Enhanced Experience in Research, Entrepreneurship, and University Social Responsibility for Technology-Based Entrepreneurship

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Abstract– Having training programs for strengthening research, entrepreneurship, and university social responsibility based on technology-based entrepreneurship is vital for a country's economic contribution. This research proposes a program that enables the formation of multidisciplinary teams of university students, allowing them to participate in three different categories: research, entrepreneurship, and university social responsibility. With the proposed methodology, participants reported a satisfaction rate of 88.5% with the program, highlighting the positive impact of raising awareness among participants to achieve the strengthening of the university innovation and entrepreneurship ecosystem.

Keywords— Design Thinking, Research, Entrepreneurship, University Social Responsibility, Technology-Based Entrepreneurship.

I. INTRODUCTION

University education, in pursuit of social development, faces new challenges in the training of competent professionals, not only in technical knowledge but also in soft skills that enable decision-making within a context of solidarity for the common good [1]. For this reason, the vision of academia should favor a humanistic approach, identifying the needs of its environment and responsibly contributing to the development of the community.

In accordance with Etzkowitz [1], the university plays a significant role in social and economic progress. In this context, the concept of entrepreneurial academia has been developed, aiming to merge higher education with entrepreneurial principles to enhance students' ability to face current and future challenges in an innovative and proactive manner. This approach seeks not only to educate competent professionals in their respective fields but also to instill an entrepreneurial mindset that promotes creativity, adaptability, and commitment to the sustainable development of society [2].

In this era of technology and digitization, new challenges arise for the business environment, including the restructuring of ecosystems, changes in governance models, and management strategies that aim to enhance economic growth in a sustainable manner [3]. In this context, technology-based entrepreneurship and social innovation emerge as guiding principles for the economic and social progress of the world. The university, with its mission of integrating technology transfer, innovation, continuous education, and social engagement, plays a crucial role in developing these initiatives [4].

According to Robledo, Osorio, and Lopez [2], there are still limitations to achieving this purpose, highlighting the commitment of the university community as a fundamental part of this integration. Additionally, Cervantes, Bermudez, and Pulido [5], identify the need for a review of academic programs, emphasizing the inclusion of courses that promote research and university social responsibility. They also consider that the teaching-learning process should be led by faculty with competencies related to research and project management with social impact. Bedregal-Alpaca, et al [6] argue for the importance of fostering a culture of innovation within the university, where the entire university community sees it as an opportunity to fulfill its responsibility to society, with students taking a leading role in proposing innovation and entrepreneurship initiatives. In this context, Rodriguez et al [7], emphasize the need to integrate academic strategies for digital transformation, including the development of digital skills in both faculty and students [8].

Given the above Rippa et al [4] stress the importance of the university recognizing the type of generation it is shaping comprehensively. It is crucial to tailor the teaching-learning process to the capabilities, skills, and demands of the generational group of students. In the current era, the ones pursuing university studies are digital natives or Generation Z.

According to Lyons [9] Generation Z comprises the younger population, born in 1995 and onwards, characterized by growing up around the internet revolution and being immersed in social networks [10]. According to Wilson [11] Generation Z demonstrates technological proficiency and a clear inclination towards aspects related to social and environmental impact. Lesinskis et al [12] point out that this generation shows interest in entrepreneurship, which should be viewed as an opportunity in the mission of the entrepreneurial university.

According to Gomez [13], technology-based entrepreneurship processes are materializing in various forms: startup companies, patents, or strategic business units within universities. However, very few universities currently include the creation of spin-off companies among their outcomes. Therefore, this article contributes to the exploration of educational strategies that foster the enhancement of research, entrepreneurship, and university social responsibility. One of the key strategic pillars is the generation of technology-based entrepreneurship to address the challenges of technological change and the emergence of novel innovation paradigms.

