladeshi stock market crisis in 2010. In order to preserve stock market stability following that significant crash, the author also made an effort to confirm the beliefs of individual investors.

Research highlighted the state of the securities markets in Bangladesh using the BBM [10]. It discussed some of the regulations and rules to enter the IPO under BBM. Moreover, she portrayed some problems regarding the manipulation of the system by the issue managers who are taking advantage of the financially illiterate people who fail to study the overall market and the economic health of that specific corporation they are willing to invest their life savings. Every year, through IPOs, a number of new companies in Bangladesh get listed on the securities exchange. But there are questions about whether at least some of these freshly listed companies are sincere. The current prices for shares issued by many of these publicly listed firms in Bangladesh during the past few years have been significantly lower than their offer prices. The efficiency and transparency of such businesses have been questioned in light of this scenario. Investors must therefore be aware of the prospective uses of the IPO proceeds as well as the prospects of certain companies before applying for IPO shares.

A succinct overview of the issues that plague Bangladesh's capital market was presented [14]. To show the actual situation of the country's capital market, the study looked at the performance of the nation's leading exchange, the Dhaka Stock Exchange (DSE). Additionally, it offered a number of specific recommendations for

the growth of Bangladesh's capital market. The study also pointed out that Bangladesh's stock market is defined by low liquidity and rising market concentration, primarily because the country's top business organizations have an undue reliance on the banking industry. Additionally, the average level of market transparency is poor by worldwide standards, and the underlying issues have generally been developing slowly. The majority of retail investors are led by rumors, and insider trading is frequently practiced.

A study was conducted to provide a brief introduction to Bangladesh's stock markets as well as the BSEC [1]. Its entire focus was on the share market crash due to vicious advantage seekers existing in the market. A group of avaricious investors used manipulation on several levels to take advantage of the ignorance of small investors on the fundamentals of the market. The market's decline was only accelerated by the unscrupulous manipulators' excessively dishonest actions. In light of the pertinent facts and numbers, this study has largely concentrated on the origins and effects of the fundamental deviation as well as the conundrum of manipulation. The study discussed the steps to be taken for estimating price under the BBM as well as its benefits and drawbacks. Additionally, it mentioned that underwriters frequently over-adjust the issue price according to the information gathered during book-building.

The prospect of an emerging economy like Bangladesh was evaluated where the authors looked into how well stock market participants translate data about shifts in the money supply into stock prices [2]. Tests to determine whether changes in monetary aggregates have a direct effect on security prices through asset changes and an indirect impact on stock prices through their impacts on real economic activity are of particular interest. According to the research presented in the article, informal causality causes informational inefficiency in Bangladesh's stock market. The BSEC's infrastructure needs to be updated, the firms under the commission should audit the reassessment of the companies' NAVs, demutualization should take place as soon as feasible and rule-based private placement, preference share issuance, and BBMs are required. Moreover, insider trading ought to be outlawed completely.

Another research examined a few strategies by which companies going public differ significantly around the globe in the most researched markets [7]. In the study, the patterns of undervaluing, inflated prices, and OST in IPOs listed on DSE were examined, along with the degree to which they occurred over several years together. The study showed that, while taking into account all parameters related to IPOs in Bangladesh, the BBM may reduce the level of under-pricing and condense the variation of OST.

The knowledge of Bangladesh's stock market has been demonstrated in an investigation [15]. It concentrated on the problem and concept of the IPO process. The investigation discovered Bangladesh and other distinct stock exchanges' initial returns and underpriced IPOs. It also identified the causes of Bangladesh's under-pricing. Finding out the BBM of the IPO process and its performance on the stock exchange in Nepal was the major goal of another study [9]. The present study gathered detailed information to analyze his report and the following observations were made: Increasing the pricing capabilities of institutional investors to some significant degree and introducing the BBM pricing approach to the market has not, as anticipated, reduced price extortion; on the contrary, it has greatly grown, probably as a result of other outside influences and slightly improved institutional investors' ability to price securities. He also suggested that in order to win investors' trust, the relevant authorities should step forward and execute the proper regulations, which is the optimal way for IPO pricing.

