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Scientific articles

**Innovación educativa con desarrollo social de un posgrado en
Guerrero: prácticas para el cambio desde el emprendimiento**

***Educational innovation with social development in a postgraduate program
in Guerrero: practices for change through entrepreneurship***

***Inovação educacional com desenvolvimento social em um programa de
pós-graduação em Guerrero: práticas de mudança por meio do
empreendedorismo***

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Resumen

El objetivo de este estudio es analizar la percepción de los estudiantes de posgrado de la Facultad de Contaduría y Administración de la Universidad Autónoma de Guerrero en torno a la motivación y el liderazgo como factores clave para el desarrollo de emprendimientos con impacto social. La investigación se justifica en el contexto de desigualdad socioeconómica que caracteriza el estado de Guerrero, donde la educación superior, particularmente los posgrados inscritos en el Sistema Nacional de Posgrados, puedan desempeñar un papel estratégico en la promoción del desarrollo regional. En el marco teórico se integra enfoques clásicos y contemporáneos. A partir de esta base, se plantea como hipótesis central que los estudiantes perciben la motivación y el liderazgo como factores relevantes para impulsar emprendimientos sociales. La investigación es de carácter cuantitativo, con un diseño no experimental, transversal y alcance correlacional. Se aplicó un cuestionario estructurado que exploraron cinco variables: motivación, conocimiento, liderazgo, satisfacción y colaboración. Para el análisis de los datos se utilizó un análisis factorial exploratorio. Los resultados mostraron que el liderazgo, la satisfacción y la colaboración presentan correlaciones altas y positivas entre sí, constituyendo un factor sólido. En contraste, la motivación mostró correlaciones bajas y negativas con estas variables, mientras que el conocimiento se asoció principalmente al primer factor. Se concluye que estos posgrados constituyen un espacio propicio para impulsar el emprendimiento social, principalmente entre estudiantes que provienen de contextos desfavorecidos.

Palabras clave: desarrollo regional, liderazgo, educación superior, colaboración, motivación.

Abstract

The objective of this study is to analyze the perceptions of graduate students at the Faculty of Accounting and Administration of the Autonomous University of Guerrero regarding motivation and leadership as key factors for the development of social impact ventures. The research is justified within the context of socioeconomic inequality that characterizes the state of Guerrero, where higher education, particularly graduate programs registered with the National Graduate System, can play a strategic role in promoting regional development. The theoretical framework integrates both classical and contemporary approaches. Based on this

foundation, the central hypothesis is that students perceive motivation and leadership as relevant factors for fostering social entrepreneurship. The research is quantitative, with a non-experimental, cross-sectional, and correlational design. A structured questionnaire was administered, exploring five variables: motivation, knowledge, leadership, satisfaction, and collaboration. Exploratory factor analysis was used for data analysis. The results showed that leadership, satisfaction, and collaboration exhibit high and positive correlations with each other, constituting a strong factor. In contrast, motivation showed low and negative correlations with these variables, while knowledge was primarily associated with the first factor. It is concluded that these postgraduate programs provide a favorable environment for promoting social entrepreneurship, especially among students from disadvantaged backgrounds.

Keywords: regional development, leadership, higher education, collaboration, motivation.

Resumo

O objetivo deste estudo é analisar as percepções de estudantes de pós-graduação da Faculdade de Contabilidade e Administração da Universidade Autônoma de Guerrero sobre motivação e liderança como fatores-chave para o desenvolvimento de empreendimentos de impacto social. A pesquisa se justifica pelo contexto de desigualdade socioeconômica que caracteriza o estado de Guerrero, onde o ensino superior, particularmente os programas de pós-graduação registrados no Sistema Nacional de Pós-Graduação, pode desempenhar um papel estratégico na promoção do desenvolvimento regional. O referencial teórico integra abordagens clássicas e contemporâneas. Com base nesse fundamento, a hipótese central é que os estudantes percebem a motivação e a liderança como fatores relevantes para o fomento do empreendedorismo social. A pesquisa é quantitativa, com delineamento não experimental, transversal e correlacional. Foi aplicado um questionário estruturado, explorando cinco variáveis: motivação, conhecimento, liderança, satisfação e colaboração. A análise fatorial exploratória foi utilizada para a análise dos dados. Os resultados mostraram que liderança, satisfação e colaboração apresentam correlações altas e positivas entre si, constituindo um fator forte. Em contrapartida, a motivação apresentou correlações baixas e negativas com essas variáveis, enquanto o conhecimento esteve associado principalmente ao primeiro fator. Conclui-se que esses programas de pós-graduação constituem um ambiente favorável para a promoção do empreendedorismo social, especialmente entre estudantes de