II. BACKGROUND

According to the 2023 Global Innovation Index report, Peru is ranked 76th, with the three most innovative economies in Latin America and the Caribbean being Brazil at 49th, Chile at 52nd, and Mexico at 58th. Therefore, it is a priority to integrate innovation for development and national progress. Peru leads in human capital and research, ranking 50th, Chile excels in infrastructure at 52nd, and Brazil heads business sophistication at 39th, as well as in knowledge and technology products at 52nd. Meanwhile, Mexico tops the list for creative products at 45th [14].

According to the Organization for Economic Co-operation and Development (OECD), Peru's public and private spending on research and development has improved, increasing from 0.06% of Gross Domestic Product (GDP) in 2012 to 0.16% of GDP in 2019. However, this figure is still significantly below the average investment of OECD countries, which is around 2%, led by Israel exceeding 5% [14].

On the other hand, Ostos, Cuartas, and González propose an interesting program for Capacity Building in Science, Technology, and Innovation (STI) applied at the Universidad Santo Tomás in Colombia. The purpose of this program is to develop critical and creative thinking by analyzing the social context in which students operate. It consists of eight strategies, namely study groups, academic collectives, work groups, research seedbeds, an institutional program for young researchers, a research manager program, an institutional program for scientific vocations, and thesis projects [15]. The authors aim to integrate the university community through the eight proposed strategies, involving not only students but also faculty, graduates, and even administrative staff.

Initiatives like the one mentioned align with the universities' goal of contributing to innovation in Peru through research. Consequently, there is a focus on generating technology-based entrepreneurship, promoting the creation of goods and services that systematically apply scientific and technological knowledge in the design, development, and production of innovative objects or manufacturing processes [16]. This approach addresses the needs or problems of society.

Given the University Law that governs Peru, Law No. 30220 [17], which specifies in Article 48 that research is an essential and mandatory function of the university, with the responsibility to promote and execute it, emphasizing knowledge generation that responds to the needs of society, particularly the national reality. This task should involve faculty, students, and graduates. Article 52 states that Peruvian universities, as part of their formative activity, should encourage students to create small and micro-businesses owned by the students themselves, providing support through technical and business advice, as well as facilities in the use of the institution's equipment and facilities. Article 124 indicates that University Social Responsibility (USR) contributes to sustainable development and the well-being of society through the exercise of its functions: academic, research, and extension services, and participation in national development at different levels and dimensions [17].

In response to societal demands, various universities have established departments or areas of research and University Social Responsibility. These areas aim to create curricular or extracurricular spaces that allow students to develop soft skills such as leadership, teamwork, collaboration with key stakeholders, public speaking, negotiation, among others [18]. Some of these extracurricular spaces include research seedbeds, business incubators, and workgroups [19].

According to Ostos, Cuartas, and González, research seedbeds are extracurricular spaces that allow students to develop research and innovation projects [15]. Additionally, Villalba and González argue that it is a strategy that addresses knowledge through active and constructive teaching, enabling students to have real but controlled and guided participation [20].

Building on the findings of Hyun Jung Oh [21], Generation Z is characterized by being more technological, so the academic environment should foster teaching and learning strategies that promote the development of this generation's skills, identifying their acquired abilities. On the other hand, Gennari et al [22] point out that the current temporal context offers the opportunity for universities to generate technology-based entrepreneurship with a social focus. Considering that the purpose of education is to provide students with suitable tools for understanding and reflecting on technology. In the experience presented by Soeryanto [23] there is evidence of a positive correlation between technology-based entrepreneurial education and the entrepreneurial intention of university students.

Finally, as proposed by Rippa et al [4], the university cannot be exempt from continuous and accelerated technological and digital change but must integrate them into the academic entrepreneurship realm. This leads to the development of an even more challenging concept like digital academic entrepreneurship, which can be tangible through the creation of startups, within the framework of development and innovation for the benefit not only locally but globally. Thus, demonstrating the democratization process in access to the university ecosystem.