A recent study looked at how the regime change affected under-pricing, total issue costs, and the characteristics of companies that raise common stock through IPOs [4]. The authors discovered that issue costs might be decreased by larger, more established enterprises through BBM. They also demonstrated that the switch to book-building in Japan seems to have added value for both large and small issuers while having little impact on issuers that fall in the middle of these two categories.

Factors that influence IPO over-subscription have been pointed out by a recent study [3]. The survey discovered that there were no well-known, substantial national and global conglomerates listed through IPOs. The study advised regulators to take the necessary steps to adapt and acquaint themselves with the BBM, which can persuade good companies to list on stock markets through IPOs. Their sample years were from 2010-2019 incorporating firms from several industries from the DSE and thus carried the evidence that some factors do have a significant influence on the IPO OST. The study was backed up by empirical research using a regression model and other statistical tools to justify their hypothesis which lead them to the conclusion that Bangladesh has yet to form a stable BBM that would welcome the potential giant companies to feel secure enough to adopt the process. Very recently, it has been shown that the sponsors and pre-IPO domestic as well as overseas investors are quite disappointed with the stock markets that are currently prevailing in Bangladesh [22].

III. Research gap of previous studies

An earlier investigation focused particularly on the rules and regulations provided by the BSEC regarding BBM [10]. There is no elaborate presentation showing whether the companies are following those rules while applying for an IPO. One technological company has been used as an example that follows BBM but

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the rest of the firms and industries are kept untouched which clearly does not lead us to any conclusion about the practice of BBM in Bangladesh. A subsequent research based on comparative analysis between BBM and FPM was conducted [7] where the author displayed average return and the rate of OST in his study. The information can simply be found from the websites of DSE and CSE and the readers would fail to extract new finding by going through the paper. But it is also understandable since the BBM is quite comparatively new in this country and as the firms are not yet comfortable with adopting the whole system the researchers are still digging deep to extract valuable and relevant information that can be used in their research papers. In a recent study [3], however, incorporated data from 2010-2019 that excluded the significant economic fluctuations, inflation, and natural occurrences existing in the financial system of Bangladesh after 2019, especially the post-COVID-19 pandemic scenario where the policies, regulations, level of participation and forms of businesses have changed to a great extent. The present study has incorporated recent years and new emerging industries of the country (Appendices 1-3).

Research questions following previous research gap
Vital questions such as: (i) What are the factors that influence the expected number of subscriptions or ensure OST of newly issued IPOs in the securities market; (ii) Why are the companies in Bangladesh not fully welcoming BBM even though it has been practiced in developed countries over the last decade?; and (c) Will we ever be able to fully adopt BBM in our capital markets?, are dealt with in the present study.

Objective of the study
The present investigation was aimed to: (i) find out the factors which influence the OST of IPOs in the capital market of Bangladesh; (ii) assess the applications of BBM in the securities markets of the country; and (iii) determine the issues with the BBM which are impeding the development of the capital markets of Bangladesh.

IV. Research design and Methodology
The present study has been conducted utilizing a quantitative approach. In the sphere of BSEC and DSE websites, an empirical study has been done to investigate the factors that influence the increased number of subscriptions in our primary share markets to answer all of the research questions. Here one dependent variable and four independent variables have been selected to draw a numerical equation that would prove four hypotheses established for the sake of this research. The sample size has been determined using the purposive sampling concept on the basis of data availability. Data were collected from companies from different industries where corporate bonds and mutual funds have been eliminated as their business purpose and methods differ from the casual business firms and trading corporations. The research is therefore based on secondary data gathered from BSEC websites, financial statements, annual reports, and recently published journals.

Sample size
The samples collected from the website of BSEC included 62 companies (Appendices 1-3) representing different industries such as IT and telecommunication, power and fuel, food, pharmaceutical, textile, and other categories of industries.

