

Entrepreneurial Intention in Surgical Instrumentation Students: Study in Colombian Universities

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Abstract

Entrepreneurship plays a significant role in higher education institutions, allowing students to achieve their personal goals. The design and implementation of strategies related to education for entrepreneurship and articulation of these with the universities' substantive functions would support students' entrepreneurship culture, promoting different capacities to face occupational contexts. We developed a questionnaire under the Global University Entrepreneurial Spirit Students' Survey (GUESSS). The sample consisted of 224 students belonging to higher education institutions from the surgical instrumentation programs in Barranquilla, Colombia. The research results showed that the entrepreneurial intention increases in students to the extent that they have an adequate perception of business entrepreneurship and their confidence in managing and exploiting their capacities upon graduating from the academic program.

Keywords

Entrepreneurial intention and determinants, Entrepreneurship's education, GUESSS.

1. Introduction

In recent years, there has been evidence that entrepreneurship plays a fundamental role as a strategic element in each country's continuous improvement. Nations have been able to take advantage of its benefits, turning it into a potential for its development and growth. According to the Global Entrepreneurship Monitor (GEM), a report that analyzes the rate of entrepreneurial activity in countries (TEA), presents that one of the stages of the business creation process is the "intent." For this reason, it is essential to recognize that the entrepreneurial process in an individual is achieved when all the functions, activities, and actions associated with the identification and exploitation of opportunities are integrated. Hence, the need to assume an attitude based on undertaking values, since both risk and economic gains, sacrifice or dedication, are characteristics attributed to the exercise of entrepreneurial activity (Robles and Pelekais, 2015).

To train people with entrepreneurial skills, higher education institutions must incorporate among their strategies the processes that encourage their students' entrepreneurial intention. According to the reports made by the National Ministry of Education and the labor observatory, in the Colombian Caribbean, 49,820 people have graduated from the area of health sciences and 2,196 as professionals in surgical instrumentation from the six programs offered in the zone. We evidenced that in the career of surgical instrumentation from professionals in the Colombian Caribbean, the most significant limitations when facing new trends are lack of knowledge, lack of opportunities, and fear of entrepreneurship.

Our study focuses on analyzing surgical instrumentation students' entrepreneurial intention in Barranquilla, a Colombian Caribbean city. Such entrepreneurial intention includes identifying career intentions and students' entrepreneurial activity, including entrepreneurial intention determinants to recognize the activities related to entrepreneurship education and proposing alternatives to strengthen entrepreneurship culture in the programs. The aim is to comprehend the link between entrepreneurship and education in developing professional and personal skills. Within this perspective, the student will be able to identify opportunities in new sectors through entrepreneurship. Furthermore, the entrepreneurial intention has been studied with progressive interest in the university context with initiatives such as the GUESSS project; however, no references had originated for entrepreneurial intention studies in students of surgical instrumentation programs in Colombia. Therefore, this study becomes the first in this discipline, according to the documentary and bibliographical review.

2. Theoretical Framework

The word entrepreneurship comes from the French "entrepreneur," which means pioneer, which refers to the capacity a person has and develops to make an additional effort; to further obtain the proposed goals. Similarly, it is often used as a reference concept in the business sector for the person who starts a new company or project. Therefore, the term entrepreneurship is attributed to those who are innovators or add value to an object or activity. That is why the attitude of people who undertake new challenges and projects, overcome situations of dissatisfaction, moments of routine, little personal or work growth is said to promote entrepreneurial behavior (Chams-Anturi et al., 2020; Echeverría, 2017).

According to Lozano (2016), entrepreneurship consists of detecting business opportunities and business creation without discriminating the social, cultural, or demographic factors that interfere with innovation. Alternatively, Lederman et al. (2014) state that one of the most significant elements that highlight the entrepreneur is located in the ability to carry out their ideas and generate action on them, part of these characteristics is related to developing capacity for action and learning, as well as acting firmly.

One of the complementary tools that measure entrepreneurial intention is the Global University Entrepreneurial Spirit Students' Survey (GUESSS), a global research project responsible for analyzing student entrepreneurs' attitudes, preferences, and activities. Including developing strategies that lead universities to take responsibility in this context. The GUESSS model was born in 2003 as an initiative of the Swiss Research Institute of Small and medium-sized enterprises (SMEs) and Entrepreneurship of the University of St. Gallen to identify and globally compare the entrepreneurial spirit of university students and proposing actions of improvement in their training.

The theoretical foundation of the GUESSS project is framed in the Theory of Planned Behavior of Ajzen (1991, 2002) and Fishbein and Ajzen (1975). According to these, the main predictor of behavior is intention. In relation, Torres et al. (2016) mentioned that the model is sustained through the theory of planned behavior (TPB), which presents the intention of exhibiting a specific type of conduct, which is influenced by three main factors like the attitude towards behavior, subjective norms and perception of behavioral control. Accordingly, Wong (2015) complements by expressing that in the context of GUESSS, the aspirations that students have in choosing a career are investigated, like, for example, the intention of founding a company or taking over a family business. However, other factors are also taken into account within the model, such as the university context, family context, personal motives, and social/cultural context that can affect business intentions through the three main elements of TPB.