The Catholic University of Santa Maria, through its Vice Chancellorship of Research, undertakes this work thanks to EQUIPU Santa Maria, an organizational system that promotes student initiatives focused on research, development, and innovation. Additionally, the university operates INNICIA, its business incubator that encourages the generation and validation of technology-based entrepreneurship. Furthermore, the university has a Directorate of University Social Responsibility that designs and executes projects promoting sustainable development through its functions. In 2022, the Vice Chancellorship of Research launched the Ideaton William Morris program with categories in research and entrepreneurship. For the year 2023, a collaborative effort with the Directorate of University Social Responsibility led to the introduction of three categories: research, entrepreneurship, and university social responsibility. This program is named after the university's founder, Reverend Father William Morris Christy.

III. METHODOLOGY

In the second edition of the Ideaton William Morris in 2022, the following activities were included: Induction of questions and inquiries, networking, mentoring, workshops, semifinals, and finals.

During the induction session for questions and inquiries, participants were introduced to and explained the Ideaton guidelines in detail. In the following days, two networking sessions were conducted to form multidisciplinary groups in the morning and afternoon, allowing university undergraduate students from different Professional Schools including health sciences, social sciences, natural sciences and engineering, as well as legal and business studies. Subsequently, optional mentoring sessions with various specialists were provided to help teams define their projects. All participants were then offered a series of workshops to learn how to use research databases (SCOPUS, Web of Science). To facilitate their learning, a university research faculty member was invited to provide information search techniques and examples of scientific articles [24]. This assisted participants in the applied research category.

For participants in the business model category, a couple of presentations were given by the best entrepreneurs from the university's business incubator, providing them with a model to follow for effective participation. The second workshop offered tips on how to create a pitch presentation. A few days later, the semifinal took place, where each team had to submit a video of up to 5 minutes presenting their proposal according to their respective category. These videos were sent to an institutional email by a predetermined date.

Finally, the grand final was held at the University's coliseum, featuring presentations from the top three teams in each category. A national judging panel from various specialties evaluated the presentations. In Fig. 1, the final event is depicted.

Fig. 1 End of Ideaton William Morris 2022

In 2023, the methodology used for the development of projects included the following components.

1. Formulation

The definition of thematic areas was based on the current context of the Arequipa region, derived from the Innovation and Entrepreneurship Ecosystem Development Plan (PDE) of the region [25], as well as in alignment with the Sustainable Development Goals (SDGs) set by the United Nations (UN), representing global challenges for action [26]. The program included three categories: research, entrepreneurship, and university social responsibility.

Projects in the research and entrepreneurship categories were required to be defined based on 7 thematic areas identified in the Development Plan of the Innovation and Entrepreneurship Ecosystem (PDE) of the Arequipa region:

- Health Service Improvements
- Responsible and Smart Mining
- Advanced Manufacturing with Export Potential
- Arequipa Agro-tech Region
- Arequipa: Impactful, Comprehensive, and Smart Tourist Destination
- Knowledge Hub, Entrepreneurship, and Technological Innovation
- Arequipa: Green, Resilient, and Sustainable

For university social responsibility (USR) projects, it was proposed to align them with the Sustainable Development Goals (SDGs), especially those related to the following social issues prevalent in the city of Arequipa:

- Quality education in educational institutions
- Improvement of basic services (health, sanitation, etc.)
- Reduction of child malnutrition
- Poverty reduction
- Inclusion and disability
- Bullying in schools
- Strengthening micro-enterprises
- Civic responsibility
- Environmental care

- Personal and corporate ethical behavior
- Responsible production and consumption

2. *Launch*

The program launch began with the promotion and participant registration starting on August 15, 2023. Additionally, it included an induction session to address questions and inquiries. Various communication channels were utilized, such as social media, activation events (an implementation strategy involving information module setups with music and games to capture students' attention and encourage their participation in ongoing programs), as well as university advertising screens, allowing the university community to apply to the mentioned categories. (See Fig. 2)

Fig. 2 Launch and Activation

3. *Networking*

According to Robledo, Osorio, and Lopez, contacts with different sources of knowledge and information are important for achieving technical success in innovation [2]. This underscores the role of networking spaces. Therefore, the program included a networking meeting on August 28, 2023, facilitating the interaction among students from various university majors to get to know each other and exchange knowledge and experiences. This space allowed the consolidation of multidisciplinary teams, an essential requirement for project development (see Fig. 3).
Moreover, Ramírez-Carvajal, Carvajal-Henao, Toro-Cardona, and Grisales-Aguirre point out that networking helps overcome potential limitations, even in terms of the economic factor, and fosters cooperation among organizations and participants [27]. This supports the need for a multidisciplinary team.