origem socioeconômica desfavorecida.

Palavras-chave: desenvolvimento regional, liderança, ensino superior, colaboração, motivação.

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Introduction

The Autonomous University of Guerrero (UAGro), founded in 1960, has established itself through its strong focus on social inclusion. In the state of Guerrero, this institution offers upper secondary and higher education services primarily aimed at people from low socioeconomic backgrounds.

Furthermore, social entrepreneurship has emerged as a key mechanism to address socioeconomic challenges in contexts with high inequality, as is the case in some regions of Guerrero.

In this context, postgraduate programs play a fundamental role in training professionals capable of generating innovative solutions with community impact. To this end, factors such as leadership, motivation, and collaboration are crucial to the success of these initiatives.

The objective of this study is to understand the perception of postgraduate students regarding opportunities for social and solidarity organization, considering social entrepreneurship as a key factor for regional development.

The perception of postgraduate students in the accounting and administrative disciplines of UAGro was analyzed, evaluating how these variables influenced their disposition towards social entrepreneurship.

The findings underscore the need for educational institutions to strengthen pedagogical strategies focused on transformational leadership and networking, aligned with regional development demands. The study thus contributes to the ongoing discussion on the role of higher education in promoting social and solidarity economies through its postgraduate programs.

Theoretical framework

Postgraduate studies are crucial for social development. This is especially true for those accredited by the National Postgraduate System (SNP) of the Secretariat of Science, Humanities, Technology and Innovation (SECIHTI), as they contribute significantly to strengthening higher education in Mexico.

These programs allow for the identification of opportunities to implement innovative educational best practices. This capacity is particularly relevant in postgraduate programs in accounting and administrative disciplines, whose purpose is to promote a social economy.

In this context, Gómez-Díaz et al. (2022) recognized that promoting social entrepreneurship from higher education could constitute an emerging measure for regional development.

In this sense, educational programs are designed to improve the quality of education in Mexico through educational projects. This approach seeks efficiency while simultaneously ensuring relevant professional training (Orellana-Navarrete et al., 2024). For this reason, it can be stated that the future of professionals depends largely on the development of knowledge and its connection to the social sector.

From an academic perspective, various studies support the idea that educational programs can implement actions that benefit society, given that the financial resources allocated to public educational institutions should include mechanisms that contribute to social return. In other words, an institutional commitment must be made, while students acquire professional training with a strong sense of humanity and social responsibility, which strengthens their academic degree programs (Chávez, 2024). Therefore, it is established that, “the principle of well-being for the population, in accordance with the regulations of CONAHCYT” (Pérez, 2023, p. 15).

Recent studies have highlighted the importance of social relevance in postgraduate programs, which should extend beyond the teaching and learning process. For example, Gómez-Bayona et al. (2023) suggested exposing students to experiences that directly reflect the situations and challenges present in the social contexts of each region. Similarly, Méndez- Ochaita (2023) emphasized that in Mexico, these programs should primarily focus on social issues.

Specifically, academic programs registered with the National System of Graduate Studies (SNP) offer professional development orientations focused on the application of humanistic, scientific, and technological knowledge. Similarly, those that conduct research

do so in accordance with research lines and social impact (Official Gazette of the Federation [DOF], 2023) . Furthermore, the social relevance of a graduate program includes strategies to address current problems based on an ideal graduate profile (García et al., 2023).

The challenge for public universities, through their core functions, is to meet the needs of society without exception. Therefore, there is an interest in advancing quality through evaluation procedures established according to the requirements of educational institutions. But most importantly, there is the positive impact that graduates have on their communities (Gómez-Avilés et al., 2024).

