

## SMALL AND MEDIUM ENTERPRISE DEBT DECISION: A BEST-WORST METHOD FRAMEWORK

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**Abstract:** Lack of resources among small and medium enterprises (SMEs) but a lower level of debt, despite policy incentives, is perplexing. The level of debt in SMEs has four influencers such as the business owner, firm, bank, and government. Primarily, business owners would like to increase wealth and retain control, banks would lend and cover the risk of debt, and the government would promote SMEs for employment and growth. Thus, the decision for debt and subsequent growth and performance appears simple. But, the Reserve Bank of India observes that the level of debt in SMEs remains below the expected level, over the years, despite policy incentives. Though the factors leading to debt decisions are known, how the priorities of such factors explain the contradiction are lacking. This research identifies various factors leading to debt decisions from the literature, uses the Best Worst Methodology (BWM) to find their relative importance, and corroborates it with the qualitative data gathered from experts. We find that banks at 34 percent weight in debt decision (highest), 6 percent more compared to the firm. The government has the least importance, at around 10 percent. However, the firm performance, trust in the bank, compliance, firm growth, and bank-firm relationship are the top five decision variables for debt. Given the stronghold of banks, their actions and decision-making must be suitable for the SME business context. Operationalization of the qualitative criteria of bank's trust in SME, digitalization, improvement in bank transaction documentation, and the possibility of digital gateway organizations emerging as institutional SME lenders are some future research scopes.

**Keywords:** SME, India, Debt, Bank, Entrepreneur, Best Worst Method.

### 1. Introduction

New venture formation within resource constraints is the hallmark of entrepreneurship. Given the importance of entrepreneurship, government, banks and other entities try to mitigate resource constraints especially, finance. Often,

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policymakers try to estimate the credit gap to micro, small, and medium enterprises (MSME in India or SMEs in general) and address the issue of access to credit. Therefore, it is surprising when SMEs in a country like India do not consume enough credit, despite an ongoing policy focus. The Reserve Bank of India (RBI) reported on the weak growth of MSME credit as “years of mandated lending have not produced enough progress and new approaches are needed (India, 2019).” The SME credit shrank in 2020 despite government incentives fueling concern of widening of the credit gap and subsequent adverse impact on economic growth and wage (Sen, 2020). The Covid-19 crisis fueled serious concerns about credit availability, and the government tried to match the crisis through various policy measures and support. However, the RBI observation was for extended periods, suggesting the issue is not limited to the policy or banks alone (Abremski & Roben, 2021).

Entrepreneurs, firms, banks, and governments are four entities responsible for the outcomes of the institutional financing mechanism. Apparently, debt aversion is a personal attitude; a negative disposition of entrepreneurs towards the debt that affect the financing decision of their businesses. The personal characteristics of an entrepreneur are independent variables. Secondly, the firm has characteristics such as growth, performance, and tangible assets among other factors influencing the eligibility for an institutional debt. Banks, on the other hand, evaluate different firm and entrepreneurial factors, match the demand and supply of funds for loans. The government with its policies and incentives can influence the entrepreneur, firm, and the bank for the desired outcome of a loan decision. Institutional finance helps SMEs to improve their productivity and growth but simultaneously expose them to various debt risks. This research responds to the question why policy incentives do not prompt SMEs to take adequate loans. In general, we try to understand the importance of different factors in institutional debt decisions. We approach this question through the best worst method (BMW) of multi criteria decision making. This method for the debt decision framework is novel and not applied in earlier research. The results contribute to the pecking order theory, trade-off theory, and agency theory applicable to the capital structure of firms. As the subsequent review indicates, the capital structure decision framework in the case of SMEs is an understudied area.

The interplay of various factors necessitates a purposive review of literature, presented in the next section. Subsequent sections include literature review, factors affecting debt decision in SMEs, theoretical framework, research gap, methodology, analysis discussion, limitation, and future scope.

## **2. Literature Review**

Typically, an entrepreneur finances a new venture from his own funds or bootstrapping. Initial funds deployed are usually equity. According to the pecking order theory (POT), entrepreneurs do not accept external equity due to the accompanying threat of wealth dilution (Sapienza et al., 2003). A formal debt infusion to the capital structure takes place subsequently. Debt sources can be informal, from individuals and known sources. Banks are institutional sources of finance and such finances are known as SME finance. There is a supply and demand side of SME finance but the RBI report indicates that the demand side of SME finance is lacking consistently. SME finance influences capital investment, firm performance, and employment, but its influence on profitability and wages is not apparent (Kersten et

al., 2017). This finding is debatable. Another study contested that debt funding is not beneficial for SME performance (Cheong et al., 2020).

The relationship between finance on performance and employment makes policymakers focus on it. Secondly, improvements in firm performance and resource constraints presuppose the need for debt. In an ideal situation, the demand and supply for SME financing should match but this is not the case. An optimal level of debt helps improve SME performance (Jadoua & Mostapha, 2020) but it is also argued that the book value of equity is an adjustable accounting number and does not play a significant role in financing decisions (Kieschnick & Moussawi, 2018).

The capital structure of SMEs is not a country-specific issue. Recent research on debt and capital structure spread across countries such as Ethiopia (Melesse, 2020), Europe (Li et al., 2019), Japan (Cui, 2020), Argentina (Briozzo et al., 2016), Portugal (Pacheco & Tavares, 2017; Serrasqueiro et al., 2016), Sweden (Heshmati, 2001; Öhman & Yazdanfar, 2017), India (Baker et al., 2020; Bhama et al., 2018; Kumar & Rao, 2016), Spain (Acedo-Ramírez et al., 2013), Lebanon (Jadoua & Mostapha, 2019; Jadoua & Mostapha, 2020), Srilanka (Kuruppu & Azeez, 2016), France (Adair & Adaskou, 2018)], and United States (Coleman et al., 2016). The geographical spread indicates the commonality and seriousness of the issue.

The following section groups the findings of the review based on stakeholder of debt decisions such as entrepreneur/ SME owners, firms, banks, and government.

