BARRIERS TO SOCIAL ENTREPRENEURSHIP AMONG BUSINESS MANAGEMENT UNIVERSITY STUDENTS IN SPAIN: A FUZZY DEMATEL APPROACH

O. Barbulescu[1], J. Capó-I-Vicedo[2], G. Maldonado-Gómez[3], J.V. Tomás-Miquel[2]

[1]Universitatea Transilvania din Brașov (ROMANIA)
[2]Universitat Politècnica de València (SPAIN)
[3]TecNM-Campus Instituto Tecnológico Superior del Oriente del Estado de Hidalgo (MEXICO)

Abstract

This article explores barriers hindering the engagement of business management university students in social entrepreneurship (SE) in the Spanish context. The study, conducted at the Alcoy Campus of the Universitat Politècnica de València, employs a Fuzzy Decision-Making Trial and Evaluation Laboratory (DEMATEL) approach to analyse complex interrelationships among identified obstacles. Through surveys and interviews with students, professors and university management staff, the research revealed a number of key barriers, such as the lack of awareness and understanding of the opportunities of SE, the lack of institutional, informational and financial support from the public administration, large companies and organisations, the lack of a vision of change as necessary and possible or the lack of specific training, among others. It also quantified the strength and direction of relationships among these barriers. The findings underscore the need for targeted interventions, particularly by public administration, companies, organisations and educational institutions, to address these obstacles and foster a socially conscious entrepreneurial mindset among business management students.

Keywords: Social entrepreneurship, Barriers, Business management students, Fuzzy DEMATEL

1 INTRODUCTION

In recent years, the field of social entrepreneurship (SE) has garnered substantial attention within academic literature [1]. This burgeoning area of research delves into the intersection of business principles and societal impact, exploring innovative strategies to address pressing social and environmental challenges. SE is defined by the proactive pursuit of novel solutions to entrenched problems, coupling a commitment to social or environmental improvement with entrepreneurial principles. This multifaceted concept emphasises the application of innovative business models, sustainable practices and collaborative approaches to effect positive change, ultimately contributing to creating a more equitable and sustainable world.

However, the reality is that the application of this idea is far from widespread in the business world [2]. This is especially evident in the context of university students who encounter difficulties inherent to the process of entrepreneurship, even more so when it is connected to social or environmental issues.

In a rapidly evolving global landscape characterised by increasing social and environmental challenges, the purpose of this paper is, therefore, to investigate the barriers that impede the engagement of business management university students in SE endeavours in the Spanish context. More specifically, this paper aims to go a step further than the past literature by exploring the cause-and-effect relationships among the barriers while also delineating their significance.

Therefore, recognising the importance of a nuanced and comprehensive analysis, we employed a Multi-Criteria Decision Making (MCDM) approach, specifically Fuzzy Decision-Making Trial and Evaluation Laboratory (DEMATEL), to model complex interrelationships among various identified barriers.

The choice of business management students as the object of study in this work is due to two main reasons: on the one hand, their previous background allows them to have a greater knowledge of how to carry out entrepreneurial processes and, on the other hand, according to [3], they develop a greater sensitivity than STEM students to issues such as social, environmental, economic or technological sustainability. Similar empirical evidence exists for the teaching staff in the area of business management in comparison to teaching staff in other areas [4].

Through a combination of surveys and interviews, we collected data on the perceptions and experiences of students, faculty and management staff in the business management area of the Alcoy Campus of the Universitat Politècnica de València (UPV) in Spain concerning barriers to accessing SE. The quantitative data was subjected to Fuzzy DEMATEL analysis, enabling us to unveil the nuanced cause-and-effect relationships and prioritise the barriers based on their impact and interconnectedness.

The study revealed a number of obstacles, such as the lack of awareness and understanding of the opportunities of SE, the lack of institutional, informational and financial support, the lack of a vision of change as necessary and possible or the lack of specific training, among others. More importantly, our analyses also allowed us to quantify the strength and direction of the relationships between barriers.

The structure of the paper is as follows. After this introduction, the second section describes the barriers to SE identified in the literature, together with the details of the methodology and the sample used in the empirical analysis. This is followed by a description of the results of the empirical study. Finally, the conclusions section presents the theoretical and managerial implications, along with the limitations of the work and recommendations for future research.