It is important to mention that the high rates of poverty and low levels of competitiveness in some regions of Mexico should be a priority in closing this gap through education, with a view to regional development. To achieve a competitive society, development must be promoted through alternatives such as entrepreneurship (Franco, 2023). Currently, and related to the main topic of this work, there are postgraduate programs recognized by the National System of Postgraduate Studies (SNP) that address the complex challenges facing society today, challenges whose causes and consequences must be understood.

In an increasingly interconnected and globalized world, initiatives focused on social impact projects have emerged as a transformative force for addressing complex environmental challenges. These ventures not only seek to generate economic benefits but also to create social impact. However, one of the most significant challenges they face is a lack of motivation and leadership, critical factors for their long-term success and sustainability. Motivation drives entrepreneurs to overcome obstacles and persevere, while effective leadership is essential for guiding teams, inspiring trust, and ensuring the efficient execution of strategies.

Lack of motivation can stem from multiple sources, including the absence of adequate incentives, emotional exhaustion, and the perception that efforts are not generating the desired impact. On the other hand, in the context of social entrepreneurship, leadership involves not only traditional skills but also the ability to mobilize resources, build support networks, and foster an organizational culture geared toward social change. It is important to note that Mexico has implemented public policies focused on social welfare and, through education, demonstrates a commitment to sound socioeconomic development. For example, postgraduate programs within the National System of Postgraduate Studies (SNP) have contributed strategic actions to address the country's challenges.

In this context, students interested in undertaking projects “require the integration of social, cultural, and economic knowledge, which increases the likelihood of success” (Briseño-Aguirre et al., 2024, p. 29). Indeed, this is even more relevant in a region where economic and social development indicators are minimal, making it necessary to analyze the perception of social impact in educational programs, in this case, postgraduate programs in accounting and business administration.

Motivation and leadership are key factors in fostering socially impactful entrepreneurship in higher education, particularly within the framework of a social and solidarity economy at the postgraduate level. In this context, the lack of these two variables poses a problem that can hinder the development of an entrepreneurial society in various settings. Therefore, this study aims to explore the underlying causes of the lack of motivation and leadership among postgraduate students in the aforementioned disciplines. Specifically, this research focuses on the state of Guerrero, where, according to Armenta (2020), a level playing field prevails.

This study was conducted at the Autonomous University of Guerrero (UAGro), an institution that promotes social inclusion and prioritizes educational management based on its institutional development. A strategy is proposed to foster social entrepreneurship and benefit the regional context. Table 1 presents a set of classical theories that inform the definition of the variables used.

Table 1. Concepts for describing variables

Author	Variable	Concept
Hersey & Blanchard (1969)	Situational Leadership	It adapts to the needs and skills of its followers.
Mulgan (2006)	Social innovation	It emphasizes the importance of developing new ideas, products, services, and models that meet social needs more effectively.
Victor Vroom (1964)	Motivation	It is influenced by the expectation that a particular effort will lead to a performance and subsequently a desired reward.
Bass (1985)	Leadership	Ability to inspire and motivate followers towards the achievement of common goals.

Source : Prepared by the author based on the consulted literature.

Based on the above, and using the items from the questionnaire administered to graduate students at UAGro, the following question was posed: What is the students' perception of motivation and leadership for developing social enterprises? This study seeks to answer this question by analyzing students' perceptions and proposing strategies based on professional training. This is done by considering knowledge of social organizations and the common good as key determinants for improving competitiveness and social well-being in the region.

To achieve the objective and answer the research question, a survey was administered to graduate students and validated by experts. Two educational programs participated in the study: the Master's in Organizational Management and the Master's in Fiscal Studies at the Faculty of Accounting and Administration of the UAGro. Based on the consulted literature, the following research hypothesis was formulated:

Ho : Graduate students perceive that motivation and leadership are not relevant factors for developing social enterprises .

H₁ : Graduate students perceive that motivation and leadership are relevant factors for developing social enterprises.