### ***2.1. E: Entrepreneur Attributes***

The personal characteristics of the entrepreneur determine the level of debt (Chaganti et al., 1996). Personal perspectives, life events, future outlook, and future funding options influencing decisions in the SME context, indicate that SMEs are an extension of the owners' personal objectives (Wong et al., 2018). Uncertainty avoidance and individuality characteristics are negatively related to the long-term debt of SMEs (Kearney et al., 2012).

Similarly, entrepreneurial optimism based on earnings forecasts is associated with debt decisions. More optimistic entrepreneurs prefer equity (Fourati & Attitalah, 2018). Firms run by debt-averse entrepreneurs are less likely to use debt, even if guaranteed by the government during the COVID-19 crisis; interestingly, the debt policies reduce interest significantly (Paaso et al., 2021). Even the socio-emotional wealth of the entrepreneur influences debt decisions (Rajamani, 2021).

#### ***2.1.1. E1: Expertise***

Entrepreneurial expertise is related to decision-making, responsiveness to situations, performance, recognize patterns and situations, detecting unpredictable situations, decisiveness to take action, and having a non-predictive approach (Dew et al., 2015). Abilities of owner-managers influence the capital structure in the SME context (Eniola, 2018). Many times, entrepreneurial optimism is not adequate to convince the banks of the prospect of business and loans (Fourati & Attitalah, 2018).

### *2.1.2 E2: Experience*

Risk perception and experience have a curvilinear relation (Sitkin & Pablo, 1992). The confidence of an inexperienced and very experienced business owner is likely to be different. Dependence on information and perception of the ability to control may vary due to the level of experience. The nature of entrepreneurial experience influences entrepreneurial optimism and thereby the financing choices; serial entrepreneurs are more likely to use debt (Fourati & Attitalah, 2018). The threat rigidity hypothesis also suggests that individuals with prior experience of failure may be more conservative (Van Gelder et al., 2007). The business sector, asset size, and demography factors of owner such as education and experience are also major determinants of debt (Kuruppu & Azeez, 2016). Lack of experience and immigrant status implies more personal sources of debt (Coleman et al., 2016).

### *2.1.3. E3: Risk appetite*

Risk appetite is the amount of risk one is willing to accept to pursue one's objective. Risk propensity is the general tendency to take risks but risk perception is the assessment of risk in a situation (Eniola, 2018). The risk propensity is influenced by a habit (inertia) or by the outcomes of past successful attempts (outcome). Risk appetite influences financial and non-financial performance (Fang & An, 2016). Though the perception of risk is related to the opportunities, it is not only about economic risk, the risk of conceding self-determination or control over business is also an important factor (Sapienza et al., 2003). Avoidance of uncertainty and business risk are negatively associated with long-term debt of SMEs (Kearney et al., 2012).

### *2.1.4. E4: Social Status*

Debt attitude is determined by education, risk-taking, and financial literacy, and it has a cultural element that passes through generations (Almenberg et al., 2019). The risk of bankruptcy negatively affects the self-esteem of SME owner (Khan et al., 2020). The loss of income, personal debt, a decline in social status, low self-esteem, feeling of being stigmatized, blaming others, feeling of remorse, and regret are major costs of business failure (Rasekhi et al., 2017).

### *2.1.5. E5: Ability to manage risk*

SMEs do not consider debt as a business risk leading to failure thus, the risk of debt is considered insignificant (Kramoliš & Dobeš, 2020). But, interest to sales ratio is one of variables that predict the financial failure of SMEs (Zizi et al., 2020). Non-firm-specific factors influence the mix of funds for a firm. Financial flexibility, limited self-liability, business risk, financial risk, interest rate risk, transaction cost, and tax benefits among other factors influence the debt level of a firm.

However, business owners have a neutral attitude towards the 'debt level of other industries' and 'innovative schemes of banks' while considering debt decisions (Dogra & Gupta, 2009). In addition to the business risk, SME owners also desire to reduce interference from debt providers and maintain independence and autonomy (Kearney et al., 2012). The ability of the entrepreneur to manage financial risk influences the competitiveness of SMEs (Kozubíková et al., 2017).

### *2.1.6. E6: Control over business*

Almost all forms of external financing require business owners to sacrifice some decision control (Winborg & Landström, 2001). Thus, the degree of control on the business and external financing contradicts each other. Authors have proposed that the choice of the financing source is determined by the drive for self-determination, emotion may also limit the rational-economic decision (Sapienza et al., 2003). A firm's debt level depends on a businessperson's attitude toward debt, need for control, risk propensity, experience, social norms, and personal net worth (Matthews et al., 2016).

## **2.2. F: Firm Attributes**

Several firm attributes are evaluated for a loan. The firm size is one such attribute that encompasses assets, sales, or market value of equity. SMEs prefer internal funds followed by bank financing (long-term loans from government and financial institutions). For SMEs, the trade credit, funds from family and friends, and money lenders remain informal sources in order (Baker et al., 2020). Major sources of short term debt are the trade credit and bank loan which is associated with firm characteristics (size, age, ownership, sector, and region), the capital structure of SMEs are determined by the age, profitability, tangibility, and liquidity (Kumar & Rao, 2016).

The financing decision of SMEs depended on firm characteristics (firm age, size, and legal form) and owner characteristics (age, education, and perceived emotional bankruptcy costs (Briozzo et al., 2016). The firm age did not significantly impact the pecking order of debt usage. However, debt redemption behavior was different for different firm sizes. Larger firms redeem more debt compared to small and medium firms, which was explained as a need to retain funds for future financing needs of young firms (Bhama et al., 2018). The level of debt in an SME is likely to be higher if the initial start-up capital included debt (Melesse, 2020). In the hospitality sector, the debt is influenced by profitability, assets tangibility, firm dimension, total liquidity, and risk (Pacheco & Tavares, 2017).

