A Bayesian Best and Worth Method-Based Methodology to Select the Best Growth Strategy for SMES

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Abstract: The small and medium-sized enterprises (SMEs) are the main driver of employment, those that contribute greater economic growth in gross domestic product and innovation. The analysis of the factors that influence in SMEs growth seems decisive in knowing how SMEs compete, helping to prioritize resources and make decisions. This research has presented a methodology for decision-makers when having to select the most appropriate growth strategy. In this paper, the two first steps of such methodology have been implemented, having identified, from the scientific literatura, eight key growth factors and four SMEs growth strategies. Additionally, it has justified the application of the Bayesian Best and Worst Method in order to be able to rank these four strategies by weighting these eight key growth factors.

Keywords: Small and medium-sized enterprises (SMEs), key factors for growth, growth strategies, Bayesian Best and Worst Method.

Introduction

The importance of small and medium-sized enterprises (SMEs) increased in the recent years, becoming the predominant type of companies worldwide, and in particular in the European Union, reaching 99 % of the total firms in market, being also the main driver of employment, those that contribute greater economic growth in gross domestic product and innovation (European Union 2023).

Due to their specifications, SMEs act differently compare to large companies, in particular, their financial limitations limit their growth and performance, being therefore forced to prioritize others factors that have a relevant role in terms of growth in this typology of companies. Then, the analysis of these factors seems decisive in knowing how SMEs growth and compete, helping to prioritize resources and make decisions. In this sense, analyzing processes, establishing objectives and prioritizing action plans with efficient allocation of resources is essential to remain or grow, but finding a comprehensive solution including what method to apply, is not a simple task in the analysis of complex states.

The most popular performance measurement system seems to be the Balanced Scorecard (BSC) developed by Kaplan and Norton in 1992. This system has received worldwide recognition as a performance measurement tool which is essentially multidimensional in nature that links measures to organizational strategy (Kaplan and Norton, 1996). Complementary to BSC, the called strategic maps emerged shortly after (Kaplan and Norton, 1996). Strategic Maps are very useful tool to graphically represented through a chain of cause-effect relationships between the strategic objectives of the BSC connecting the results obtained in the strategy with the inducers that will make them possible.

However, despite the influential work of Kaplan and Norton in these efforts, organizations still struggle to manage the complexity of the interrelations between the set of decisions that are needed to validate an organization´s strategy as well as some guidance on how to select the most appropriate strategy for growth, especially true for SMEs.

Then, the main objective of this research is to present a methodology that, through the application of the Bayesian Best- Worst Method (BBWM), will allow to decision makers to make better strategic decisions, while rationalizing the associated resources, through the selection of the most adequate strategic options for the SME.

Nevertheless, there has not been any significant study on the determination, rank and evaluation of the different strategy alternatives of SMEs related to their Growth and based on the Key Growth Factors (KGF) by applying the MCDA technique called Bayesian Best and Worth Method (BBWM) . Thereby, the contributions of the study can be described as follows:

1) Identifying the KGF that influence the whole growth for SME through a literature review.
2) Proposing a methodology to rank the different SMEs growth strategy options (alternatives) using the Bayesian BWM approach.
3) Guiding the Decision Makers (DMs) of SMEs in making decisions at the managerial level.

Therefore, this research will proceed as follows: the next section presents the results of a literature review regarding the main KGF; then, the different strategies for growth based on the matrix model of Ansoff (1997) are identified; then, the following section briefly presents the BBWM; then, the proposed methodology to be applied is presented; finally, the main conclusions and future research work are introduced.

KGF affecting the SMEs Growth

After having carried out a literature review of the KGF, eight KGF have been identified and are presented in Table 1.

Table1: Key factors for SMEs to growth

Key Factors	Relation with growth	Authors
1. Entrepreneurial Orientation	Different dimensions of entrepreneurial orientation affect the growth and performance of SMEs	Sorama et al., (2022)
2. Innovation Capability	Innovation represents an important factor in promoting the growth and development of SMEs and contribute to their overall success and economic benefits.	Saunila, M. (2017); Hajar, (2015); Al-Ansari et al, (2013)
3. Human Capital Resources	Human capital is a crucial element in the process of transforming information into valuable knowledge that will improve company performance.	Daou (2014); Tovstiga & Tulugurova (2007)
4. Internationalization	Developing exporting activities and internationalization practices also influences SMEs' growth. International growth is a key factor for SMEs to survive International research and outsourcing strategies development allow small enterprises to improve sales and gain competitive advantages that can be used to boost growth	Robson & Bennett, (2000); Veronica et al., (2020); Gylling et al., (2015); Rodriguez & Jesus Nieto, (2016).
5. External Networks	Firms can benefit from having a strong network with clients and/or providers.	Scott et al., (2022)
6. Size	Size of the company does influence the growth	Rodriguez et al, (2003); Levrattota et al (2010)
7. Age	Increasing age indicates that firms usually follow a sustainable model that allows it to grow to a significant size. SME age comprises the influence of small firms' life cycle phases on growth and the influence of their experience.	Rodriguez et al, (2003), Foreman-Peck et al., (2006).
8. Capital structure	A strong capital structure is essential for SMEs to develop their activity. Having the necessary financial resources is key for firms to expand, and grow (Rasheed, 2005).	(Rasheed, 2005); Wynarczyk & Watson (2005).