Fig. 3 Networking

4. *Workshops*

According to the analysis of the consolidated report from the Global Entrepreneurship Monitor, published by the ESAN University in 2019 [28], only 21.9% of early-stage ventures have an innovative offering. Hence, the importance of learning methodologies that allow validating their value proposition in the shortest time possible, reducing the risk of making mistakes or failing.

In this context, the learning proposal utilized methodologies such as Design Thinking and Pitch Development. Throughout this process, participating students received training on applying research and incorporating University Social Responsibility (USR) in technology-based. The design of these workshops arises from an understanding of the entrepreneurship aining needs of the students.

4.1. *Design Thinking*
According to Stanford University in its 2017 Bootcamp bootleg, Design Thinking is a methodology of creative and innovative action that allows you to develop processes and build innovative ideas to solve problems or challenges proposed by an organization, guiding solutions for the end user [29].
The students who participated in the program went through the 5 stages of Design Thinking and learned, through empathy, that to create innovative ideas, they need to know their users and

understand how they can address their problems. To 'define the problem,' causes and effects were identified to focus on a subject of study through the establishment of hypotheses that allowed finding solutions. Subsequently, it is not enough to identify a correct idea, but when we talk about 'ideating,' it means selecting ideas that come closer to solving the identified problem. From there, it is important to 'prototype,' which is to develop a product or service that allows showing it to the customer and validating it together with them, repeating this action as many times as necessary to 'test' and find the innovative solution that is closest to the validation of the hypothesis.

4.2. *Pitch*
This workshop taught participants how to optimize their time when presenting their project. According to Rios Cardona, this technique aims to condense a lengthy speech, focusing on the clear argument that considers four differentiating factors: who proposes, what is proposed, for what purpose, and for whom. Additionally, the author states that this space allows teams to present their project to decision-makers, piquing the interest of an investor, collaborator, or evaluator, convincing them that the idea is optimal. This may lead to scheduling a future meeting to expand on project details and thus achieve a successful negotiation [31]. Given the above, it is relevant for teams to know how to communicate and sell their research, entrepreneurship, or university social responsibility project idea, developing soft skills in communication and negotiation.

5. Advisory

The proposed methodology includes the guidance of a teacher-tutor in the process of structuring the proposal. In this regard, Bedregal-Alpaca, Baluarte-Araya, and Cornejo-Aparicio point out that teachers need to be facilitators, guides, and motivators in the learning process of their students. They add that the teacher should promote action by sharing ideas among the student team and also with the teacher, generating knowledge through discussion and developing a project, providing more functional and meaningful experiences [6]. While the guidance from the teacher-tutor could occur throughout the entire program, the week of September 5 to 10 was established as the time for intensive guidance for the structuring of the projects to be presented.

6. Project Submission

Creating multidisciplinary teams was proposed as a challenge to cover the necessary skills for the proper formulation of projects. The deadline for submission was set for September 11, 2023. The various teams faced the challenge of meeting the submission deadline in a timely and efficient manner. This included the submission of their projects as well as a video for their pitch.

7. Preselection

A preselection process of the best teams in each category was carried out. For the evaluation process, national specialists were invited for each category. Three specialists were considered for each category, and to ensure a transparent process, a grading rubric was established that included relevant criteria according to each area. This preselection allowed identifying the top 3 teams in each category. On this occasion, the pitch was reviewed in video format.