Gantt chart of the study
A Gantt chart was used to properly segregate the research activities over a two-month time duration from 15 September to 15 November 2022. Initially, after receiving the title of the thesis from the Supervisor, about 60 research papers, journals and articles were studied in order to get a good grasp and idea on the relevant topic. Some newspaper articles and websites were deeply scanned to observe updated situation on the BBM of Bangladesh. Finally, the research problems were identified that lead to establish research questions that are going to be answered and interpreted in Section V below.

Variables used in the model and establishing hypotheses

To conduct this research a regression equation was established that consisted of one dependent variable OST and four independent variables *viz*., EPS, NPV, lot size, and PIC, which have later been used to build up four hypotheses to prove and evaluate factors influencing IPO's OST in Bangladesh.

OST times

When there is more demand than the shares available in a new stock offering, the situation is said to be over-subscribed [16]. Underwriters or other business firms selling the security may raise the price or provide extra securities if a new offer is over-subscribed to reflect the greater-than-expected demand. The sole dependent variable OST in the study was derived by dividing the number of IPO shares requested by the number of shares made available for public subscription by an IPO candidate for business.

Lot size

The set number of primary shares that an IPO issuing company agrees to issue in response to a request is known as a lot [17]. The secondary share's minimum market lot on Bangladesh's secondary market is now one (1), with no maximum. The lot size for an IPO is typically 100, 200, 250, or 500 shares. A lot of 500 shares were seen as large size, while any other amount was regarded as not large. If lot is huge, it costs more money to apply for an IPO, which causes liquidity issues for small investors and could result in an IPO that might be under-subscribed. In the present study, the following hypotheses were taken into account.
H1: Lot size has a positive influence on IPO's OST

Earnings per share (EPS)

EPS is a crucial financial metric that shows a company's profitability. It is calculated by dividing a company's net profit by the total number of outstanding common shares [18]. EPS, a popular statistic for determining corporate value, shows how much money a firm produces for a single share. The current analysis takes into account the most recent EPS immediately prior to the start of the IPO subscription based on the prospectus. We presumed that IPO investors may be influenced by the EPS published in the prospectus. As a result, the businesses that have reported greater EPS may also have attracted more subscribers.
H2: EPS has a positive influence on IPO's OST

Net asset value (NAV)

NAV of an investment fund is calculated by dividing the number of outstanding shares by the net value of the fund's assets less its liabilities [19]. The closing market values of the securities in the portfolio are used to determine NAV at the conclusion of each trading day. We calculated IPO gains or losses using NAV as an important benchmark. Regulators typically demand that firms publish NAV per share in their IPO prospectus. We speculated that businesses with greater NAV might draw more clients, which would increase the number of subscriptions.
H3: NPV has a positive influence on IPO's OST

Post-IPO capital (PIC)

A well-known variable utilized in research on subscription times is the size of the IPO [20]. We believed that an IPO's size and OST are inversely correlated, meaning that as an IPO's size rises, subscription rates fall and *vice-versa*. It is suggested that PIC, not IPO size, is a better indicator of a company's market capitalization. Due to the possibility of a profitable flip, investors like companies with minimal market capitalization. On the other hand, investors might not be interested in purchasing the majority of the stock of companies with high PIC. As a result, there ought to be an adverse correlation between PIC and IPO subscription times.
H4: PIC has a negative influence on IPO's OST

We may therefore represent the following logistic regression model's equation using the above-mentioned variables as a basis: Over-subscription (OST) = α + β lot + β EPS + β NAV + β PIC.

V. Analysis and Evaluation

Methods of IPO pricing

There are two methods of IPO pricing that exist in the capital markets of Bangladesh (Table 1). For a long period of time, the companies listed in the securities exchange have followed and now are still following FPM as it is less complex and less time-consuming compared to the BBM. From Table 1 and Fig.1 it can be witnessed that the participation in the BBM is relatively far less as it seems to be a new concept to the capital market and most of the firms are taking time to observe the outcomes of this method.