SMEs Growth Strategies (alternatives)

In our approach, the different alternatives that the firm has available to growth are based on the growth strategies proposed in the Ansoff model (1970), in which four different strategies can be distinguished based on the market/product matrix (Table 2).

Table 2. Elaboration based on Ansoff´s Growth Strategy Matrix (1970)

CODE STRATEGY	PRODUCTS OR FUNCIONALITIES/MARKETS	STRATEGY NAME
E1	Existing Markets_ Existing Products_New Efficiencies	Evolutive Strategy
E2	Existing Markets_ New Products or Funcionalities	Renewal strategy
E3	New Markets_ Existing product or Functionalities	New Markets strategy
E4	New Markets_ New products or Functionalities	Diversification Strategy

The first strategy development (E1) is to expand current business with the existing markets and the existing products through market penetration strategies (e.g., enhancing the services, expanding distribution channels, increasing product usage), this alternative could be a evolutive strategy, one option that could be necessary in firms in order to maintain the relative competitiveness in the market. The second alternative strategy (E2) is product or new functions development strategies (e.g., product line extensions through new features, variants or benefits and new product offerings for existing customers).The third alternative strategy (E3) is market development strategies (e.g., new customer segments or geographic expansion) and the fourth alternative strategy (E4) is based on new markets development strategies and product line extensions or new product offerings. This alternative is diversification of the business, this growth option may be related to the core business or not, in this case it would be considered unrelated or radical diversification for the firm.

Bayesian Best- Worst Method (BBWM)

The Best and Worst Method (BWM) is a multi-criteria decision-making method (MCDM) which finds the optimal weights of a set of criteria based on the preferences of only one decision-maker (DM) or evaluator. This method was developed by Jafar Rezaei (2015). In contrast to other pairwise comparision-based MCDM techniques, we propose the BWM because this technique presents several significant advantages such as: it can reduce the amount of inconstancy in the comparison data to a great extent by identifying the best and worst indicators of the indicator set before making comparisons between indicators; this method enhances the decision maker's comprehension of the evaluation's extent, thereby increasing the reliability of their indicator comparisons (Anam, 2022); in a singular optimization model, the decision maker will generate two comparison vectors by utilizing the best and worst indicators as points of reference. This approach serves to alleviate the potential influence of anchoring bias that the decision maker may experience while conducting indicator comparisons.

Our proposal includes an upgraded version of the BWM, called Bayesian Best Worst Method (BBWM), considering that the perception of several experts is better that only one perception, the different opinions of several experts are combined using a probabilistic approach, facilitating more precise decision-making about the integrated ranking of the criteria under consideration (Mohammadi & Rezaei, 2020). The BBWM lies between the single vector and full matrix comparison, and it improves the consistency of the evaluation criteria while reducing the evaluation data and time (Liang et al., 2019).

Methodology

Figure 1 shows the main steps to follow when applying the BBWM to the identified KGF (step 1) in order to be able to rank and select the most appropriate growth strategy from the four already identified for SMEs.
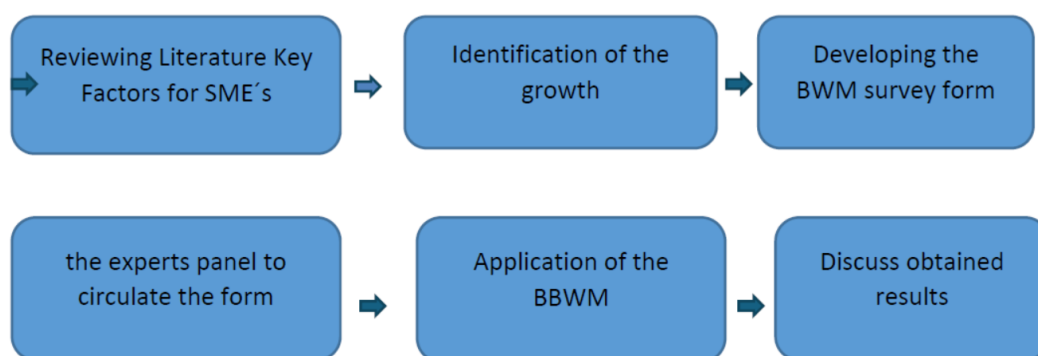

Figure 2. Proposed methodology

Regarding the BBWM survey form, it should be developed, and sent to the created experts panel, in order to construct the be able to properly apply the BBWM. Once the BBWM has been applied, the results should be discussed and, finally, decisions made. Further, in this study the most significant decision is which one out of the identified four growth strategies for SMEs will be chosen in order to increase the organisation's growth.

Conclusions and future research work

This research has presented a methodology for SMEs decision-makers when having to select the most appropriate growth strategy. In this paper, the two first steps of such methodology have been implemented, having identified from the scientific literature eight key growth factors and four SMEs growth strategies. Additionally, it has justified the application of the Bayesian Best and Worst Method to be able to rank these four strategies by weighting the eight key growth factors. Future research work should focus Reviewing Literature Key Factors for SME´s Identification of the growth developing the BWM survey form the experts panel to circulate the form Application of the BBWM Discuss obtained results on the practical application of the BBWM providing with additional information to decision-makers.

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