Materials and methods

This study began in April 2024. Cross-sectional data was used for its development. The empirical strategy consisted of the voluntary participation of 57 students from different cohorts and study modalities. The sample was composed of 70% women and 30% men. The majority identified as middle class, and 53% had postgraduate scholarships from the SECIHTI (Secretariat of Science, Technology, and Innovation). It is important to note that the participants had made partial progress on their degree projects, which enhances the relevance of the questionnaire, as it relates to the social impact of their thesis proposals, and considering that both postgraduate programs are professionally oriented. The instrument was distributed via WhatsApp. Prior to the distribution, the students' classrooms were visited, and the purpose of the study was explained to them. A non-experimental, correlational design was used to determine the related variables. In addition, the five-alternative Likert scale was used, where 1 = strongly agree, 2 = agree, 3 = neither agree nor disagree, 4 = disagree and 5 = strongly disagree (see questionnaire appendix) with a total of 13 questions, with the intention of reducing visual fatigue and disinterest in the answers.

Exploratory factor analysis is a multivariate statistical technique that seeks to simplify and understand the underlying structure of a set of variables by identifying a small set of latent factors or constructs that explain the variables (Watkins, 2018). Based on the data collected in the survey, 13 items were analyzed, with responses measured on a 5-point Likert scale. The items (see questionnaire appendix) correspond to two variables: independent (motivation and knowledge) and dependent (leadership, satisfaction, and collaboration).

RStudio software, which confirmed the factorability of the data matrix. This verification was based on the polychoric correlation matrix, suitable for ordinal data, such as that presented on a Likert scale, in order to discard variables with high correlations ($r > 0.90$). The Kaiser-Meyer-Olkin (KMO) test was then applied to the resulting correlation matrix. This test assesses the suitability of the data for factor analysis by measuring the proportion of common variance based on correlations and partial correlations. Its values range from 0 to 1, with higher values indicating greater suitability for factor analysis (Kaiser, 1974). The KMO index, which ranges from 0 to 1, approximately estimates the proportion

of variance in the data that could be explained by factors. Table 2 shows the KMO classification which must be ≥ 0.70 , according to the reference values proposed by Kaiser (Kaiser and Rice, 1974), therefore, a relationship of the values between the associated factors is shown.

Table 2. Classification of values.

Values	Factoring suitability
0.00 to 0.49	Unacceptable
0.50 to 0.59	Miserable
0.60 to 0.69	Mediocre
0.70 to 0.79	Half
0.80 to 0.89	Meritorious
0.90 to 1.00	Marvelous

Fountain: Own elaboration, based on Kaiser and Rice (1974).

Additionally, Bartlett's test of sphericity (Bartlett, 1951) was used, which compares the correlation matrix to an identity matrix, where the null hypothesis is H_0 : matrix = identity, which is equivalent to stating that the variables are not correlated in the population. Therefore, if the null hypothesis is rejected, exploratory factor analysis can continue.

The determination of the number of factors to extract is the number of factors that was determined by parallel analysis (Horn, 1965), the procedure is based on the principle that the factors to be extracted must account for more variance than would be expected randomly.

Factor extraction and rotation: The factor extraction method used was maximum likelihood (MLE). This technique is based on a linear combination of variables to form factors, where the parameter estimates are such that they are most likely to have generated the observed correlation matrix. The correlations are weighted according to the uniqueness of each variable, which refers to the difference between a variable's variability and its communality (Jöreskog, 1967).

The oblique (non-orthogonal) rotation method was used, assuming that the factors are not independent, due to the relationships found in the correlation matrix; this method describes the relationship between the factors.