2 METHODOLOGY

2.1 Barriers to social entrepreneurship

According to [5], SE refers to sustainable ventures that blend "business principles with a passion for social impact". These endeavours aim to make social value their foremost organisational goal, utilising business concepts to ensure the longevity of their operations in pursuing this objective [6]. As a result, and in contrast to traditional enterprises, whose main objective is to generate financial profit, social enterprises aim, first and foremost, to create a positive impact on society.

However, despite its potential for positive change, numerous obstacles stand in the way of aspiring social entrepreneurs [2]. On the other hand, this process of SE is even more complex in the specific case of university students, as they face numerous challenges under a personal state characterised by low financial capacity, limited experience and a lack of specific knowledge on the social issue.

The literature has addressed the challenges of SE and, over the years, has raised different barriers to SE, both generally [2] and explicitly for university students [7], [8]. Based on a comprehensive literature review, Table 1 summarises the barriers that university students face when setting up a business in the social sphere, classified according to whether the responsibility is internal or external to them.

Table 1. List of barriers to SE. Source: own elaboration

Barrier's dimension	***Barrier's subdimension***	***Code***	***Barrier***	***Source***
Internal	Financial	B01	Lack of financial resources	[2], [9], [10]
		B02	Expectation of low income (limited financial viability of the enterprise in the market and long-term sustainability)	[9]
	Intellectual (experience and knowledge)	B03	Lack of experience in entrepreneurship	[2], [7], [8], [9]
		B04	Lack of specific training	[2[, [7], [8], [10]
		B05	Lack of awareness and understanding of opportunities and potential of SE	[7]
	Social	B06	Fear of losing reputation or network of relationships	[2]
		B07	External pressures from family, friends and society at large	[11]
	Perceptual	B08	Self-perceived lack of personal characteristics for entrepreneurship (networking with others, low-risk aversion, leadership, persistence and long-term expectations, etc.)	[2], [8], [9]
		B09	Lack of a vision of change as necessary and possible. Lack of social awareness	[2]
External	Economic	B10	Lack of availability of credit from banks or investors	[10]
	Social context	B11	The complexity of social problems (lack of standardised measures of social value creation)	[12]

	Institutional	B12	Lack of institutional, informational and financial support from public administration, large companies and organisations	[2], [10]
	Market	B13	Lack of consumer confidence in the quality of products produced by social enterprises and social initiatives	[2]
	Academic	B14	Lack of support from academic institutions for SE	[8], [13]

2.2 The Fuzzy DEMATEL methodology

This study focuses on elucidating the cause-and-effect connections among obstacles to developing SE. Traditional models fall short in this endeavour due to (i) the intricate and interconnected nature of these barriers, and (ii) the uncertainty and imprecision associated with expert evaluations. Fuzzy set theory is employed to handle imprecise data, with typically four to six expert opinions using intuitive fuzzy sets considered sufficient for reliable conclusions [14]. Additionally, the DEMATEL methodology is utilised to assess complex systems with causal relationships based on expert opinions. Notably, the results derived from these methods offer valuable insights into the relative significance of each factor within the overall system [15]. Hence, an integrated approach combining fuzzy set theory and DEMATEL yields more robust conclusions compared to traditional methods, making it widely applicable across various fields, including computer science, engineering, business, management, decision sciences and social sciences [16]–[19]. Consequently, the data analysis in this study employs a combination of fuzzy set theory and DEMATEL methods.

The Fuzzy DEMATEL Method applied in this work consists of a total of six steps. The procedure for each of these steps is described below.

- *Step 1: Generate the fuzzy direct-relation matrix*

To determine the model of the relationships among the 14 barriers, a 14 × 14 matrix is initially created. The impact of each element in a row on each element in a column of this matrix can be represented as a fuzzy number. If multiple experts' opinions are utilised, all experts need to complete the matrix. The arithmetic mean of all the experts' opinions is then used to generate the direct relation matrix z.

$$z = \begin{bmatrix} 0 & \cdots & \tilde{z}_{n1} \\ \vdots & \ddots & \vdots \\ \tilde{z}_{1n} & \cdots & 0 \end{bmatrix}$$

Table 2 shows the fuzzy 5-point scale used for the specific case of our model.