Table 1: Percentage of companies following two methods of IPO

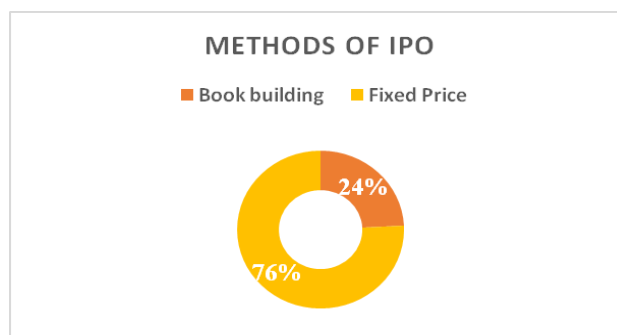| Methods of IPO pricing	Frequencies	Percentages	Cumulative
Book building method (BBM)	15	24.19354839	24.19354839
Fixed price method (FPM)	47	75.80645161	100
Total	**62**	**100**	

Fig. 1: Percentage of firms using two separate methods of IPO. Source: DSE website (2022)

Table 2: Year-wise listing of IPO

Years	Frequencies	Percentages	Cumulative
2015	14	22.58064516	22.58064516
2016	6	9.677419355	32.25806452
2017	7	11.29032258	43.5483871
2018	11	17.74193548	61.29032258
2019	9	14.51612903	75.80645161
2020	5	8.064516129	83.87096774
2021	7	11.29032258	95.16129032
2022	3	4.838709677	100
Total	**62**	**100**	

Table 2 and Fig. 2 clearly represent that the listing of IPOs was initially at a higher level compared with the following years. A rise in the year of 2018 can be noted based on the assumption of emerging new IT and telecommunication companies through the advancement of modern science and the rise of grants and donations provided by the government to the new start up firms [12]. We observed a decline in the frequency after that period and the lowest level can be addressed in the year of 2022 followed by the COVID-19 pandemic situations.
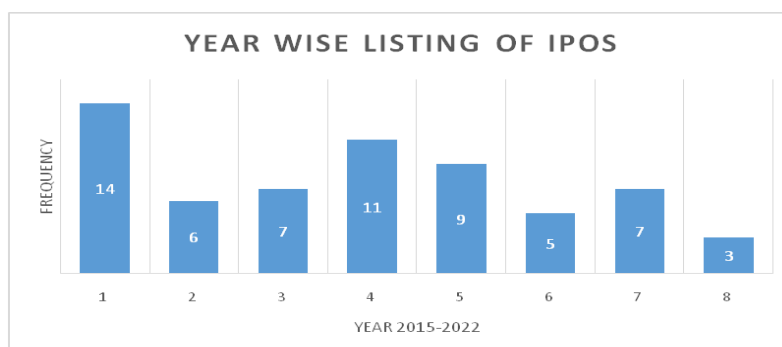

Fig. 2: Year-wise listing of IPOs. Source: Dhaka Stock Exchange (DSE) website (2022)
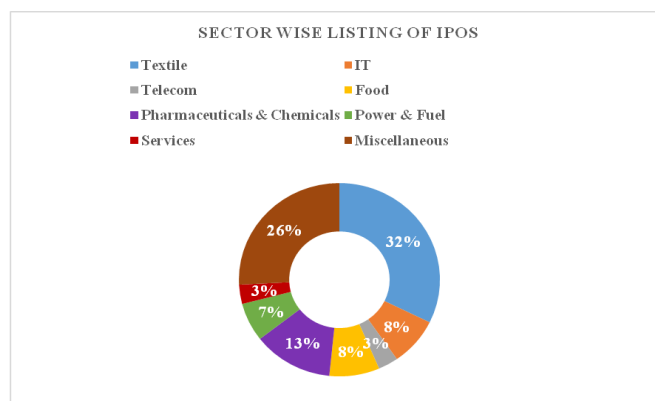
Fig. 3: Sector-wise listing of IPOs. Source: Dhaka Stock Exchange (DSE) website (2022)

From the above pie chart (Fig. 3), it has clearly been demonstrated that the maximum number of participants in the IPOs has been made by the textile industry from which the country produced and exported ready-made garments and different clothing materials. Next, a significant involvement from the pharmaceutical industry was witnessed followed by the food and IT industry.