For the research category, the criteria considered were (See Table I):

TABLE I.
RESEARCH CATEGORY CRITERIA

Evaluation Criteria	Percentage	Description
Relevance of the project supported by scientific sources of information	30%	State of the art of the subject and its contribution. Expected impacts Expected publications of the project's results
Innovation	40%	Viable innovative research is sought for study. The proposal shows a novel and creative approach to address the problem.
Conceptual Clarity of Applied Research	20%	The proposal is well structured and there is coherence between the research idea and objectives. Rationality of the required budget Relevance of equipment and materials and infrastructure
Conceptual Clarity of Applied Research	10%	Clarity in the presentation of the exhibit and original designs

Meanwhile, the entrepreneurship category included the following criteria (See Table II):

TABLE II. ENTREPRENEURSHIP
CATEGORY CRITERIA

Evaluation Criteria	Percentage	Description
Problem Analysis	30%	The team should be able to contextualize the problem and discuss its relevance to society
Innovation	40%	Disruptive innovation solutions are sought that do not leave viability aside.
Business Model	20%	Solutions with scalability and business development potential
Pitch Presentation	10%	Clarity in the presentation of the exhibition and original designs.

Finally, the USR category considered the following criteria (See Table III):

TABLE III.
USR CATEGORY CRITERIA

Evaluation Criteria	Percentage	Description
Problem Analysis	25%	The team should be able to contextualize the problem and should respond to the specific needs of a given population.
Innovation	25%	Viable innovative solutions are sought for implementation
Social Impact	40%	Solutions with social impact that help a sector of the community. The proposed objectives must be clear and possible to achieve in the established time and with the available resources (economic and human).
Pitch Presentation	10%	Clarity in the presentation of the exhibition and original designs.

8. Final Selection

The final of the program took place with the presence of an evaluation committee composed of members belonging to the CECIAC network (Construction and Evaluation of Academic Sector Capacities) with extensive experience in research, entrepreneurship, and management in social responsibility. They came to the university from different Spanish-speaking countries. The network aims to strengthen the capacities of innovation management with a prosocial orientation in the universities that are part of the network. (See Figure 4).
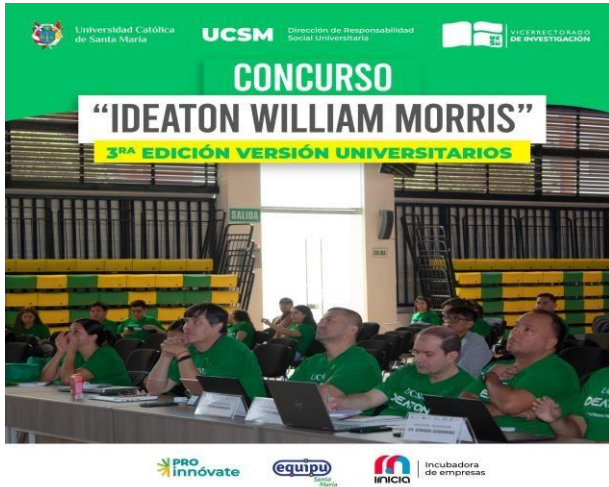
Fig. 4 Evaluation panel of the final competition

Fig. 6. Proposed Methodology

On this occasion, the evaluation criteria were maintained, and the goal was to identify the first, second, and third place in each category. The final took place in person (see fig. 5), where the teams presented their pitch in the university's Coliseum.

Fig. 5 Winning teams, judges, and organizers

The methodology described above followed the structure detailed in the following diagram (see fig. 6). However, based on the feedback received at the end of the program, opportunities for improvement were identified for 2024.

For the application of the methodology, it is necessary to mention that it is a cycle that is shaped by feedback over time according to the needs of the subject and the evolution of new technologies.

IV. PROGRAM DEVELOPMENT

A. Research

The students' participation in the program aimed to promote their ability to formulate a research problem aligned with the defined thematic areas, as well as to gather and synthesize information, define a work methodology, and propose expected results. These competencies help strengthen their professional profile, as the guidance of a teacher-tutor allows the deployment of research skills and pedagogical strategies, providing the necessary support to students and fostering collaborative work. As pointed out by E. Flores, A. Aranibar-Molina, C. Palomino-Peralta, and W. Soto-Palomino, although there is sustained growth in research initiated by teaching staff in Peru, seeking publication in high-impact scientific journals, research development should also reach students who need to deepen their previous knowledge and find solutions to problems in their fields of action [32].