Table 2. Fuzzy scale used in the model

Code	Linguistic terms	Low (l)	Medium (m)	Upper (u)
1	No influence	0	0	0.25
2	Very low influence	0	0.25	0.5
3	Low influence	0.25	0.5	0.75
4	High influence	0.5	0.75	1
5	Very high influence	0.75	1	1

- *Step 2: Normalise the fuzzy direct-relation matrix*

The normalised fuzzy direct-relation matrix can be obtained using the following formula:

$$\tilde{x}_{ij} = \frac{\tilde{z}_{\mathrm{ij}}}{r} = \left(\frac{l_{ij}}{r}, \frac{m_{ij}}{r}, \frac{u_{ij}}{r}\right)$$

Where:

$$r = \max_{i,j}\left\{\max_{i}\sum_{j=1}^{n} u_{ij}, \max_{j}\sum_{i=1}^{n} u_{ij}\right\} \qquad i, j \in \{1,2,3,\ldots,n\}$$

✦ *Step 3: Calculate the fuzzy total-relation matrix*

In step 3, the fuzzy total-relation matrix can be calculated by applying the following formula:

$$\tilde{T} = \lim_{k \to +\infty} (\tilde{x}^1 \oplus \tilde{x}^2 \oplus \ldots \oplus \tilde{x}^k)$$

If each element of the fuzzy total-relation matrix is expressed as $\tilde{t}_{ij} = (l''_{ij}, m''_{ij}, u''_{ij})$, it can be calculated as follows:

$$[l''_{ij}] = x_l \times (I - x_l)^{-1}$$

$$[m''_{ij}] = x_m \times (I - x_m)^{-1}$$

$$[u''_{ij}] = x_u \times (I - x_u)^{-1}$$

✦ *Step 4: Defuzzify into crisp values*

The CFCS (Converting Fuzzy data into Crisp Scores) method proposed by Opricovic and Tzeng is used to obtain crisp values of the total-relation matrix (T matrix). The steps of CFCS method are as follows:

$$l_{ij}^n = \frac{\left(l_{ij}^t - \min l_{ij}^t\right)}{\Delta_{min}^{max}}$$

$$m_{ij}^n = \frac{(m_{ij}^t - min\ l_{ij}^t)}{\Delta_{min}^{max}}$$

$$u_{ij}^n = \frac{(u_{ij}^t - min\ l_{ij}^t)}{\Delta_{min}^{max}}$$

So that:

$$\Delta_{min}^{max} = \max u_{ij}^t - \min l_{ij}^t$$

Calculating the upper and lower bounds of normalised values:

$$l_{ij}^s = {m_{ij}^n}\Big/{(1 + m_{ij}^n - l_{ij}^n)}$$

$$u_{ij}^s = {u_{ij}^n}\Big/{(1 + u_{ij}^n - l_{ij}^n)}$$

Calculating total normalised crisp values:

$$x_{ij} = \frac{[l_{ij}^s(1 - l_{ij}^s) + u_{ij}^s \times u_{ij}^s]}{[1 - l_{ij}^s + u_{ij}^s]}$$

✦ *Step 5: Final output and create a causal relation diagram*

The next step is to find out the sum of each row and each column of the crisp total-relation matrix obtained in the previous step. The sum of rows (D) and columns (R) can be obtained as follows:

$$D = \sum_{j=1}^{n} T_{ij}$$

$$R = \sum_{i=1}^{n} T_{ij}$$

The D+R and D-R values can then be calculated.

✦ *Step 6: Interpret the results*

Finally, according to the previous step, each factor can be assessed based on the following aspects:

- The (D + R) horizontal vector signifies the level of significance that each factor holds within the overall system. Essentially, (D + R) reflects the impact of factor i on the entire system as well as the influence of other system factors on this particular factor.
- On the other hand, the (D-R) vertical vector denotes the extent to which a factor influences the system. In broad terms, a positive D-R value indicates a causal variable, while a negative D-R value signifies an effect.