A firm's debt was found to be influenced by profitability, firm age, the structure of ownership, and government support (Melesse, 2020). SME access to debt depended on firm size, firm age, type of industry, type of ownership, tangibility, and profitability where firm age, type of industry and profitability have a positive effect but firm size and type of ownership have a negative effect on access to debt (Jadoua & Mostapha, 2019). Firm characteristics (growth opportunity, firm size, assets, and selling products) and owner characteristics (net worth, experience, education, and ethnicity), and personal sources were preferred by small but growing firms (Coleman et al., 2016). Information asymmetry, agency problems, and collateral requirements are important for small firms to access long-term debt (Jadoua & Mostapha, 2019; Serrasqueiro & Caetano, 2015). A contradictory finding was that the firm size, gender of the owner, and education did not show a correlation with debt level (Melesse, 2020). Firms try to maintain a target level of debt and if the target is exceeded considerable time is required to bring it back to the level (Heshmati, 2001).

### *2.2.1. F1: Firm Growth*

The level of debt is influenced by growth opportunities, credit risk, and control over ownership (Adair & Adaskou, 2018). Along with growth, variables such as size, age,

profitability, liquidity, asset tangibility, non-debt tax shields, and industry affiliation explained the debt policy (Öhman & Yazdanfar, 2017). However, there are sector-specific variations. In the hospitality sector, the firm growth and tax benefits were not related to the debt (Pacheco & Tavares, 2017). Japanese SMEs, which are small, profitable, and older, pursue the strategy of 'non-positive net debt' (Cui, 2020). Such firms are likely to have few growth opportunities, and higher tangibility. It is also known that young firms tend to focus on growth rather than profitability (Epure & Guasch, 2020). Debt has a positive association with growth opportunity but a negative relationship with the cost of debt, age, and cash flows (Acedo-Ramírez et al., 2013).

#### *2.2.2. F2: Collateral*

Collateral is one of the most common criteria of evaluation for debt. As per the RBI guideline, banks are forbidden to ask for collateral security for loans up to INR 1 million to units in the micro and small enterprises (India, 2021). The availability of collateral security enables businesses to secure debt. The availability of pledgeable short-term assets enables export-intensive SMEs (Maes et al., 2019). Researchers did not find a significant effect of tangibility on access to debt (Jadoua & Mostapha, 2019).

#### *2.2.3. F3: Performance*

Profitability and firm size are negatively associated with the leverage for SMEs in manufacturing, and large firms with stable earnings do not prefer debt (Rao et al., 2019). The adverse impact of short-term and long-term debt has been reported in a panel data study (Franquesa & Vera, 2021). Debt has a significant negative effect on firm performance for SMEs, and the effect reduces when the firm size exceeds a threshold level (Ibhagui & Olokoyo, 2018). The credit risk moderates the debt level and firm performance but the debt ratio is negatively related to firm performance in low credit risk SMEs (Li et al., 2019). A lower level of debt is related to a higher level of profitability (Serrasqueiro et al., 2016).

#### *2.2.4. F4: Age*

Arguing that the small firms have information opacity influencing the credit risk, authors have suggested that the firm age is a better predictor of risk than size (Nitani & Riding, 2015). Even among small businesses, the financing pattern varies. Typically, newer firms depend more on debt compared to older firms (Van Auken & Doran, 1989). Independently, the firm age, is negatively related to the use of debt however, there is an interaction effect of firm age with corporate governance features in older firms where managers can adequately exercise their risk preferences to change the capital structure (Kieschnick & Moussawi, 2018).

### **2.3. B: Bank Attributes**

Loan decision-making is influenced by bank characteristics, as well as the loan officer's decision-making biases, and deliberate and intuitive reasoning style. Banker's behavior significantly influences banking products awareness and outcomes (Kar, 2019). Bank officers use deliberative and intuitive analysis for lending decisions which includes soft information and situational factors (Trönnberg & Hemlin, 2014).

In the absence of the performance history of the firm and verified skill of the

entrepreneurs, banks perceive incompetence and opportunism and collateral reduces the risk of debt (Sapienza et al., 2003). Research has indicated a negative relationship between power distance and debt implying a consultative role of financial institutions to be more appropriate (Kearney et al., 2012). The more complex horizontal and vertical structure of the bank forces entrepreneurs to choose costlier alternatives (Baixauli-Soler et al., 2021).

### *2.3.1. B1: Relationship*

Some argue that the bank debt has a governance role based on bank-firm relationship and can act as a signal to outside investors (Serrasqueiro & Caetano, 2015). The bank-firm relationship does not depend on transactions but on trust-related factors for which SMEs choose local banks and maintain a long-term relationship (Jackowicz et al., 2021). A relationship grounded on trust is better for SMEs access to debt (Hernández-Cánovas & Martínez-Solano, 2010). However, banks typically attempt to reduce the risk on the bank and shift it to the SMEs while taking a loan decision (Bruns & Fletcher, 2008).

### *2.3.2. B2: Trust*

Trust-related factors influence SME lending decisions (Jackowicz et al., 2021). Literature proposes that trust reduces agency costs. The trust of the bank manager in SMEs increases the credit availability (Moro & Fink, 2013). Public sector and private sector banks deploy different uncertainty strategies for SME lending and the trust development mechanism varies between them (Nguyen et al., 2007). A longitudinal study confirms a robust positive relationship between trust and credit access (Kautonen et al., 2020). However, trust matters only when formal information to assess the SME's creditworthiness is insufficient. Further, banks try to avoid uncertainty and depend on trust while lending to private business clients (Nguyen et al., 2007).

### *2.3.3. B3: Interest rate*

The cost of debt is more but the access to debt increases, if SMEs have long relationship with a single bank, suggesting that the relationship should be with at least two banks (Hernández-Cánovas & Martínez-Solano, 2010). The cost of debt is influenced by macro-economic factors and firm-specific factors (size) (Yazdanfar & Öhman, 2020). Further, the quality of financial statements is inversely related to the effective interest cost for SMEs (Vander Bauwhede et al., 2015). Banks also charge differentially based on innovation and location, even for publicly guaranteed loans, which the authors have called the 'innovation debt penalty' (Cowling et al., 2018).