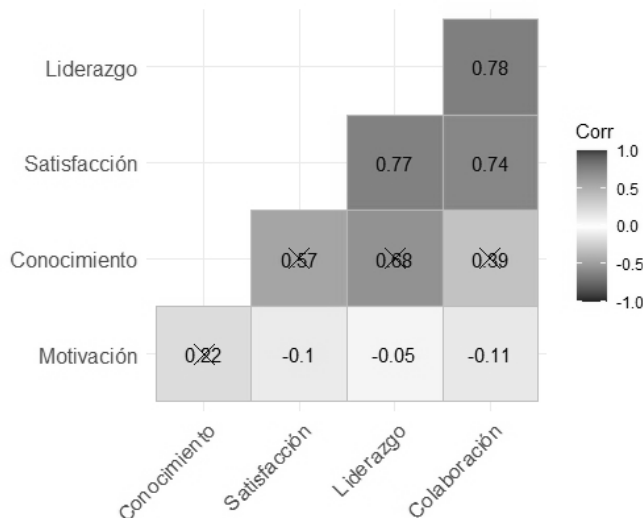
Results

polychoric correlation analysis revealed two main patterns in the relationships between the evaluated variables:

1. ($p < .05$), high and positive ($r \geq 0.7$) correlations were identified between the variables of leadership, satisfaction and collaboration.
2. In contrast, the motivation variable showed low and negative correlations ($r < -0.3$) with the same set of variables (leadership, satisfaction and collaboration).
3. For its part, the knowledge variable did not show significant relationships with any of the other study variables (see figure 1).

This pattern of results, obtained with graduate students, indicates that their motivation to generate value and social development is above average. This finding is consistent with that presented by Briseño et al. (2014), who suggest the relevance of intervening in social and cultural factors, among others.

Figure 1. Correlogram between the survey items.



Source: Own elaboration.

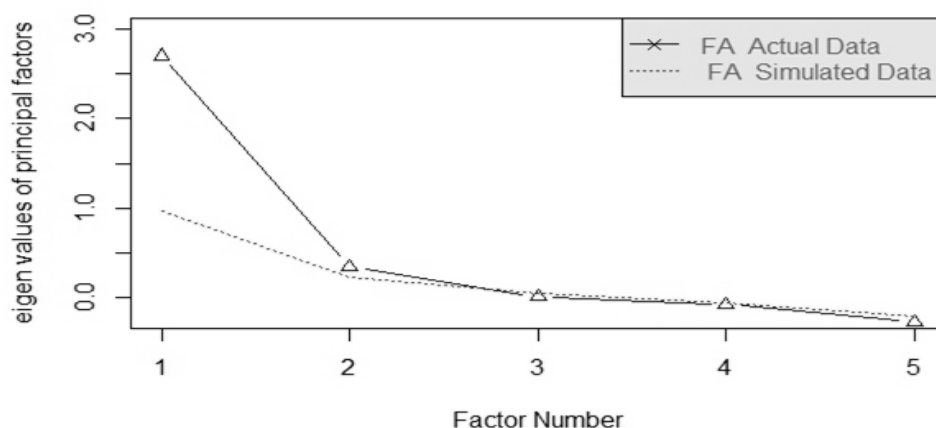
Note. The figure shows the values based on the polychoric correlation analysis and those marked with an X were not significant ($p > 0.05$).

The KMO test on the original survey data yielded a measure of sampling adequacy (MSA) of 0.69, which, according to Kaiser's criteria, is a "mediocre" result; however, it is close to the acceptable threshold of 0.7. Furthermore, the Bartlett test result was significant ($\chi^2 = 156.03$; $df = 10$; $p < 0.001$), indicating sufficient correlation between the variables to

proceed with factor analysis.

The results of the parallel analysis indicated that two factors should be extracted in the exploratory factor analysis (see Figure 2). The variable with the highest loading on the first factor was knowledge, while motivation did not show a significant loading; for the second factor, all three variables showed high loadings, indicating that they are very important, with collaboration being the most influential variable. The relationship between the factors ($r = 0.5$) can be considered moderate (see Table 3 and Figure 3).