Merino (2010) shows that health entrepreneurs have a significant role in transforming the global health system. This is one reason why these professionals should be academically trained in entrepreneurship and manage financial support to develop tools that improve the structure and enable a better quality of life. In particular, for Rodríguez et al. (2014), the mission of the surgical instrumentation program is to execute and implement a comprehensive training, framed in the ethical, moral, and humanistic aspects; scientific, technological and investigative, competitive, capable of

teamwork; but also a leader, entrepreneur, creative, analytical, with critical judgment. Given this, it is essential to consolidate entrepreneurship since it allows generating binding decisions that improve various clinical procedures.

3. Methodology

The research uses a cross-sectional descriptive quantitative model. The methodology's design involves planning, choosing, and analyzing the information to answer the research questions. A total of 93 questions following the application of a questionnaire was used as the primary source. The instrument applied was based on the Global University Entrepreneurial Spirit Students' Survey (GUESSS). We proposed a non-experimental method as variables were not influenced and were observed in their real context. The universities that are part of the study are ten semesters (5 years) to completion institutions. The studied population is students from the 1st to 8th semester studying surgical instrumentation at the universities where the academic program is currently offered in the Caribbean Colombia city of Barranquilla. The sample consists of 224 students. The students rated the attributes on a scale between 1 (strongly disagree) and 7 (strongly agree). Once we obtained the questionnaires' information, this was processed through descriptive statistical analysis techniques to assess the students' entrepreneurship intent.

4. Results

The survey asks the students for their socio-demographical characterization, career intentions upon graduation, and determinants of entrepreneurial intentions, focusing on four other areas: university context, family context, personal motivations, and socio-cultural context. According to the previous methodological parameters, and based on the analyzed information, the study revealed the following:

4.1 Socio-Demographic Characterization of the Students

92% of the students are under 25 years of age, 79% were women, and 93% were in a single marital status; most of the students are in the 8th semester, equivalent to 28% of the sample, followed by 1st-semester students with 23%.

4.2 Career Intentions and Entrepreneurial Activity of Students

The results of the dimension of career intention at the time of the degree as a professional and the intention of career after 5 years of the degree as a professional reflect that 86% of those surveyed consider it positive to develop entrepreneurial skills; 53% want to work in small and medium-sized enterprises (SME) specifically; from this group 81% would like to work in a large company at the end of their degree; upon graduation, 45% will desire to pursue their own entrepreneurship, 64% prefer to start their own entrepreneurship immediately; 56% consider that during their career they have acquired useful technical tools to use when creating their own business; 62% feel that they are more prepared to work in a large company than to create their own business; 55% believe that in their career they have conquered their knowledge of the entrepreneurial world; 67% understand that having their own business can be a professional alternative; 46% believe that they have make useful contacts if they want to develop an entrepreneurship; and 55% believe that they have developed the necessary skills to be an entrepreneur (Review Figure 1).

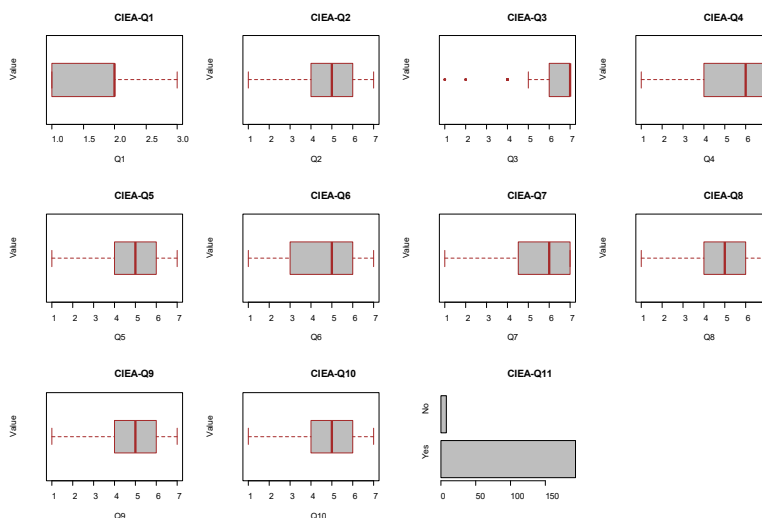


Figure 1. Career Intentions and Entrepreneurial Activity of Students

In contrast to what is evidenced in Álvarez et al. (2016), we identified that university students who are part of this study, once they graduated, their career intentions are inclined to be employees of a company. The previous is aligned and consistent with the results of the GUESSS project's earlier editions evidenced in Sieger et al. (2016). The difference with the study by Sieger et al. (2016), but in line with Álvarez et al. (2016), is based on the fact that university students have a greater expectation in the city under study for being company founders.

4.3 Determinants of the Entrepreneurial Intention of Students

To understand the students' entrepreneurial intention determinants, we analyze the following dimensions: university context, family context, personal motivations, socio-cultural context.