### *2.3.4. B4: Compliance*

Lenders can impose 'covenants' or restrictions on the firms' operations (Sapienza et al., 2003). Debt contracts have been observed to be less strict if asset tangibility is higher and the firm is family-owned (Hillier et al., 2018). However, 'shareholder-creditor agency conflict' is a well-acknowledged phenomenon. Covenants affected access to loans by SMEs, banks formulate strict loan extension procedures to reduce loan defaults (Sansa, 2019).

## **2.4. G: Government Attributes**

The government tries to promote the cause of SMEs through various policy measures. Salient measured are indicated below as factors.

### *2.4.1. G1: Policy Incentives*

The level of debt and policy incentive has been difficult to ascertain (Reserve Bank of India, 2019). Start-ups depend on access to capital during the initial stages and government funding or grants are important sources for high-technology entrepreneurs (Elston & Audretsch, 2011). A Nigerian study indicated a significant relationship between government policy and the business growth of SMEs (Alabi et al., 2019).

### *2.4.2. G2: Subsidy/ Tax benefit Subheading*

The role of subsidy or tax-benefit declared by the policy of the government on firm debt and performance is ambiguous at best. SMEs, supported by the government programs recorded negligible financial performance (Chen et al., 2020). The financial support policies were not found effective in addressing cash constraints or reopening of SMEs, possibly due to complications in access to policy-oriented loans or a misallocation (Chen et al., 2020). However, debt was found inversely related to non-debt tax shields and directly to fixed assets (Acedo-Ramírez et al., 2013).

### *2.4.3. G3: Loan guarantee*

Credit guarantee to SMEs is an international phenomenon, and such schemes are in operation in India since 1981 (Levitsky, 1997). The Ministry of MSME, India, and Small Industries Development Bank of India (SIDBI), established the Credit Guarantee Fund Trust for Micro and Small Enterprises (CGTMSE) in the year 2000 to ensure credit guarantee. The government and SIDBI contribute to the fund in the ratio of 4:1 respectively. While some suggest that such assistance beyond conventional financing improves SME performance (Xiang & Worthington, 2017), others argue that the effect is difficult to measure due to lack of clarity in operations, irregular monitoring, and non-transparent accounting among other factors (Honohan, 2010). Guaranteed access to credit and trade credit influenced the level of debt in the case of French SMEs (Adair & Adaskou, 2018).

## **2.5. Theoretical background**

Literature suggests three theories, the pecking order theory (POT), tradeoff theory (TOT), and agency theory related to the capital structure of the SMEs (Acedo-Ramírez et al., 2013; Kumar et al., 2020; Serrasqueiro & Caetano, 2015). The pecking order theory (POT) argues that the financing preference is internally generated funds, debt, and external equity in the order. This preference for source and performance is not unequivocal. For start-ups, research reported a small positive impact of internal funding on start-up growth, debt funding did not have any whereas, external equity obtained from private equity or venture capital has a weak role. Whereas, it is known that financial constraints limit the growth of startups (Corsi & Prencipe, 2018).

On the other hand, the trade-off theory suggests that firms decide on their optimum level of debt taking into account the net debt benefits. It is found that profitable and old SMEs choose less debt but larger SMEs choose more debt thereby indicating that



these theories are not exclusive to each other (Serrasqueiro & Caetano, 2015). It is also known that the information asymmetry and uncertainty associated with a new firm make the external finance scarce and costly. The agency cost theory (agency theory) suggests that the debt holder of firms restricts the use of capital through covenants if they believe that the agents (managers) are likely to favor equity holders. Another corollary is that the managers are self-serving agents to be disciplined by debt. Thus, debt plays a balancing role between agency cost of equity and agency cost of debt.

The debt level was influenced by three different characteristics such as trade-off behavior, pecking order, and an extreme aversion to debt (Briozzo et al., 2016). The wealth maximizing explanation of financing decisions in SMEs is argued to be inadequate. Wealth maximization and self-determination are two primary motives that drives entrepreneurial financing, but the trade-off between them is complex and dynamic (Sapienza et al., 2003). The decision on the level of debt can change with the change in contexts, it is not expected to be static. Further, the term (short or long) of debt has different explanations. The applicability of TOT is more to the long term debt and POT is more applicable for short term debt (Nunes & Serrasqueiro, 2017).

### **3. Research Gap**

SME capital structuring does not follow traditional finance theory. In addition, there are bootstrapping mechanisms to generate various combinations of financing mechanisms suitable for entrepreneurial organizations (Winborg & Landström, 2001). Capital structuring choices of entrepreneurial firms are open to investigation and debate (Sapienza et al., 2003). The uniqueness of cultural, legal, and institutional characteristics in the emerging markets makes the debt decision in SMEs more important compared to others (Vo, 2017). Researchers acknowledge that how SMEs decide their financial structures are not known but agree that there are a series of factors including personal perspectives, life events, and future outlook, and future funding options, thereby reinforcing the view that SMEs are an extension of the owners' personal objectives (Wong et al., 2018).

Literature does suggest the factors responsible for capital structure decision and to some extent the interaction among factors. However, the relative importance of banks, entrepreneurs, governments, and firms as different criteria, in the decision is not investigated adequately. Each of these criteria has various sub-criteria and their relative importance are also not adequately understood. Thus, the objectives of this research are to understand the relative importance of criteria and sub-criteria in the SME debt decision.

### **4. Methodology**

The multi criteria decision making (MCDM) method Best-Worst method (BWM) was used due to its advantages of higher reliability compared to AHP and fewer data requirements for comparison (Rezaei, 2015). BWM is also used in combination with balanced scorecard for business performance evaluation (Dwivedi et al., 2021), supplier selection decision (Fazlollahtabar & Kazemitash, 2021), service provider selection in the supply chain (Muravev & Mijic, 2020), and off-road vehicle selection (Pamučar & Savin, 2020). Literature indicates increased usage of BMW method in research.

The steps involved in BWM are as follows:

STEP 1: Determine a set of decision criteria

The decision criteria are identified in this stage.