Table 3: Descriptive statistics

Criteria	Lot size	EPS	NAV	IPO
Average	364.0322581	2.49016129	27.11483871	1212.268919
Summation	22570	154.39	1681.12	75160.673
Minimum	100	0.42	18.58	870
Maximum	500	25.53	161.82	5237.93
Standard deviation	177.2602022	3.341897219	21.40234664	867.6372099

EPS= Earnings per share, NAV= Net Asset value, IPO= Initial public offering.

The descriptive statistics (Table 3) illustrated the average, summation, minimum and maximum values and standard deviation of the independent variables. The averages of EPS and NAV were 2.49 and 27.11 respectively, while the lot size and IPO showcases had an average of 364.03 and 1212.27, respectively. Here the minimum value of lot size was 100 whereas the maximum number was considered to be 500 per issue. The standard deviations of the parameters are also shown in the table.

Table 4: Matrix of correlations for the independent variables

Sources of variation		OST	Lot	EPS	NAV	IPO
OST	Pearson Correlation	1	.666**	-.352**	-.456**	-.386**
	Sig. (2-tailed)		.000	.005	.000	.002
	N	62	62	62	62	62
Lot	Pearson Correlation	.666**	1	-.547**	-.619**	-.101
	Sig. (2-tailed)	.000		.000	.000	.436
	N	62	62	62	62	62
EPS	Pearson Correlation	-.352**	-.547**	1	.920**	.270*
	Sig. (2-tailed)	.005	.000		.000	.034
	N	62	62	62	62	62
NAV	Pearson Correlation	-.456**	-.619**	.920**	1	.251*
	Sig. (2-tailed)	.000	.000	.000		.049
	N	62	62	62	62	62
IPO	Pearson Correlation	-.386**	-.101	.270*	.251*	1
	Sig. (2-tailed)	.002	.436	.034	.049	
	N	62	62	62	62	62

*Correlation is significant at the 0.05 level (2-tailed); **Correlation is significant at the 0.01 level (2-tailed).

Co-efficient of correlations between variables

There existed significant correlations between the dependent variable OST and four independent variables lot, EPS, NAV and IPO. The coefficient of correlation (r-values) between OST and lot, OST and EPS,

OST and NAV, and OST and IPO were 0.666 (P<0.001), -0.352 (P<0.01), -0.4567 (P<0.001) and -0.386 (P< 0.01), respectively. Results also indicated significant correlations between EPS and IPO (r= 0.270; P<0.05) and NAV and IPO (r=0.251; P<0.05). However, an insignificant correlation between lot and IPO (r=-0.101; P<0.436) was also observed.

Table 5: Outcomes of the logistic regression model

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.759[a]	.576	.546	10.77923

a. Predictors (Constants) Lot, EPS, NAV and IPO

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	8986.925	4	2246.731	19.336	.000[b]
	Residual	6622.933	57	116.192		
	Total	**15609.859**	**61**			

a. Dependent variable: OST; b. Predictors (constants): Lot, EPS, NAV and IPO

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B	
		B	Std. Error	Beta			Lower Bound	Upper Bound
1	(Constant)	14.545	5.918		2.458	.017	2.695	26.395
	LOT	.057	.010	.637	5.771	.000	.038	.077
	EPS	2.084	1.059	.435	1.969	.054	-.035	4.204
	NAV	-.281	.175	-.376	-1.602	.115	-.632	.070
	IPO	-.006	.002	-.345	-3.845	.000	-.010	-.003

a. Dependent Variable: OST

Analysis of variance (ANOVA) of the experimental data showed a highly significant value ($F_{4, 52}$=19.336; P<0.001) between the dependent variable and four independent variables under study (Table 5). The table also reflected whether the independent variables had a significant influence on the dependent variable OST. As it can be observed that the P-values of lot and PIO were less than .05, it inferred the fact that these values had a statistically significant impact on OST. The EPS expressed a slight shortfall to be assumed to have statistical significance as 0.054; P>0.05. On the contrary, NAV did not have any significant impact on OST. As it is known that the value of t is considered to be acceptable if the value is greater than +2 or less than -2, the values of t of lot size and PIO are considered to be those two hypotheses that can be acceptable. The hypothesis established by the rest two predictor variables EPS and NAV would fall under the null hypothesis as their values range between +2 and -2.