2.3 Research context

In order to answer the research questions, the Fuzzy DEMATEL methodology was applied to a sample of a total of ten people linked to the area of business management at the Alcoy Campus of the UPV. Specifically, information was requested from six students, two professors and two management staff linked to this research area.

The sample selection responds to the need to obtain the opinion on the cause-and-effect relationships between barriers from different points of view. On the one hand, the students, both bachelor's and master's degree students, who are the main actors in the research work and, on the other hand, the professors and management staff whose knowledge and experience of more than 15 years at the university can greatly enrich the vision of the interrelations between barriers to SE. Table 3 summarises the main characteristics of the selected interviewees.

Table 3. Main characteristics of the interviewees

Expert characteristics	*Percentage*
Gender	
Female	50
Male	50
Age	
Between 18 and 25 years old	40
Between 26 and 35 years old	20
Between 36 and 45 years old	20
Between 46 and 55 years old	20
Educational background	
Bachelor's degree students	30
Master's degree students	30
Professors/management staff with a PhD	40

3 RESULTS

The following results were obtained after applying the Fuzzy DEMATEL methodology to analyse the interrelationships between the barriers to SE.

By way of explanation, Table 4 shows the results collected from one of the interviewees. As can be seen, the information obtained from each interviewee consists of a table in which they were asked to rate from 1 to 5 according to Table 2 above, the influence that each of the barriers in rows had on each of the barriers shown in columns.

Table 4. Response obtained from one of the interviewees

	B01	B02	B03	B04	B05	B06	B07	B08	B09	B10	B11	B12	B13	B14
B01	0	1	2	3	3	1	4	1	1	1	1	1	1	1
B02	1	0	1	5	4	5	5	1	1	5	1	1	1	3
B03	2	3	0	1	1	1	1	5	1	1	1	1	1	1
B04	1	5	5	0	5	4	4	3	4	3	1	3	1	1
B05	1	5	3	4	0	4	4	1	4	3	1	3	1	1
B06	1	1	5	5	5	0	4	1	1	1	1	1	1	1
B07	1	1	3	3	3	5	0	1	2	1	1	1	1	1
B08	2	1	5	3	3	1	1	0	1	1	1	1	1	1
B09	1	4	1	5	5	5	5	1	0	4	1	4	1	4
B10	5	1	2	1	2	2	2	1	1	0	1	1	1	2
B11	1	4	1	4	5	3	3	1	3	4	0	5	1	4
B12	5	5	4	5	5	4	4	2	5	5	4	0	3	5
B13	1	3	1	2	2	2	3	2	1	1	1	1	0	1
B14	1	2	4	5	4	3	3	4	5	3	3	3	2	0

After processing each of the responses through the first four steps of the methodology, step 4 yielded the crisp total-relation matrix, which is shown in Table 5.

Table 5. Crisp total-relation matrix

	B01	B02	B03	B04	B05	B06	B07	B08	B09	B10	B11	B12	B13	B14
B01	0.014	0.031	0.058	0.068	0.064	0.047	0.089	0.049	0.036	0.051	0.027	0.024	0.015	0.021
B02	0.032	0.05	0.063	0.112	0.125	0.114	0.13	0.059	0.083	0.122	0.057	0.065	0.028	0.061
B03	0.032	0.072	0.037	0.058	0.089	0.059	0.076	0.101	0.078	0.065	0.058	0.048	0.02	0.05
B04	0.032	0.103	0.106	0.062	0.131	0.098	0.108	0.093	0.114	0.1	0.08	0.073	0.039	0.053
B05	0.035	0.129	0.089	0.12	0.081	0.115	0.121	0.065	0.134	0.112	0.077	0.099	0.046	0.075
B06	0.022	0.063	0.104	0.102	0.108	0.044	0.098	0.067	0.085	0.049	0.046	0.04	0.02	0.032
B07	0.032	0.054	0.084	0.071	0.08	0.103	0.037	0.054	0.06	0.039	0.027	0.028	0.017	0.025
B08	0.031	0.059	0.094	0.091	0.088	0.069	0.064	0.029	0.049	0.036	0.032	0.029	0.017	0.026
B09	0.04	0.106	0.066	0.127	0.155	0.114	0.109	0.053	0.068	0.124	0.079	0.106	0.05	0.102
B10	0.1	0.06	0.06	0.059	0.08	0.054	0.067	0.038	0.051	0.037	0.039	0.062	0.019	0.064
B11	0.044	0.13	0.083	0.129	0.165	0.11	0.113	0.062	0.14	0.139	0.052	0.129	0.042	0.113
B12	0.092	0.127	0.124	0.151	0.175	0.121	0.123	0.078	0.161	0.153	0.119	0.066	0.071	0.134
B13	0.019	0.079	0.031	0.05	0.063	0.062	0.064	0.034	0.056	0.06	0.029	0.036	0.011	0.029
B14	0.042	0.103	0.11	0.147	0.154	0.112	0.103	0.101	0.142	0.117	0.101	0.109	0.044	0.052