For the presentation of projects in this category, the format of the Project Plan: Future Researchers was defined, which included the following aspects:

1. Research Title
2. Personal Information of Project Team Members
3. Brief Project Summary
4. Background
5. Objectives (general and specific)

6. Research Methodology
7. Justification and Expected Impacts (social, economic, environmental, technological, and others)
8. Activity Timeline
9. Budget
10. Specify Area of Specialization
11. Annexes (optional)

In the research category, 13 multidisciplinary teams presented their projects. From these, 3 teams were selected to advance to the final stage.

The first-place project (see fig. 7) in this category proposed a research project for the use of wastewater in support of the cultivation of microalgae and cyanobacteria, aiming to obtain pigments and biodiesel.

Fig 7. First-place winners in the research category

B. Entrepreneurship

The ideas proposed for entrepreneurship projects were aligned with sustainable business models that allow the generation of technology-based entrepreneurship and contribute to current solutions in the Arequipa Region. The main objective was to identify a sustainable and scalable business model in the national and international markets. The teams received the guidance of mentors who are specialists in different areas to share experiences and tools that expedite the validation processes of their value propositions.

The application of agile methodologies such as Design Thinking allowed student researchers and entrepreneurs to identify current problems within their families, communities, universities, organizations, or any institution where they find themselves. This enabled them to generate products or services with value, thereby contributing to solving many of the problems in their lives and the lives of others.

The evaluation of their projects considered the following assessment criteria:

1. Project title
2. Leader and entrepreneurial team members

3. Brief project summary
4. Presentation of the Business Model Canvas
5. Budget development
6. Areas of specialization
7. Developed and/or applied technology.
8. Attachments (additional justifications - optional)

During the process, we had 13 teams selected, which learned the importance of making a Pitch with a defined structure, so that, together with their entrepreneurial team, they could present themselves before an evaluation committee. Three teams were selected as finalists and one winner, which used information and communication technologies (ICT) to develop a platform for managing personalized trips according to the preferences and budget of the users. In this way, they offered an additional tool to promote tourism in the Arequipa region (see fig. 8).

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Fig. 8 Winners of the first place in Entrepreneurship

C. University Social Responsibility

For the USR proposals, the aim is to align the presented projects with one of the Sustainable Development Goals (SDGs). Especially those related to social issues in Arequipa or the university community. Participants propose ideas that generate a positive impact on society, addressing social and environmental issues with an innovative approach.

The winning proposal (see fig. 9) aimed to promote the culture of environmental awareness among the university community through the implementation of an Internet of Things system that manages paper, cardboard, and electrical and electronic waste. The student project was based on a project published in LACCEI [30].

Fig. 9 Winners of the first place in USR

In 2023, the program recognized the top three positions in each category. In all cases, the teams received technological prizes as incentives for their efforts, but additionally, a seed capital was granted for the execution of their projects. The amount granted as seed capital varies based on the position occupied by each team. Additionally, the leaders of each team that ranked first in each category were given the opportunity for a training and motivation trip. Three young individuals (each representing a category) traveled to the most important entrepreneurship festival in Latin America, INCmty 2023, organized by Tecnologico de Monterrey University in Mexico.

V. RESULTS AND DISCUSSION

This document aims to showcase the experience of promoting the generation of technology-based entrepreneurship through the use of agile methodologies. In 2022, the second edition of the Ideaton William Morris competition was held, featuring only two categories: Research and Entrepreneurship. The goal was to raise awareness among undergraduate students, giving them the opportunity to develop their first research or entrepreneurship project and allowing them to understand the essence of the EQUIPU Santa María subsection and the INNICIA Business Incubator.