Problems with BBM in Bangladesh

The first issue arises when the indicative price of the IPO is set using the BBM. The exchange changed a few of the relevant regulations, but the issuers can still influence the procedure to their advantage.
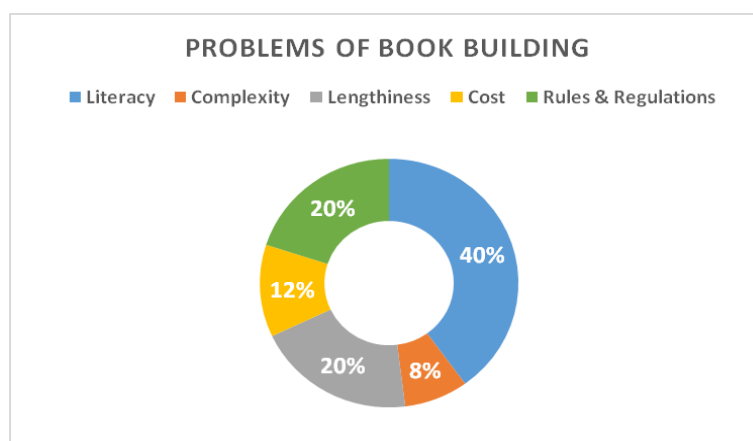
Fig. 4: Problems of BBM in Bangladesh. Source: The Business Standard (2022)

In a nutshell, the following seven problems of BBM were encountered in the country:

(1) Potential investors who attend road shows are insufficiently knowledgeable about business valuation and financial analysis.

(2) Issuing firms determine inflated indicative prices that do not correspond to the firm's fundamentals with the help of auditors, issue managers, and occasionally the regulator [14]. In essence, auditors also play a role in assisting businesses in window-dressing their financial statements and concealing unfavourable information. At the road show, issue managers help companies persuade qualified investment firms to provide inflated prices for new issues.

(3) Maximum ceiling and floor level in price that can be entered into the bids is about 20%. But with a view to pursuing their bids, investors most of the time set prices at the ceiling with upward direction.

(4) Reviewing recent IPOs using this methodology reveals evidence that indicative prices have been placed at a rather high level. The cut-off prices have always been set higher than indicated pricing as well. Ultimately, the P/E ratios have increased by more than 15 times by the point the issue prices are fixed. At the beginning of its trading at the markets, the P/E ratios are even further raised to approximately 25 times. As a result, the exchange starts listing the new issues at increased prices. However, until institutional investors realize their advantages, the high prices typically persist. The ordinary investors who own these shares begin to suffer as a result of the subsequent price decline. Using this strategy undoubtedly makes the market more volatile.

(5) The BBM entails a lot of difficult phases that, in most cases, take several months. According to a report [21], all IPOs using this strategy have taken close to a year or longer to complete the entire process. During this time, many things could happen. For example, the nation's economy could decline, the political climate could worsen, the business could suffer from a downturn, and the world economy could experience a recession. All of these will inevitably reduce business profits. As a result, the firms' assessment at the road shows will signify absolutely nothing. Additionally, the procedures' complexity dissuades businesses from selling their shares *via* this technique. (6) A company must have been in operation for the past three years and have earnings records for the previous two fiscal years in order to employ the BBM. Additionally, the business must have generated positive net operating cash flow and net current assets over the previous two fiscal years. The issuers conduct window dressing for this reason.

(7) Above all, firstly, it is unclear from the rule whether NAV should be calculated using the pre-IPO or post-IPO share numbers. And secondly, it states that shares should be evaluated based on prior earnings, but it again makes no mention of whether those earnings should be taken into account based on pre-IPO share count or post-IPO share count.

Latest updates on BBM in Bangladesh

Offering a fair price was the prior book-building value technique. However, the price of the new approach is even less than what the domestic and foreign investors spent a few years ago. According to Omega Petroleum Company's Secretary, the permitted cut-off price is not the price a potentially big firm deserves and the sponsors and pre-IPO domestic as well as overseas investors are quite disappointed [22].