STEP 2: Determine the Best (B) (most desirable or most important) and the Worst (W) (least desirable or least important) decision criteria based on experts' opinion.

STEP 3: Determine the preference of the best decision criterion (B) over all the other decision criteria, using a 9-point scale (1: B is equally important to j; 9: B is extremely more important than j; where j are the other criteria under consideration). The result is a best-to-others (BO) vector as follows:

$$Z_B = (z_{B1}, z_{B2}, \dots, z_{Bn}) \tag{1}$$

where  $z_{Bj}$  represents the preference of B over j and  $z_{BB} = 1$ .

STEP 4: Determine the preference of all the decision criteria over the worst criterion (W), using a 9-point scale (1: j is equally important to W; 9: j is extremely more important than W). It results in a Others-to-Worst (OW) vector as follows:

$$Z_W = (z_{1W}, z_{2W}, \dots, z_{nW})^T \tag{2}$$

where  $z_{jW}$  represents the preference of j over W and  $z_{wW} = 1$ .

STEP 5: Find the optimal weights ( $w_1^*, w_2^*, \dots, w_n^*$ ). The optimal weights should be determined such that the maximum absolute differences

$$\{|w_B - z_{Bj} \cdot w_j|, |w_j - z_{jW} \cdot w_W|\} \forall j \text{ is minimized i.e.} \\ \min_j \max \{|w_B - z_{Bj} \cdot w_j|, |w_j - z_{jW} \cdot w_W|\} \tag{3}$$

$$\text{s.t. } \sum_j w_j = 1$$

$$w_j \geq 0, \forall j$$

Problem (1) is equivalent to the following linear problem:

$$\min \hat{\epsilon}$$

$$\text{s.t. } |w_B - z_{Bj} \cdot w_j| \leq \hat{\epsilon}, \forall j$$

$$|w_j - z_{jW} \cdot w_W| \leq \hat{\epsilon}, \forall j \tag{4}$$

$$\sum_j w_j = 1; w_j \geq 0, \forall j.$$

Solving problem (2), the optimal weights ( $w_1^*, w_2^*, \dots, w_n^*$ ) are determined along with the optimal objective function value  $\hat{\epsilon}^*$  (Consistency index or Ksi\*). The closer the value of Ksi\* to zero, the more higher level of consistency of the pairwise comparisons provided by the expert(s).

If the MCDM has more than one level, each levels' weights are obtained through the BWM (Steps 1 to 5), which is then multiplied with all level weights to obtain the global weights of each criteria. Based on the value of global weights of criteria, the ranks were assigned to them which fulfils the objective of the concerned research.

The 17 identified sub-factors/criteria were evaluated by experts (9 in number; R1 to R9) who quantified and ranked the factors based on contributions toward the debt

decision SMEs from banks. A scale of 1-9 was used for the best and worst factors separately for each criterion. At the initial level, the factors such as entrepreneur, firm, bank, and government role were ranked and subsequently, the sub-factors of each factor were ranked. The analysis was done by the use of BWM Solver- 2021 version (excel file) developed by Zafar Rezaei, the contributor of the BWM method. The factors and sub-factors are shown in figure-1.

The experts were qualified by their profession, experience in the profession, education, and awareness about the topic under investigation (MSME, bank, and government policy).

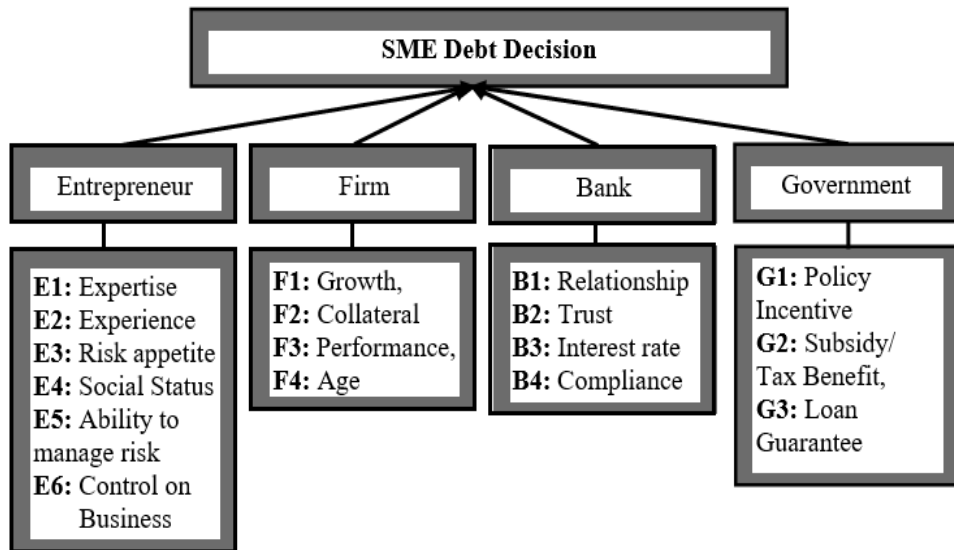


Figure 1. Proposed model for Debt Decision in SMEs

During the ranking process, experts chose to comment on the issue and it was noted down as additional qualitative feedback. The feedback is presented in a separate section, as corroboration to the findings.

Table 1. Expert Profiles (R1 to R9 are experts)

	Q1	Q2	Q3	Q4	Q5	Q6	Q7
R1	Banker	41	14	M.Com.	8	8	8
R2	Banker/ Academician	65	36	Ph.D.	6	8	7
R3	Banker	51	23	M.Sc.(Ag)	7	9	8
R4	Entrepreneur (Hotel, Govt. supplier/ contractor)	51	25	B.E.	8	7	7
R5	Academic/ Entrepreneur	52	29	Ph.D.	6	6	6
R6	Govt., Industry Promotion Officer	46	23	L.L.B.	9	7	9
R7	Retail	33	10	B.Com	6	7	6
R8	Entrepreneur	51	25	B. Tech.	6	7	6
R9	Academician	51	25	Ph.D.	5	6	5

Note: R1-9: Respondent, Q1: Profession, Q2: Age, Q3: Experience, Q4: Highest Education, Q5: Awareness of MSME, Q6: Awareness of Bank, Q7: Awareness of Govt.