In 2023, a collaboration was established with other departments to encourage joint efforts, leading to the addition of an extra category. The three areas for submission were research,

entrepreneurship, and university social responsibility. Figure 10 provides a comparison of both years by category:
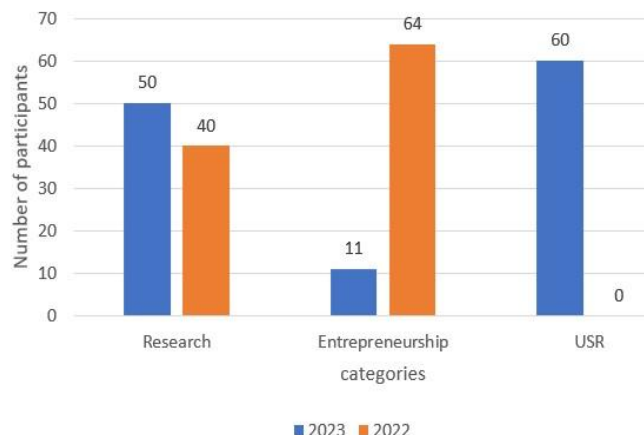

Fig 10. Comparison of Both Years by Categories

At the end of the event, participants were asked for their opinion on the program's development. As shown in Table IV, in the year 2023, participant satisfaction reached 88.5%, compared to 85.6% in 2022

TABLE IV.
SURVEY ON PARTICIPANT SATISFACTION WITH THE EVENT

Participants 2022					
Did you like the development of the event?	VS	S	I	LS	NS
104 responses	49,1%	36,5%	9,6%	4,8%	0%
Participants 2023					
Did you like the development of the event?	VS	S	I	LS	NS
121 responses	57,9%	30,6%	8,2%	3,3%	0%

VS: very satisfying   **S:** Satisfying   **I:** Intermediate
LS: Little satisfying   **NS:** Not satisfying

Also, a survey was conducted only with the winners of the different categories. It can be seen in Table V that there is an increase in both years. This is due to the fact that in 2022, attractive prizes were given to each team member, while in 2023, symbolic prizes were awarded in addition to funding for the project. Additionally, the leaders of each team that won first place in each category had the opportunity to attend the most important entrepreneurship festival in Latin America, INCmty 2023, which provided a learning space and strengthened their entrepreneurial spirit to provide feedback to the team and the project.

Of the 2022 winners					
Did you like the development of the event?	VS	S	I	LS	NS
18 responses	83,4%	22,2%	5,6%	0%	0%
Of the 2022 winners					
Did you like the development of the event?	VS	S	I	LS	NS
36 responses	94,4%	5,6%	0%	0%	0%

VS: very satisfying   **S:** Satisfying   **I:** Intermediate
LS: Little satisfying   **NS:** Not satisfying

Finally, after training the winning team members in their project development, in 2024, funding will be provided to each winning team for the development of the proposal. This ensures that it doesn't remain just an idea, but that they manage to successfully develop the proposed project with the support of their specialized teacher-tutor, allowing them to conclude successfully in each category.

VI. CONCLUSIONS

With the generational shift in university students, considering the current temporal context of Generation Z, characterized by technological proficiency and a strong inclination towards social and environmental impact, it is important to strengthen their skills to apply their knowledge agilely in solving social problems. For this reason, a program was proposed to form multidisciplinary teams of university students that could participate in different categories, allowing the development of their projects.

In the research category, a technically viable proposal was developed, suitable for publication in a poster or scientific article. In entrepreneurship, a viable proposal was presented to generate an innovative business model by analyzing a market sector to initiate entrepreneurial activities. In university social responsibility, a project proposal was formulated to assist a vulnerable population segment facing a social problem, generating an impact on a sector of the population.

It is also important to acknowledge that, thanks to the proposed methodology, participants expressed a satisfaction rate of 88.5% with the program, as they focused on providing an appropriate proposal that will be developed in 2024 with the support of their specialized teacher-tutors. Finally, it was very positive to raise awareness among the leaders of each category to attend the most important entrepreneurship festival in Latin America and connect with the Latin American entrepreneurial ecosystem.

VII. FUTURE WORK

In 2024, a significant improvement has been proposed to empower undergraduate students to actively contribute to solving social issues in the Arequipa region by addressing specific challenges. Additionally, it is anticipated that teachers will have a more active role in providing the necessary support for the completion of projects aligned with the region's problems.

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