In the **university context**, the survey reflects that 72% of the student had not taken an entrepreneurship course before; 71% have initiatives in taking an entrepreneurship course; 87% would like to promote an innovative environment as a constant originator of novel ideas. 52% think that a professor has transferred knowledge and experiences in the entrepreneurial field to them; 49% believe that their university's support for entrepreneurial endeavors is visible and easily identifiable; 55% think that their university's support for entrepreneurial activities is essential for the execution of ideas and business creation, and 45% known success stories of entrepreneurs from their university (Review Figure 2).

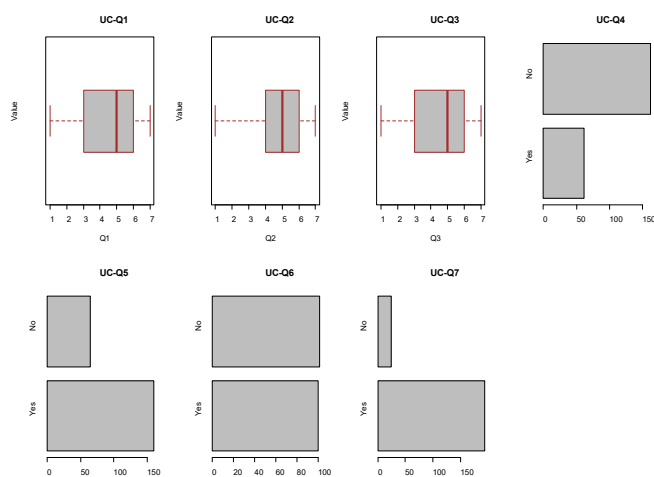


Figure 2. University context

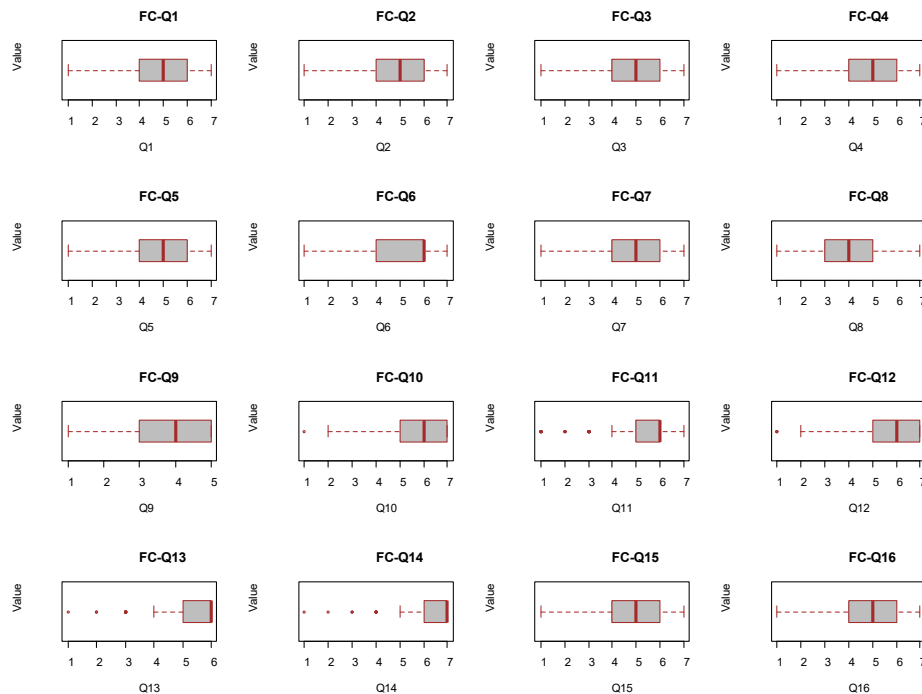
A fundamental element of the GUESSS project is the role of the university context in entrepreneurial intentions. According to Lima et al. (2014), entrepreneurship education is an essential research topic. Álvarez et al. (2016), in their report on students' entrepreneurial spirit in Colombia, state that few students in the country do enroll in an entrepreneurship program and that a short percentage of students have attended an entrepreneurship course, either by obligation or optionally. Which shows similar results with our research; these standards demonstrate that universities in both Barranquilla and Colombia are making efforts to promote entrepreneurship courses in their academic programs. However, there are still opportunities to expand entrepreneurship education.

We can underline in the university context that although the respondents have not taken many entrepreneurship courses; they have great desires to foster an environment of innovation. However, teaching work is essential in transferring knowledge and experiences in the entrepreneurial field and its support for development. In the curricular contents and the study plans in the surgical instrumentation programs of Barranquilla, entrepreneurship must be disseminated with greater relevance and put into practice. In this sense, it is essential to create strategies and programmatic content that develop and promote an entrepreneurial environment, which helps students encourage business creation, risk making a decision, and have an attitude to achieve entrepreneurship.