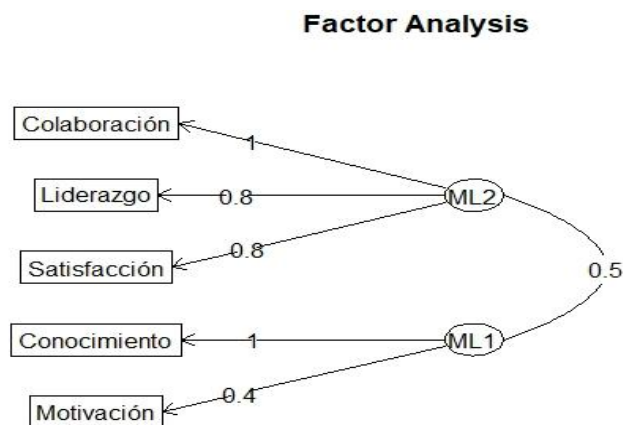
Figure 2. Number of factors to be extracted using parallel analysis.



Fountain: Original work.

Figure 3 shows the values on the straight lines representing the loadings of individual items on each factor, and the value on the curved line connecting the factors represents the correlation between them. ML1 and ML2 correspond to factors 1 and 2, respectively, extracted using the maximum likelihood method.

Figure 3. Exploratory factor analysis tree



Fountain: Original work

The factor values, determined by the sum of squares of the loadings, show that all are greater than 1, therefore these factors should be retained in the exploratory factor analysis. The proportion of variance explained by each factor indicates that factor 2 is the most relevant, while factor 1 has a comparatively lower value. Regarding the cumulative variance, the two factors together explain 68% (0.68) of the total variance (see Table 4), suggesting the possible existence of other factors or dimensions not assessed in the instrument. The fit index is 0.02. Table 3 shows the loadings > 0.4 , and Table 4 shows the results of the explained and cumulative variance loadings for the factors, as illustrated below:

Table 2. Load values > 0.4

Item	Factor1 (ML1)	Factor2 (ML2)
Motivation	0.400	
Knowledge	0.967	
Leadership		0.757
Satisfaction		0.752
Collaboration		0.973

Fountain: Original work

Table 3. Sum of squares

Statisticians	Factor 1	Factor 2
Saturations	1,215	2,193
For each variance factor	0.243	0.439
Cumulative variance	0.243	0.682

Source: Own elaboration

Discussion

Exploratory factor analysis revealed that motivation did not exert a significant influence on the factors examined. This result suggests that, for the sample of graduate students considered, this component is not a central element in promoting entrepreneurial initiatives. Conversely, leadership, satisfaction, and collaboration showed a strong association with the second factor, reflecting the students' interest in improving their environment through the projects developed for their academic degree. Taken together, these findings partially support hypothesis H_1 : while knowledge (associated with factor 1), as well as leadership and collaboration skills (factor 2), proved to be essential dimensions, motivation did not emerge as a determining component in the context of this study.

Thus, collaboration was the variable with the greatest influence on the second factor, demonstrating that collaborative work and social impact are key in social enterprises. Based on the theoretical framework, the findings reflect a convergence with the positions of Murgan (2006) regarding social innovation, and Bass (1985) regarding transformational leadership. In other words, the need to guide students to consider solving problems from the perspective of social entrepreneurship with leadership should be emphasized.

However, there is a need for the two educational programs under study to strengthen their teaching and learning strategies, fostering leadership and collaboration for the common good. This is crucial in the current context, given that the study focused on the state of Guerrero, a region with high levels of inequality (Armenta, 2020). This could be achieved through interdisciplinary projects or collaboration with social actors, as suggested by Gómez-Bayona et al. (2023). Furthermore, it is essential to examine the mechanisms of intrinsic and extrinsic motivation in students, possibly due to limitations in this study that may reflect

biases in the current context.

It is important to note that this work aims to contribute to teaching and learning initiatives for regional development. Specifically, it sought to identify the factors influencing motivation and leadership regarding the social entrepreneurship intentions of students in the two postgraduate programs at the Faculty of Accounting and Administration of the Autonomous University of Guerrero (UAGro). Students' perceptions of social entrepreneurship may not accurately reflect the realities of their context. Furthermore, a literature review revealed a scarcity of research on this topic in the state of Guerrero. Most available empirical studies focus on more common business models and employ predominantly descriptive methodologies.