Policy on MSME, The scale for Q5 to Q7 is 1-Least, 9- Best

Experts chosen for the study belonged to relevant actors in the loan decision (business owners, bankers, industry promotion officer, and academicians. The academicians chosen had different roles as academicians and bankers and entrepreneurs. Anonymity was maintained to ensure response accuracy and validity. The demography and awareness levels of experts were as follows, age (mean= 49, SD=8.73), experience (mean=23.3, SD=7.63), MSME awareness (mean=6.8, SD1.30), awareness about banks (mean=7.2, SD=0.97), awareness about government policy (mean=6.9, SD=1.27).

### 5. Research Results

Responses from the experts were converted to weights and are presented in Table-2 to Table-6. Table 2 showcases the main criteria weightage (E, F, B, G) by each of the 9 experts (R). The average of each gives the local weightage of the main criteria. Similarly, for each sub-criterion within each main criterion the weightage were calculated from experts' opinions (Table 3 to Table 6).

*Table 2. General attributes {E, F, B, and G} weightage by individual experts*

Respondent/ Attributes	E	F	B	G	Ksi*
R1	0.1558	0.2597	0.4870	0.0975	0.2922
R2	0.5000	0.2858	0.1428	0.0714	0.0714
R3	0.4545	0.1818	0.2727	0.0910	0.0909
R4	0.1490	0.4964	0.2978	0.0568	0.0992
R5	0.1571	0.4429	0.3142	0.0858	0.1857
R6	0.1617	0.0598	0.6437	0.1348	0.1646
R7	0.4333	0.2000	0.3000	0.0667	0.1666
R8	0.1615	0.0665	0.5701	0.2019	0.2375
R9	0.1966	0.6103	0.0621	0.1310	0.1758

E: Entrepreneurs; F: Firm; B: Bank; G: Government

*Table 3. Entrepreneurship sub-criteria weightage {E1 to E6}*

Respondents/ sub-factors	E1	E2	E3	E4	E5	E6	Ksi*
R1	0.4391	0.1822	0.1368	0.0514	0.1094	0.0911	0.1077
R2	0.1034	0.1292	0.3899	0.0428	0.2585	0.0862	0.1268
R3	0.0941	0.1176	0.2351	0.0561	0.3504	0.1567	0.1198
R4	0.0885	0.1106	0.1475	0.0627	0.3794	0.2213	0.0632
R5	0.1106	0.1475	0.3794	0.0627	0.2213	0.0885	0.0632
R6	0.3794	0.2213	0.1475	0.0627	0.1106	0.0885	0.0632
R7	0.3794	0.1475	0.1106	0.0985	0.2213	0.0527	0.0632
R8	0.2222	0.1482	0.1111	0.0470	0.1111	0.3704	0.0740
R9	0.0781	0.0936	0.1560	0.0471	0.2340	0.4012	0.0668

E1: Expertise; E2: Experience; E3: Risk appetite; E4: Social status; E5: Ability to manage risk; E6: Control over business

*Table 4. Firm sub-criteria weightage {F1 to F4}*

Respondent/ Sub-factors	F1	F2	F3	F4	Ksi*
R1	0.5824	0.1477	0.1847	0.0852	0.1562
R2	0.2353	0.0588	0.5294	0.1765	0.1764
R3	0.3000	0.2000	0.4333	0.0667	0.1667
R4	0.4545	0.1818	0.2727	0.0909	0.0909
R5	0.2586	0.1724	0.4655	0.1035	0.0517
R6	0.1603	0.5496	0.0764	0.2137	0.0916
R7	0.2586	0.1724	0.4655	0.1035	0.0510
R8	0.2222	0.0777	0.5667	0.1334	0.1000
R9	0.2951	0.1475	0.4918	0.0656	0.0983

F1: Firm growth; F2: Collateral (firm); F3: Firm Performance; F4: Firm age

*Table 5. Bank sub-criteria weightage {B1 to B4}*

Respondent/ Sub-factors	B1	B2	B3	B4	Ksi*
R1	0.4848	0.1818	0.2727	0.0607	0.0606
R2	0.0578	0.2480	0.5454	0.1488	0.1983
R3	0.2040	0.4286	0.0612	0.3062	0.1836
R4	0.1724	0.2586	0.1034	0.4656	0.0517
R5	0.2586	0.1724	0.1034	0.4656	0.0517
R6	0.2586	0.4656	0.1034	0.1724	0.0517
R7	0.4656	0.2586	0.1724	0.1034	0.0517
R8	0.1632	0.2176	0.0836	0.5356	0.1171
R9	0.0680	0.5272	0.1156	0.2892	0.0510

B1: Bank relationship; B2: Trust in bank; B3: Interest rate; B4: Reporting Compliance

*Table 6. Government sub-criteria weightage {G1 to G3}*

Respondent/ Sub-factors	G1	G2	G3	Ksi*
R1	0.5416	0.1667	0.2917	0.0416
R2	0.0910	0.2272	0.6818	0.2272
R3	0.0588	0.8059	0.1353	0.2764
R4	0.6444	0.2445	0.1111	0.0888
R5	0.1667	0.5417	0.2916	0.0416
R6	0.5417	0.2916	0.1667	0.0416
R7	0.1667	0.5417	0.2916	0.0416
R8	0.2444	0.6444	0.1112	0.0888
R9	0.6444	0.2444	0.1112	0.0888

G1: Policy Incentive; G2: Subsidy/Tax Benefit; G3: Government Loan guarantee  
 Table-7 represents the weightage of criteria, which was evaluated by taking the mean of each factor (Column) for E, F, B, and G respectively. The weights for E, F, B, and G are 0.2633, 0.2892, 0.3434, and 0.1041 respectively. Similarly, the local weights for sub-criteria are evaluated from Tables (3, 4, 5, and 6) to find the local weights of each sub-factor. The global weights are calculated by multiplying the factor weights corresponding to the sub-factors and the local weights of sub-factors. The summation of all 17 global weights should be 1.