In the **family context**, we analyzed the business background of the individual. Having entrepreneurial parents can become a determining factor in the intentions of young entrepreneurs to create a business. Consequently, it can be

seen that 68% of the respondents expressed the family's intentions in assessing the entrepreneurial activity; 58% consider the intention of friends to value their entrepreneurial activity; 63% indicate they agree with the entrepreneurial culture and the perception of the region or community; 58% believe that the role of the entrepreneur in the economy influences and that it is positively recognized in the region or community; 66% believe that entrepreneurial activity is worthwhile regardless of the risks, the region or community; 68% believe that the opinion of their family regarding a possible failure to undertake a project, initiative or create a company is very important; 55% think that the opinion of their close friends is essential in the face of a possible failure to start a business; 43% believe that the opinion of society, in general, is vital towards entrepreneurs who fail and show concern. Likewise, 15%, 17%, 21%, and 10% of those surveyed state that fathers, mothers, friends, and siblings, respectively, are developing their own entrepreneurship; furthermore, 16% discuss entrepreneurship with them often, 27% rarely, and 42% occasionally.

Similarly, 58% rate their performance as a good entrepreneur; 42% of those surveyed feel fear of failure and that this would stop them from starting a business; 37% are afraid of a possible social stigma related to failure and this would stop them from starting a business; 89% think it is possible to learn from failures; 47% showed that they have had some failure in the realization of a project, initiative or business creation; 47% currently have a business idea; 55% believe that they can advance this idea to start their business; 83% believe that one day they will have their own business; 68% of those surveyed find the idea of having their own business attractive compared to working for a third party; 85% stated that they would be willing to persist to create their own company; 84% would be willing to partner with someone else to attain complementarities in the development of their project, initiative or business creation; 85% would be willing to invest their savings to have their own business; 46% are aware of the different financing alternatives; 81% have independence in decision-making; 68% aspire to have recognition and social status; 75% aim for profitability; 84% believe that they would overcome their personal challenges; 62% consider entrepreneurship as a family tradition; 85% consider they have personal satisfaction when achieving success; 76% consider running an organization; 54% have difficulty finding work; 71% would be willing to invest their assets (Review Figure 3).



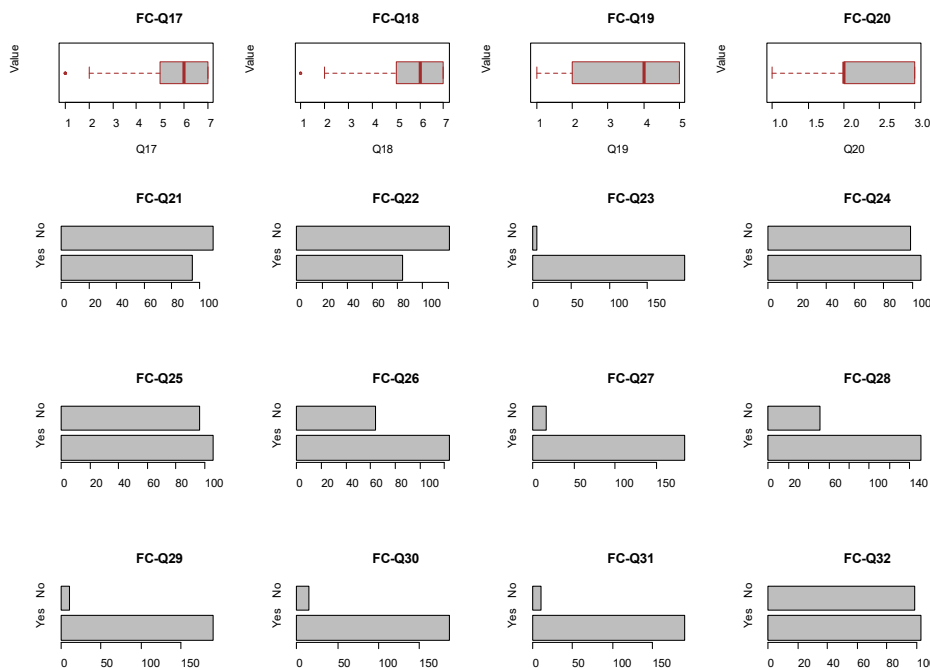


Figure 3. Family context

Many investigations have studied how parents' entrepreneurial experience can influence a student's career intention, among them Laspita et al. (2012), who affirm that students with entrepreneurial parents could continue in the same active line. The surveyed students expressed their intention to be founders since they have entrepreneurial parents or relatives, or friends. These results are similar at the national and international level, where information coincides with the support that students receive by having a favorable and decisive family business environment to encourage entrepreneurial intentions (Álvarez et al., 2016). In our study, students have a superior perspective of the family context, based on whether they have parents or relatives with their own companies that could influence their career intentions. A considerable percentage of respondents reported that their parents work independently or have their own business. These results are supported by the GUESSS Colombia 2016 project (Álvarez et al., 2016), which indicates an environment conducive to enhancing student entrepreneurship.