Conclusion

Entrepreneurship is fundamental for anyone who wants to improve their quality of life, whether their project has a social impact, responds to profitable contexts, or promotes sustainability. The analysis revealed that motivation and knowledge, supported by scientific literature, are priorities for achieving a society with project initiatives that benefit the environment. Therefore, it is suggested that social entrepreneurship be promoted, as it can contribute to regional economic development in the state of Guerrero, starting with the Autonomous University of Guerrero (UAGro).

The postgraduate educational programs at the Faculty of Accounting and Administration provide a context in which it was observed that most students have initiatives to develop social impact ventures. This trend could be attributed to the fulfillment of the objectives established in their curricula.

This entrepreneurial focus is particularly relevant to the needs of the student body, since, according to the data collected, most come from communities where social conditions are unfavorable for improving their quality of life. It is also noteworthy that a significant proportion of these students are women seeking to further their professional development, a relevant aspect from the perspective of equity and inclusion.

On the other hand, in the case of postgraduate scholarship recipients, it was identified that motivation continues to be a determining factor in obtaining their academic degree, particularly regarding social contribution as a component of the graduate profile. However, challenges remain in closing this social inequality gap, as well as in improving competitiveness indicators in the state of Guerrero.

Future lines of research

Based on this work, it is pertinent to continue with more in-depth studies that encompass other variables or dimensions from different disciplinary areas within postgraduate programs. Likewise, it is suggested that the research be extended to other regions of Mexico with similar contexts, in order to identify differences in perceptions of projects with social impact.

Among the proposed future lines of research is, for example, the exploration of intrinsic motivation, with the aim of designing more effective strategies to foster social entrepreneurship. Longitudinal studies on collaboration and leadership are also planned; that is, analyzing how these variables evolve during students' professional training, through correlation with successful cases of social entrepreneurship.

Furthermore, in the area of innovation in teaching and learning in postgraduate educational programs, it is suggested to design and evaluate educational models based on active methodologies that can influence public policies oriented towards social entrepreneurship.

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Methodology	Rubén Hernández Chavarría (principal), Citlalli Arroyo Rosas (supporting) and Javier Saldaña Almazán (supporting).
Software	Not applicable
Validation	Citlalli Arroyo Rosas
Formal analysis	Not applicable
Investigation	Rubén Hernández Chavarría (principal), Citlalli Arroyo Rosas (supporting) and Javier Saldaña Almazán (supporting).
Resources	Javier Saldaña Almazán
Data creation	Not applicable
Writing – revision and editing	Rubén Hernández Chavarría (same) and Citlalli Arroyo Rosas (same).
Display	Javier Saldaña Almazán
Supervision	Citlalli Arroyo Rosas
Project management	Javier Saldaña Almazán (same) and Rubén Hernández Chavarría (same)
Acquisition of funds	Citlalli Arroyo Rosas

Appendant

Questionnaire

Variables	items
Motivation	<p>How much do you agree with the statement: I am motivated by the fact that through my postgraduate studies I will be able to create a project that solves social problems in the state of Guerrero.</p> <p>How much do you agree with the statement: I am motivated by the idea of creating a business that generates jobs for disadvantaged people.</p> <p>How often do I feel motivated to improve myself?</p>
Knowledge	<p>I feel inspired to undertake a project that has a positive impact on the environment.</p> <p>I am committed to my postgraduate studies, with the idea of using my skills and knowledge to address social challenges.</p> <p>How important is it for me to feel a sense of personal accomplishment when studying for a postgraduate degree?</p>
Leadership	<p>As a leader, I am willing to make decisions that benefit the people involved in my graduation project, even if complex situations arise.</p> <p>I feel capable of inspiring and motivating other people to work towards a common goal.</p> <p>How much do you agree with the statement: I am willing to listen to and consider the opinions and ideas of all people involved in my graduation project in order to make informed decisions?</p>
Satisfaction	<p>I feel comfortable delegating tasks and responsibilities to other people who are involved in my thesis project and achieving the goals.</p> <p>I am willing to take responsibility for</p>

	mistakes and failures in a social project and learn from them .
Collaboration	I like working on tasks that allow me to express my creativity. I am willing to take risks to launch an initiative that benefits a social cause.

Source: Own elaboration.