The Public Issue Rules state that businesses that do not prefer premium over face value for their IPOs list under fixed-price IPOs, while businesses that want a premium must use the BBM, in which institutional investors compete to set the cut-off price, or reference price, for the general public. The regulator gradually implemented procedures to hold the bidders accountable by initially requesting their bid justification papers and eventually applying the tighter valuation approach because rogue bidding had long been causing IPO

over-pricing. In contrast to the old form of open auctions, which gave analysts discretion, bidders can now go as high as the average of a company's net asset worth and its history and predicted earnings.

VI. Limitations of the study

Two months' time period of the study was tightly knit a matter of which conducting proper investigation and justifying the collected data without any error or bias has been almost impossible. The study has incorporated data from the years 2020 and 2021 representing the natural occurrences of the COVID-19 pandemic, where plenty of companies could not participate properly and perform their daily business operations which might lead to information bias. The companies listed in the capital markets have a tendency to inflate their balances in the financial statements and perform window dressing that might lead to distorted and unreal decision-making.

VII. Recommendations

The following recommendations emerged out from the present investigation:

Establishing a comprehensive education and promotional campaign:
The reality is that the majority of DSE investors are amateurs who invest and take decisions without previous knowledge. The DSE's biggest problem is raising the financial literacy of individual investors. For the DSE to develop successfully there must be a programme of ongoing education for the investors, issuers, and regulators.

Ensuring professional qualifications for licensing:
When granting licenses to market players, a minimum standard of qualification should be upheld. This standard may be established through the prerequisites for professional training programmes, tests, or ongoing professional development.

A strong inspection department:
A strong inspection department is required that will keep a close eye on stock market transactions involving securities. This surveillance department will monitor and evaluate online stock exchange transactions in order to spot illegal trading activities.

Incorporating DSE with the global financial system:
Given the trend toward economic globalization, the DSE's management must work to incorporate the DSE into global securities markets. The various securities laws must be upheld in this regard by the regulatory agencies. If this is done, both domestic and international investors will feel safe and confident investing more in the economic resources of the DSE.

VIII. Conclusions

The prospect of carrying out this study was to highlight the market condition of BBM in Bangladesh. The nearest presumption draws us to the conclusion that BSEC is expected to share the methods of valuation regarding IPO described in the Public Issue Rule closely reflecting other capital markets that are developed and hold important participants in the process, such as issue management team and qualified investment firms, accountable by mandating them to provide more disclosure and take additional steps. This will increase the market's transparency and reliability while decreasing the likelihood that regular investors will suffer financial losses, even on the primary market.

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Appendix Table 1: Sector-wise listing of IPOs (n=62)

Companies	Frequencies	Percentages	Cumulative Percentages
Textile	20	32.25806452	32.25806452
IT	5	8.064516129	40.32258065
Telecommunication	2	3.225806452	43.5483871
Food	5	8.064516129	51.61290323
Pharmaceuticals and Chemicals	8	12.90322581	64.51612903
Power and Fuel	4	6.451612903	70.96774194
Services	2	3.225806452	74.19354839
Miscellaneous	16	25.80645161	100
Total	**62**	**100**	

IPOs= Initial public offerings

Appendix Table 2: Samples of IPOs collected from 2015-2022 of DSE (n=62)

OST	Year	Industry Type	Lot	EPS	NAV	Post-IPO
		Fixed price method (FPM)				
67.27	2015	IT	500	0.42	18.58	870
5.72		Textile	200	1.57	35.27	1100
16.51		Textile	300	3.36	22.34	587.5
34.55		Textile	250	2.22	21.85	520
12.64		Feed/food	200	4.97	30.77	800
50.67		Miscellaneous	500	1.43	16.34	1169.1