According to the above, it is observed that in the family nucleus and the community, entrepreneurship is highly valued when a possible failure occurs in undertaking a project, initiative, or when creating a company. Therefore, factors such as interdependence, profitability, satisfaction, and challenge are essential aspects. However, most respondents report that they do not have a business idea or funding sources, and fear of failure does not impede them in achieving their goals. However, students' motivation to risk building their business should be reinforced, even if this would imply partnering with someone or investing their savings. In the family context, the GUESSS-Colombia model's conclusions affirm that entrepreneurs' parents do not guarantee that the child's behavior is that of a potential successor. In the sample of surgical instrumentation students, we have shown that their families' and friends' intentions, when assessing their entrepreneurial activity, the opinion of their family regarding a possible failure to undertake is important. Students have shown through these surveys that they feel secure in undertaking entrepreneurship endeavors but must be trained and encouraged to achieve them.

In **personal motivations**, it can be seen that 95% of those surveyed have confidence and optimism about their future; 86% believe they have abilities and skills and know how to explore them; 90% feel that they know themselves; 95% listen to the opinion of those who have problems; 80% claim to have great qualities; 82% have ability and self-knowledge and claim to find quick and practical solutions to problems; 93% feel confident about achieving their goals; 97% believe that perseverance is essential to achieve success; 77% are thorough in the tasks they perform; 93% like to work to be among the best; 92% like to work as a team to arrive at a better solution; 84% are easy to communicate with other people; 85% quickly adapt to changes; 81% see creative possibilities in everything they do; 82% consider

themselves a resourceful person, especially when difficult situations arise; 93% are enthusiastic about new and unusual activities; 94% opt for favorable positions in the face of problems and adversities; 75% find the idea of creating their own business attractive; 67% intend to start their own business after graduation; 72% believe that it is feasible to create their own business; 47% understand state policies to finance ventures; 42% understand the role and contributions of business incubators; 26% know about the programs available to support entrepreneurs (Review Figure 4).

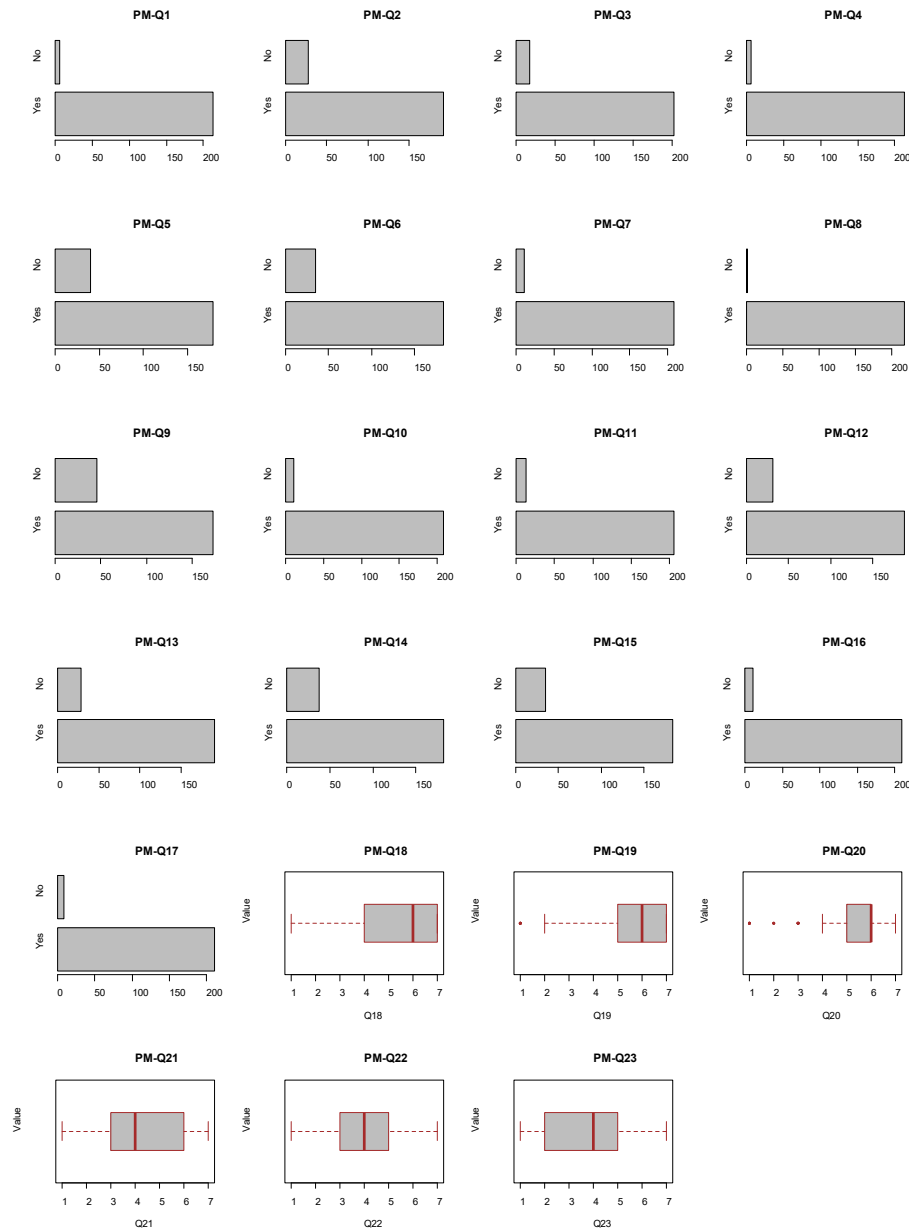


Figure 4. Personal motivations

The previous results are evidenced in theoretical approaches by authors such as Bae et al. (2014) and Vanevenhoven (2013). They argue that students bring their family and personal experience, personal motivations, and even their social perceptions to the university. The university is an environment of expectations and behavioral norms that contribute to modeling their entrepreneurial attitudes.