Once step 4 of the methodology was developed, in step 5 we proceeded to obtain the final output and create the causal relation diagram. Table 6 shows the results of the cause-and-effect model.

Table 6. Results of the cause-and-effect model

	R	D	D + R	D - R
B01	0.566	0.593	1.159	0.027
B02	1.167	1.099	2.266	-0.068
B03	1.109	0.844	1.953	-0.265
B04	1.348	1.192	2.54	-0.156
B05	1.558	1.3	2.858	-0.258
B06	1.224	0.882	2.105	-0.342
B07	1.302	0.709	2.011	-0.593
B08	0.881	0.715	1.597	-0.166
B09	1.259	1.299	2.558	0.04
B10	1.203	0.791	1.994	-0.412
B11	0.823	1.45	2.273	0.627
B12	0.915	1.695	2.61	0.78
B13	0.438	0.623	1.061	0.185
B14	0.837	1.439	2.276	0.602

Complementing the results of the table, Fig. 1 shows the causal relationship digraph to facilitate the understanding of the results obtained.

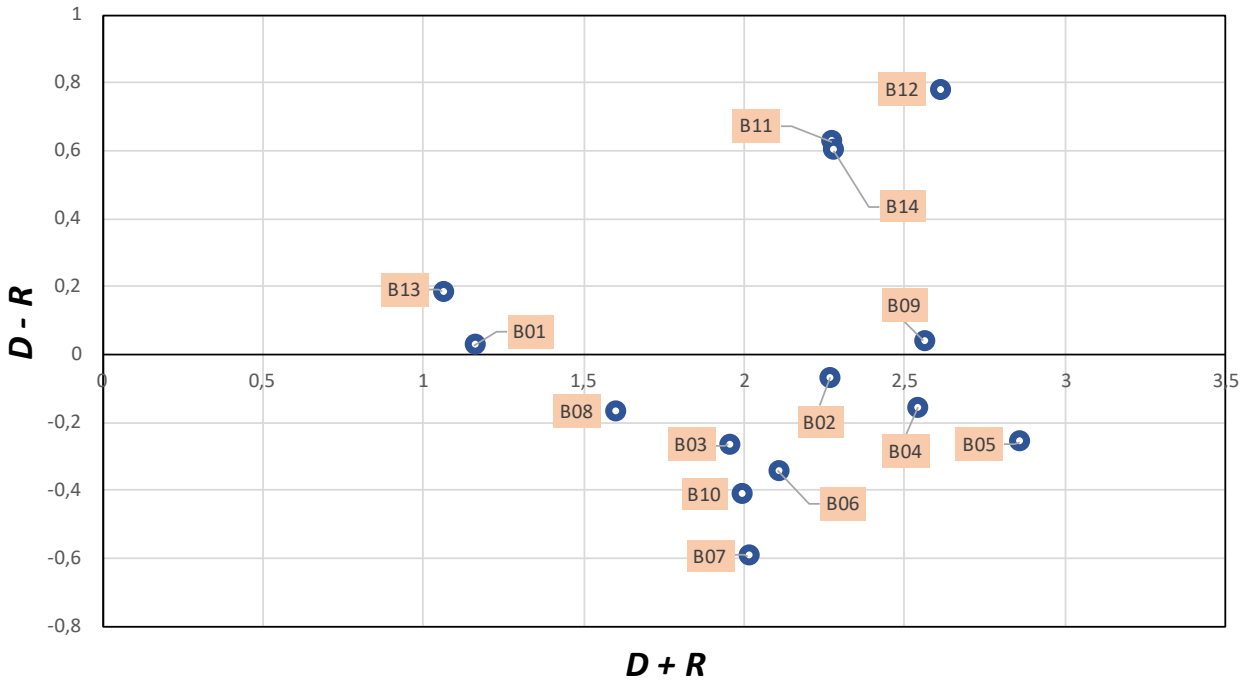

Figure 1. Cause-and-effect digraph on the barriers to SE

Finally, the results obtained were interpreted in step 6. In this way and according to the diagram and table above, each factor can be assessed in terms of the Horizontal vector (D+R) and the Vertical vector (D-R).

From the results in the Horizontal vector (D + R), which represents the degree of importance that each factor plays in the entire system, B05 is ranked in the first place and B12, B09, B04, B14, B11, B02, B06, B07, B10, B03, B08, B01 and B13, are ranked in the following places.

On the other hand, and according to the Vertical vector (D-R) results, which present the degree of a factor's influence on the system, B01, B09, B11, B12, B13 and B14 are considered causal variables. In contrast, B02, B03, B04, B05, B06, B07, B08 and B10 are considered as effects.

4 CONCLUSIONS

In a rapidly evolving global landscape characterised by increasing social and environmental challenges, this paper has investigated the barriers that impede the engagement of business management university students in SE endeavours and quantified the strength and direction of the relationships among these barriers.

The results revealed 14 obstacles that university students in business management must confront when facing the challenge of setting up a social venture. Furthermore, the Fuzzy DEMATEL procedure also allowed us to quantify the strength and direction of the relationships among barriers.

The results of the empirical study highlight that the barrier with the most significant impact on the model is the lack of awareness and understanding of opportunities and potential in SE (B05). This is accompanied by the lack of institutional, informational and financial support from the public administration, large companies and organisations (B12), the lack of a vision of change as necessary and possible (B09) and the lack of specific training (B04).