10.50		Textile	200	2.64	34.41	590.36
20.12		Miscellaneous	200	5.06	52.09	1733.51
73.93		Textile	500	1.01	12.59	648
5.5		Textile	200	3.73	52.95	980.76
16.05		Miscellaneous	200	5.16	44.12	1150
20.23		Textile	500	1.97	18.38	1750
46.91		Feed/food	500	1.86	14.55	580
42.19	2016	Shoes	500	1.55	14.29	970
44.55		Textile	500	1.02	15.63	590
32.99		Textile	500	0.36	17.97	1200
11.63		Power	200	2.25	35.88	800
21.89		Textile	500	1.48	18.79	1000
37.43	2017	Miscellaneous	500	0.75	16.10	480
41.47		Miscellaneous/machineries	500	2.09	16.96	458.92
48.04		Miscellaneous/cables	500	2.34	19.21	1200
28.12		Textile	500	1.19	15.56	830
54.37		Miscellaneous/machineries	500	0.34	13.78	1242.059
21.11		Textile	500	1.47	29.35	1130
25.18	2018	Textile	500	1.95	22.43	890
34.24		Pharmaceutical	500	1.02	13.86	930
25.77		Pharmaceutical	500	0.93	17.11	1300
31.3		Textile	500	1.19	24.91	1604
29.7		Textile	500	1.50	21.40	847.148
21.8		Miscellaneous	500	1.08	13.86	700
25.54		Fuel	500	0.43	14.30	750
35.17		Pharmaceutical	500	0.65	13.11	686
43.44		Textile	500	0.89	18.07	1001.5
6.73	2019	Textile	500	1.99	23.17	4350.55
38.58		Miscellaneous/cables	500	2.6	12.06	600
49.72		Service/Tourism	500	0.67	10.48	1150
27.73		Pharmaceutical	500	1.64	27.05	943.7
27.74		Textile	500	1.9	33.46	699
35.75		IT	500	0.97	16.95	816
34.80		Miscellaneous/machineries	500	1.39	16.91	2450
5.75	2020	Telecommunication	500	0.04	12.64	5237.93
19.375		Miscellaneous	500	1.42	21.23	950
31.46		Miscellaneous/construction	500	1.33	18.7	950
20.22	2021	Chemicals	500	2.12	18.48	1350
23.77		IT	500	1.55	22.1	750
24.53		Food	500	0.5	13.24	850
29.09	2022	Food	500	0.31	15.12	815

DSE= Dhaka Stock Exchange, OST= Over-subscription, EPS= Earnings per share, NAV= net asset value, IPO= Initial public offering.

Appendix Table 3: Samples of OST collected from 2015-2022 of DSE (n=62)

OST	Years	Industry Types	Lot	EPS	NAV	Post-IPO
		Book building method (BBM)				
5.87	2015	Power	100	5.98	23.64	3299.497
6.74	2016	Chemicals	100	5.7	70.37	2116.017
18.07	2017	IT	100	2.62	26.28	530.412
8.7	2018	Textile	100	2.44	38.24	1008.33
7.42	2019	Paper	100	2.61	31.85	1737.91
14.4		Miscellaneous/Automobiles	100	4.9	59.53	1081.33
9.05		Textile	100	3.44	29.40	1348.95
5.55	2020	IT	20	25.53	161.82	3029.28
11.62		Telecommunication	100	2.67	18.80	646.51
28.746	2021	Feed/Agro	100	7.07	44.06	472.53
12.324		Miscellaneous	200	2.56	28.59	1452.43
7.57		Service	100	3.75	33.63	1207.71
6.91		Power	200	3.13	30.2	1901.63
6.16	2022	Pharmaceutical	100	2.39	43.53	1074.16
8.65		Miscellaneous	100	1.29	32.78	1252.94

DSE= Dhaka Stock Exchange, OST= Over-subscription, EPS= Earnings per share, NAV= net asset value, IPO= Initial public offering.

Abbreviations used in the study:
BBM= Book building method, BSEC= Bangladesh Securities and Exchange Commission, DSE= Dhaka Stock Exchange, EPS= Earnings per share, FPM= Fixed price method, IPO= Initial public offering, NAV= net asset value, OST= Over-subscription, PIC= Post-IPO capital.