Sieger et al. (2011) and Schlaegel and Koenig (2014) point out that the university could improve, through its academic offer, the student's perception of self-efficacy and their control of perceived behavior in entrepreneurship. Respondents find the idea of creating their own business attractive and intend to make it after graduation. However, knowledge of the programs available to support entrepreneurs should be emphasized. We can observe that in the personal motivations, the respondents have confidence in themselves, have significant capacities, aptitudes, qualities, listen to others' opinions, have self-knowledge of themselves, reflect perseverance to achieve their goals, and are meticulous in what they do. They like to work in a team and have good two-way communication between them; they are resourceful and enthusiastic about new things. They also choose to face the problems and find it attractive to start their own business. However, most of the respondents are not clear about the state's policies to finance entrepreneurship. They do not know what business incubators do, and they do not know the different programs to support entrepreneurs.

Regarding **socio-cultural context**, it can be seen that 65% of those surveyed have the ability to connect unrelated things; 62% continuously ask themselves questions that challenge common sense; 80% observe with detail and attention the environments that surround it; 78% seek to interact with people from different areas of knowledge, to learn from them and learn different visions from their own; 71% continuously test their ideas in order to determine their viability; 63% take a bold stance in order to maximize the possibility of exploiting potential opportunities; 80% believe that they must risk to win; 77% believe that aggressive actions are necessary to achieve goals; 78% say that people who take risks are more likely to succeed; 72% have a strong tendency to take risks when they visualize the possibility of a high return; 71% frequently initiate actions in their environment that are usually followed by others; 65% often give their opinion, present their ideas and provide recommendations when the situation demands it; 72% adopt a very competitive stance to face the challenges of today's society (Review Figure 5).

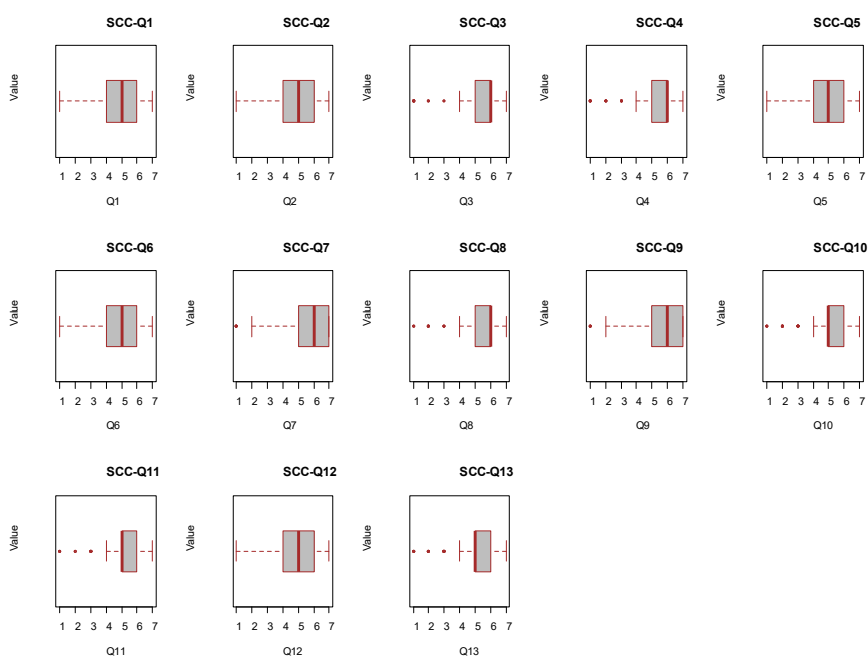


Figure 5. Socio-cultural context

Researchers such as Ajzen (2002) and Sieger and Mosen (2015) agree that entrepreneurs' decisions and their intentions are linked to the social and cultural aspects in which they live. According to Álvarez et al. (2016), social groups would react to the entrepreneur's career choice, which implies the importance of the entrepreneurial student's closest circles. Results similar to our study.

Colombia is ranked as the third country with the highest valuation of entrepreneurship by family and friends, followed by Ecuador and Mexico. Contrary to expectations in countries like Japan, Germany, Sweden, England, and Norway, which are below the world average. These show that students' entrepreneurial intention in terms of family valuation is inversely proportional to their countries' development (Álvarez et al., 2016). In the socio-cultural context, the respondents have extensive capacities and abilities. They continuously question and observe their environment in

detail, seek to learn from different areas of knowledge, test their ideas, and adopt a courageous stance to seize potential opportunities to achieve the objectives paths. They believe that taking risks is appropriate to get ahead and to be leaders of the process.