*Table 7. Local and global weights of Criteria and Sub-criteria and ranking*

Criteria	Weight	Sub-Criteria	Local weight	Global Weight (%)	Ranks	
Entrepreneur	0.2633	E1: Expertise	0.2105	5.54	8	
		E2: Experience	0.1442	3.84	13	
		E3: Risk appetite	0.2015	5.30	10	
		E4: Social status	0.059	1.55	17	
		E5: Ability to manage risk				
		E6: Control over E6: Control over				
Firm	0.2892	F1: Firm growth	0.3074	8.89	4	
		F2: Collateral (firm)	0.1898	5.49	9	
		F3: Firm Performance	0.3873	11.20	1	
		F4: Firm age	0.1155	3.34	15	
Bank	0.3434	B1: Bank relationship	0.237	8.14	5	
		B2: Trust on bank	0.3065	10.52	2	
		B3: Interest rate	0.1735	5.94	6	
		B4: Reporting Compliance	0.283	9.72	3	
Government	0.1041	G1: Policy Incentive	0.3444	3.58	14	
		G2: Subsidy/Tax Benefit	0.412	4.28	12	
		G3: Govt. Loan	0.2436	2.54	16	

The global weights converted into percentages indicate firm performance, trust in the bank, report compliance to banks, firm growth, and the relationship with banks to be the first five important factors. The impact of loan decision on social status is the least important factor.

## 5. Qualitative feedback during the response collection

Eight of the nine experts (except R1) chose to share additional feedback about the research question and their opinion is discussed in this section, the parenthesis mentions the expert's identification. The feedback is arranged by actors in the loan decision.

Entrepreneur: Entrepreneurial expertise of business owners are low, they do not even maintain a basic accounting process and completely depend on chartered accountants for a loan application, indicating a need for the basic accounting education of business owners, and continual handholding (R2). Entrepreneur's often lack awareness or clarity on the policy but, insist on granting the loan (R3). The populist nature of government policy prompts a lax attitude towards the loan, and entrepreneurs assume the loan as a consumable credit, not to be repaid (R3). At times, entrepreneurs do not even meet the 'know your customer' (KYC) requirement of a bank and fit into the policy guidelines (R3). A genuine businessperson will not take loan with low interest (R4). The expert R5 opined businesspersons have a financial plan; the loan decisions are relevant and important within a time frame only.

**Bank:** Banks are security-oriented and demand organized documents for loan appraisal, a new policy cannot change the behavior overnight (R2). Banks as business organizations check the businesspersons as potential candidates for evaluation through documented track record (R4). Banks don't take the risk (R4, R8). However, banks do not ask for records if a sufficient down payment is given which, indicates an absence of fixed policy or procedure (R4). Some bank managers take risk grant loans, others can ask for many other documents which the businessperson does not have (R4). SMEs do not get a loan from banks, even with policy, because of stricter criteria of banks (R8).

Collateral is not a sufficient condition, the current performance and history of the business are more important than the projected growth, so, the decision-making is regressive (R8). Loan to large businesses are more likely to become non-performing assets than the loan to SMEs (R8). Banks check net worth, and paying capacity, but do not check the feasibility of the project (R6). If there is a loan guarantee, banks adjust the mortgage amount while granting and grant the rest amount (R6). Many business owners borrow from private banks because nationalized banks ask for many compliance terms (R6). Banks demands security even for Mudra loan (R7). A bank is an obstacle in asking for surety in repayment (R7). It is better to go for crowdfunding than a bank loan because of the over-demand of information by the bank and compliance (R5).

**Government:** The government role is limited to the level of policy (R2). Often, the government policy is populist (R3). The government policy is for voters and is localized; to access a loan guarantee policy businesspersons have to offer bribes (R4). Government policies are on sympathetic grounds (e.g. natural calamity) rather than on business grounds (R8). Often, business owners take the subsidy for purposes other than business (R4). In the case of the Prime Minister's Rojgar Yojana (PMRY), the government is only a sponsoring agency with the role identify firms, banks are the final arbitrator on loans (R6). Policy is important because of its specific terms (R6). The government policies are for the upper or lowest level of business, there is nothing for mid-level business (R7). Government should promote the schemes regularly to create awareness and associated incentives can bring competitive spirit among businesspersons (R9).

## **6. Sensitivity of factor ratings**

Since the scores are sensitive to individual expert's opinions, we conducted a sensitivity analysis to understand the robustness of ranks identified in this study. The sensitivity analysis of different multi-criteria decision making has been suggested in various studies (Božanić et al., 2022; Durmić et al., 2020; Pamucar et al., 2021). For the sensitivity analysis, the score of the factors was changed, and the score of the sub-factors was not changed. Thus, this sensitivity test considered the factors (entrepreneur, firm, bank, and government). Secondly, in each scenario, the score of one factor was increased by 30 percent from the survey scenario and a corresponding reduction of 10 percent from the other three factors to keep the sum of factor scores as 1.

For four factors in this study, a variation of 30 percent was considered as maximum. In another situation, each factor was considered to have the same weight (25 percent

each). Thus, we arrived at the following scenarios. Survey factor score (S0), all factor weights equal (S1), entrepreneur factor score 30 percent more than survey (S2), Firm factor score 30 percent more than survey (S3), bank factor more than 30 percent (S4), and government factor more than 30 percent more (S5) than the survey score (table 8).