More importantly, however, the analysis reveals the different roles these barriers play in the model. In this sense, we identify some barriers that act as causal elements and others as effects. The lack of institutional, informational and financial support from public administration, large companies and organisations (B12), the complexity of social problems (B11) and the lack of support from academic institutions for SE (B14) are revealed as the main causes of the lack of development of SE. Therefore, external barriers to university students are the root causes of the lack of SE.

On the other hand, some other barriers are considered as effects. In this way, the external pressures from family, friends and society at large (B07), the lack of availability of credit from banks or investors (B10) and the fear of losing reputation or network of relationships (B06) are the most critical effects in our study. These barriers should be considered to be superficial in the model analysed because, as reported by [20], barriers in the cause group significantly impact both directly and indirectly on elements within the effect group. Therefore, the obstacles faced by the effect group are not considered critical and should be addressed only after resolving the barriers in the cause group.

Our findings have important implications for improving the situation of SE in developed countries such as Spain. In this sense, the results suggest that barriers B12, B11 and B14 are those that should receive greater attention from researchers, institutions and practitioners as they are the main causes of the problems analysed.

Thus, from the institutional and business sphere, public administration, companies and institutions should improve their policies to alleviate the current lack of institutional, informational and financial support in the SE field. On the other hand, from the educational sphere, universities should reinforce the dissemination of knowledge and best practices in this field among their students.

This research also suffers from certain limitations. Firstly, this research has been carried out on a sample located on a single Spanish campus, which may reduce the potential impact of our conclusions. Secondly, despite the advantages and ease of development of Multi-Criteria Decision Making (MCDM) Methods such as Fuzzy DEMATEL, their conclusions can be improved by complementing them with other multi-criteria techniques such as Interpretive Structural Modelling (ISM) and MICMAC analysis. The solution to these limitations may open new lines of research in the future.

Nevertheless, despite these shortcomings, by integrating the power of quantitative modelling with qualitative exploration, this research contributes to a deeper understanding of SE barriers among business management students at both undergraduate and master's levels. The insights gained can pave the way towards more effective strategies for cultivating a socially conscious entrepreneurial mindset in academic environments.

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