4.4 Activities Related to Education and Alternatives to Promote Entrepreneurship Strategies

The results show the strategies implemented, how to manage and disseminate knowledge, and the promotion of entrepreneurship in each Higher Education Institutions. We found that the activities related to entrepreneurship education in the surgical instrumentation program are only considered within the curricular plan in subjects of the last semester of their academic training. In business fairs, elective workshops, sessions, and entrepreneurship courses that students can take are not linked to this comprehensive training initiative. More articulation of the entrepreneurship component with the university's mission pillars such as research, teaching, and extension is necessary. In this way, it guarantees the integrity in the training of the future professional in surgical instrumentation.

5. Conclusions and Recommendations

In Colombia, higher education institutions have made an effort to train high-quality professionals. In particular, the profession of surgical instrumentation has positioned itself as a discipline of human resources in health, where the professional acquires competencies that allow them to develop functions in the field of care, research, and social projection. Like many other Colombia professions, surgical instrumentation has undergone the transformation generated by a third world country needs and evolving to overcome its challenging scientific and technological issues. This research analyzes the entrepreneurial intention of Surgical Instrumentation students in Barranquilla, Colombia. The results indicate that in the entrepreneurial intention, there are no significant differences between the universities under study and the national average for higher education institutions, showing that there is a great aspiration on the part of the students to become entrepreneurs in both cases.

Regarding the students' career intentions and entrepreneurial activity, the results show the degree's career intention as a professional and the career intention after five years of graduation. It is emphasized that once students finish their studies, they want to work in a company, which is aligned with previous editions of the GUESSS Project evidenced in Sieger et al. (2016). According to our study, students would be motivated to work in an SME or a large company, and they would like to start their entrepreneurship. The university has also allowed them to develop skills during the academic training process necessary to be an entrepreneur, which shows the significant contribution that higher education institutions are making in developing and appropriating these skills, essential in the comprehensive training of surgical instrumentation students.

Likewise, the determinants of students' entrepreneurial intentions showed that universities are making efforts to promote entrepreneurship courses in their academic programs. However, there are still opportunities to expand entrepreneurship education. It is necessary to offer courses and activities related to entrepreneurship. It was evidenced in the higher education context that the university supports students to promote entrepreneurial endeavors. However, the success stories of entrepreneurs should be strengthened, and complementary entrepreneurship courses should be promoted. In the family context, a favorable environment is an indication of enhancing the entrepreneurship of the students. In the family nucleus and the community, entrepreneurship and family opinion are highly valued in the face of a possible failure to undertake a project; for this reason, the motivation for students to risk building their business must be encouraged. In the socio-cultural context, it was evidenced that students have tried to relate to people immersed in other areas of knowledge to learn from them and understand different visions.

Regarding personal motivations, students have confidence and optimism about their future and have significant capacities, aptitudes, and qualities; they listen to others' opinions and consider perseverance to achieve their goals. They find the idea of starting their own business attractive and intend to start it after graduation. However, knowledge of the programs available to support entrepreneurs should be supported. Also, most students are not sure about the state's policies to finance entrepreneurship. They do not know what business incubators do, and they do not know the different programs to support entrepreneurs.

Finally, when identifying activities related to entrepreneurship education in surgical instrumentation programs, it is evident that these activities are mostly developed from the curricular plan and voluntary complementary activities. Thus, a better articulation of the entrepreneurship component with the university's mission pillars is necessary.

After analyzing the students' entrepreneurial intentions, it is proposed that higher education institutions implement other alternatives that sustain the culture of entrepreneurship in surgical instrumentation students. Among the proposed strategies, it is worth emphasizing:

1. The articulation of research and entrepreneurship, as suggested by Heredero and Jiménez (2013), entrepreneurship and research are linked in the same contexts. Both are integrated into the academy's conceptualizations and based on the current situation of reality, and understanding of different positions.
2. Creation of entrepreneurship incubators, understanding these as playful learning spaces, in which the student can develop entrepreneurial skills and acquire critical competencies to be an entrepreneur. Robles and Pelekais (2015) state that these programs seek to create alternative extracurricular spaces that allow the development of culture and entrepreneurial and research training in business, academic, scientific, and technological fields.
3. Entrepreneurship practices articulated with extension and social projection, Drayton (2005) points out that social entrepreneurs assume creativity as entrepreneurship practices. Social entrepreneurship acts in society, transforming through the detection of problems developing innovative solutions that provide new social behaviors.
4. Bank of opportunities to create entrepreneurship, Leiva (2009:52) states that "they are individuals dedicated to the search for opportunities, beyond the resources they have available." This reflects that taking advantage of the potential of the individual in their ability to recognize the opportunities that arise can generate entrepreneurship through different strategies generating value.

Some of these alternatives could support entrepreneurship culture in surgical instrumentation students, showing in it opportunities that the environment offers and empowering students with their entrepreneurial intentions and attitudes. Lastly, it should be noted that this research can serve as the beginning of a series of studies aimed at characterizing the entrepreneurial intention of students at any university and for any academic program as well as it can be used as a research reference in the different scientific associations and associations related to the discipline. Likewise, it can be disseminated within each higher education institution that serves as a model to generate similar studies in the health area programs offered.