Table 8. Sensitivity test of factor and change of global rank

	Sub-Factors																	
	E1:	E2:	E3:	E4:	E5:	E6:	F1:	F2:	F3:	F4:	B1:	B2:	B3:	B4:	G1:	G2:	G3:	
S0	8	13	10	17	7	11	4	9	1	15	5	2	6	3	14	12	16	
S1	10	15	11	17	9	14	4	12	2	16	8	5	13	6	3	1	7	
S2	7	12	8	17	5	9	4	11	1	15	6	2	10	3	14	13	16	
S3	9	14	10	17	8	12	2	6	1	11	5	3	7	4	15	13	16	
S4	8	13	10	17	7	11	5	9	4	15	3	1	6	2	14	12	16	
S5	9	14	11	17	8	13	4	10	1	16	5	2	7	3	12	6	15	

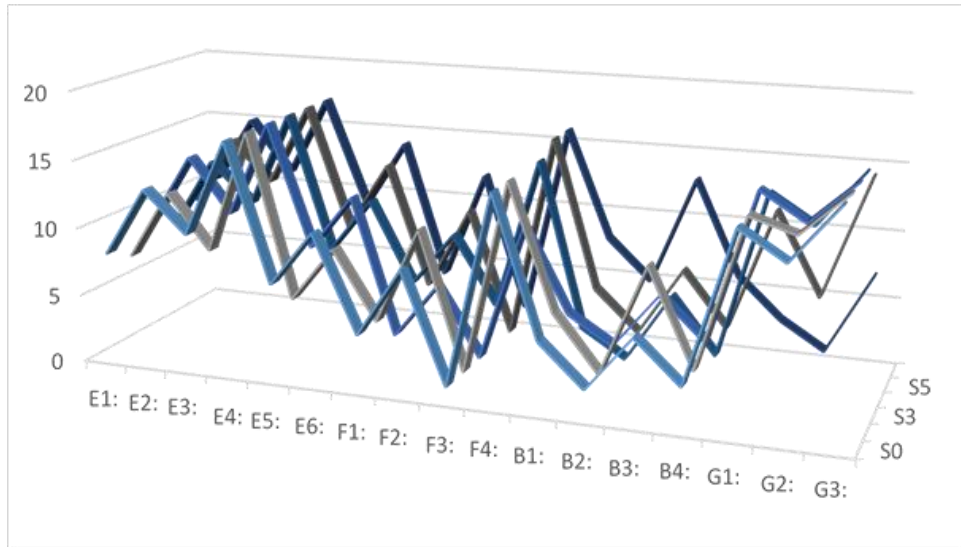


Figure 2. Rank variation at sub-factor level due to variation in factor weights

Note: The numbers indicate the sub-factor for entrepreneur (E), firm (F), bank (B), and government (G)

Table 8 and figure 2 indicate that the ranks of sub-factors do not vary even with a 30 percent increment except when all factors have equal weight. If all factors have equal weight, then the primary sub-factor is to avail subsidy/ tax benefit in a loan decision. Also, in all the scenarios considered, the social status remains the least important sub-factor. Thus, the sub-factor scores are found stable in different scenarios.

## 6. Discussion and Conclusion

Table 7 indicates that banks have substantially more weight in the debt decision



compared to other factors. Firm, entrepreneur, and government play subsequent important roles in that order. The importance of the first six factors combined (F3: Firm Performance, B2: Trust in bank, B4: Reporting Compliance, F1: Firm growth, B1: Bank relationship, and B3: Interest rate) account for 54 percent of the score. However, the lowest score of social status indicates that SMEs are not debt averse.

A six percent more importance of banks than the importance of firms indicates a pervasive role of banks. The relative importance of sub-factors under the bank includes trust, reporting compliance, relationship, and interest rate, in that order. The first three factors are difficult to achieve for an SME without long past, transaction history, or personal rapport. The objective factor of interest rate is the last, indicating the importance of subjective rather than objective criteria of debt decision by SMEs. The second important factor 'firm' has firm performance, growth, and collateral as three most important criteria in that order. This order indicates that the current performance is more important than future growth. Thus, the debt decision for future expansion or operation is regressive, indicating a contradiction and bank's inclination to pass on the risk. In such a scenario, the credit offtake is expected to less during pessimistic economic growth, even with policy incentive. The ability to manage risk, expertise, and risk appetite are the three most important entrepreneurial characteristics determining the debt decision. Control over the business and social status factors are last two important factors indicating the pragmatic nature of entrepreneurs. The subsidy or tax benefit and policy incentives are two most important criteria within government as a factor. The sequence indicates that debt decision partly anchors with some immediate to a medium term benefit to SMEs.

The banking process deserves more scrutiny in light of this finding. The documentation or transaction-related opacity is likely to be mitigated partially due to recent digitalization practices (unified payment interface, UPI) adopted and enhanced during the pandemic. Digital transactions may also improve the creditworthiness assessment leading to improved SME lending. The findings support statements of the experts presented earlier. Corruption significantly affects the choice of sources of financing, increases the use of informal debt and reduces the use of formal debt, owner's equity, and retained earnings (Phan & Archer, 2020).

The pecking order theory indicates the use of internal fund, optimal debt, and then equity whereas, the tradeoff theory indicates the debt level is up to the tax-saving benefit. However, we find that the weight of 'tax benefit' factor is only 4.28 percent in the debt decision. Thus, the debt is likely to be sub-optimal in case of SMEs. The agency theory perspective that the owners are likely to infuse debt to discipline managers is also debatable because SME owners are the managers of their businesses.

## **7. Limitations and future scope**

Many entrepreneurship attributes such as ethnicity were not explicitly incorporated in this research (Coleman et al., 2016). Similarly, the ownership structure, location, and crises were not explicit in the questions. Firms with different ownership structures and legal forms such as family firms have a different levels of medium-term debt (Migliori et al., 2018). The financial crisis of 2008 also influenced debt decisions (Ramalho et al., 2018). This study asked the experts about the trust of entrepreneurs in the banker, but apparently, the banker's trust in SME owners is more important in the decision context, and both trusts are not symmetric. Research suggests bankers use qualitative criteria of trust for lending decisions however, it is

not known how (Kautonen et al., 2020).

Others have suggested the non-bank credit sources and tax incentives improve SME performance by reducing opportunity costs (Cheong et al., 2020). Thus, the bidirectional trust role, improvement of compliance due to transparency and improved digital transaction, and emergency of digital payment organizations as institutional lenders to SMEs remain future research focus areas. This research identified the relative importance of factors using best-worst method. Interaction of these factors can be investigated though different MCDM techniques in future.

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