6. References

- Ajzen, I. (1991), "The theory of planned behavior", *Organizational Behavior And Human Decision Processes*, Vol. 50, pp. 179–211.
- Ajzen, I. (2002), "Perceived behavioral control, self-efficacy, locus of control, and the theory of planned behavior", *Journal of Applied Social Psychology*, Vol. 32 No. 1, pp. 665–683.
- Álvarez, C., Martins, I. and López, T. (2016), "El espíritu emprendedor de los estudiantes en Colombia Resultados del Proyecto Guesss Colombia 2016", *Universidad EAFIT*.
- Bae, T., Qian, S., Miao, C. and Fiet, J. (2014), "The relationship between entrepreneurship education and entrepreneurial intentions: A meta-analytic review", *Entrepreneurship Theory and Practice*, Vol. 38 No. 2, pp. 217–254.
- Chams-Anturi, O., P. Gomez, A., Escorcía-Caballero, J. and Soto-Ferrari, M. (2020), "Assessing organizational behavior: A case study in a colombian retail store", *Ibima Business Review*. pp. 414–435.
- Drayton, R. (2005), "Nature's government", *Orient Blackswan*.
- Echeverría, R. (2017), "Mi Nietzsche: La filosofía del devenir y el emprendimiento", *Ediciones Granica SA*.
- Fishbein, M. and Ajzen, I. (1975), "Belief, attitude, intention and behavior: An introduction to theory and research", *Reading, MA: Addison Wesley*.
- Heredero, C. and Jiménez, F. (2013), "Los cien errores del emprendimiento", *ESIC Editorial*.
- Laspita, S., Breugst, N., Hebllich, S. and Patzelt, H. (2012), "Intergenerational transmission of entrepreneurial intentions", *Journal of Business Venturing*, Vol. 27 No. 1, pp. 414–435.
- Lederman, D., Messina, J., Pienknagura, S. and Rigolini, J. (2014), "El emprendimiento en América Latina: muchas empresas y poca innovación", *World Bank Publications*.
- Leiva, J. (2009), "Los emprendedores y la creación de empresas", *Editorial Tecnológica de Costa Rica*.
- Lima, E., Nassif, V., Lopes, R. and Silva, D. (2014), "Educação superior em empreendedorismo e intenções empreendedoras dos estudantes: Relatório do estudo guesss Brasil 2013-2014", *São Paulo: Grupo Apoe*.
- Lozano, M. (2016), "Centro de emprendimiento e innovación. Una estrategia de desarrollo institucional", *Entornos*, Vol. 28 No. 2, pp. 127–129.
- Merino, C. (2010), "Contexto emprendedor en el sector de la salud: El enfoque de un proyecto real en España",

- Cuadernos Latinoamericanos de Administración*, Vol. 6 No. 11, pp. 45–58.
- Robles, A. and Pelekais, C. (2015), “Emprendimiento y gerencia de los procesos organizativos”, *Editorial Académica Española. Madrid*.
- Rodríguez, Cruz and Torres. (2014), “Caracterización de la instrumentación quirúrgica en Colombia”, *Bogotá: Fundación Universitaria Del Área Andina; 2014*.
- Schlaegel, C. and Koenig, M. (2014), “Determinants of entrepreneurial intent: A meta-analytic test and integration of competing models”, *Entrepreneurship Theory and Practice*, Vol. 38 No. 2, pp. 291–332.
- Sieger, P., Fueglistaller, U. and Zellweger, T. (2011), “Entrepreneurial intentions and activities of students across the world”, *International Report of the GUESSS Project 2011. St.Gallen: Swiss Research Institute of Small Business and Entrepreneurship at the University of St.Gallen*.
- Sieger, P., Fueglistaller, U. and Zellweger, T. (2016), “Student entrepreneurship 2016: Insights from 50 countries”, *St. Gallen: Swiss Research Institute of Small Business and Entrepreneurship at the University of St. Gallen*.
- Sieger, P. and Monsen, E. (2015), “Founder, academic, or employee? A nuanced study of career choice intentions”, *Journal of Small Business Management*, Vol. 53, pp. 30–57.
- Torres, M., Lorenzo, C., Campillo, C., Magallón, S., Quiles-Soler, M., Monserrat-Gauchi, J. and Martínez-Sala, A. (2016), “RED interuniversitaria para el desarrollo de competencias emprendedoras en estudiantes del grado en Publicidad y RRPP”, *PRP-Emprende 2016*.
- Vanevenhoven, J. (2013), “Advances and challenges in entrepreneurship education”, *Journal of Small Business Management*, Vol. 51 No. 3, pp. 466–470.
- Wong, P. (2015), “Global university entrepreneurial spirit students’ survey 2013/2014 Singapore Report”, *International Report of the GUESSS Project 2013/2014. National University of Singapore*.

7. Biographies

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