

Teaching-Learning Innovation Methodology through I-Tournament in the Training of Public Accounting Students and its Application in Organizational Processes

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Abstract

Current challenges in education lead to the search for strategies to enhance learning and motivate students. Challenge-based learning facilitates meaningful appropriation of knowledge. This article focuses on proposing an innovative educational strategy and a teaching-learning methodology using the I-Tournament tool, aimed at students of the Public Accounting programme, with a focus on its contribution to organizational processes. The research, of an applied and mixed nature, employs a triangular approach with a descriptive scope and a deductive method. The I-Tournament tool was designed as a training and management strategy in academic contexts, initially implemented in SMEs in Bogotá, to address specific organisational needs. The implementation of these continuous training strategies and the exchange of knowledge through technological tools such as I-Tournament promotes continuous training of future professionals, improving their analytical and problem-solving skills, and keeping them up to date in accounting, financial and tax issues.

Keywords: Challenges, Learning, Organisations, Problems, Strategy

1 Introduction

Traditional teaching has been carried out as a mainly individual activity. This has been changing in recent years with the adoption of different approaches that prioritize collaborative, project-based and competitive learning practices. These approaches allow for the creation or strengthening of bonds between students, while increasing motivation and improving understanding and learning through collaborative 'doing'. In the search for teaching strategies, tournaments emerge as promising resources. Partial results are presented from the experience developed, preparing students to participate in knowledge competitions (FRACHIA ET AL., 2014). According to ZABALA ET AL. (2020), challenge-based learning is generally regarded as an effective means to enable students to construct knowledge through competition, maintain higher motivation and apply acquired knowledge to solve real-life problems. Considering the convergence of education, and the needs to anchor knowledge, challenge-based learning becomes a method that encourages meaningful apprehension of knowledge and provides highly motivating learning situations for students. Through the combination of gamification, problem solving, situated learning and challenges, it can help students build knowledge from ambiguity, complexity, trial and error.

The relevance for the university education sector of generating overviews of the currents, strategies and trends oriented towards the development of competences and skills, which strengthen teaching and learning, especially in programmed such as public accounting, is evident, as it requires the appropriation of regulations, decrees and jurisprudence, which leads to it being very theoretical. Considering the identified need, the question is: How does the implementation of the I-Tournament tool as a training strategy and teaching-learning methodology contribute to

the development of analytical and problem-solving skills in public accounting students, and how does it impact on the organizational processes of SMEs in Bogotá?

Developing competencies for future chartered accountants is essential in today's educational context. To achieve this goal, it is essential to implement innovative methodologies that go beyond traditional teaching techniques. One of the most promising strategies is challenge-based learning, complemented by gamification, both of which are widely used in basic education but still underutilized in higher education. Challenge-based learning is a pedagogical methodology that focuses on solving real and complex problems, encouraging students' active participation and critical thinking. This methodology not only enhances theoretical understanding, but also strengthens practical skills crucial to the professional practice of accounting. Through this strategy, students are confronted with situations like those they will encounter in their professional life, which increases their preparation and confidence. On the other hand, gamification introduces game elements into the educational process, which can include points, levels, prizes and competitions, among others. This technique has the potential to transform learning into a more engaging and fun experience, significantly increasing student motivation and engagement. It is necessary to implement a pedagogical strategy that combines these innovative methodologies, adapting them to the specific needs of higher education in accounting. Such an approach could include challenging projects that require collaboration and critical thinking, as well as the integration of digital tools that facilitate the gamification of learning.

The expected impact of a strategy based on challenge-based learning and gamification is multifaceted. First, an increase in students' motivation levels is anticipated, as they feel more involved and enthusiastic about their learning. Second, a higher engagement with the programmed activities is expected, which translates into more active and constant participation. Finally, this methodology can lead to better results in academic performance, as students not only learn more, but also retain information better and develop valuable practical skills. To adequately prepare future accountants, it is crucial to adopt innovative pedagogical approaches such as challenge-based learning and gamification. These methodologies not only improve student motivation and engagement, but also ensure deeper and more meaningful learning, preparing public accounting students to successfully face the challenges of their future profession. For ZABALA (2022), the processes in higher education institutions require constant review, discussion and updating; both from the vocational and occupational background, as well as in pedagogical and didactic strategies. The main characteristics of challenge-based learning, according to ÁLVAREZ ET AL. (2021); MARAVÉ ET AL. (2023); JAIN ET AL. (2022) are the following: active work, in which students are constantly involved in acquiring their knowledge, orientation towards solving problems that are selected or designed to achieve the learning of certain knowledge objectives, learning centered on the student and not on the teacher or only on the contents, stimulation of collaborative work in small groups, openness to different disciplines of knowledge, and the teacher as a facilitator or tutor of learning.

2 Methodology

This article is developed through applied research, both in terms of its objectives and the use of a mixed methodology for data collection. According to ELIZONDO (2002), applied research is characterized by its focus on generating direct benefits for society. In the context of this project, it is aimed at small and medium-sized entrepreneurs and traders with low economic development, with the objective of designing a strategy of continuous training and exchange of theoretical, methodological and practical knowledge for students of the public accounting programmed, using the I-Tournament strategy, which will provide tools and knowledge that will enhance the growth and sustainability of small and medium-sized enterprises.

Mixed research combines the use of documentary data and fieldwork, providing a comprehensive view of the phenomenon under study. This methodology captures both the richness of qualitative data and the accuracy of quantitative data, facilitating a more complete and robust understanding of the needs and challenges faced by small and medium-sized entrepreneurs. The approach of the study is triangulated, allowing for the consolidation of the literature review, data collection and the application of analytical techniques. Triangulation is a powerful technique and tool that facilitates the use of multiple methods for the articulation and validation of data through the cross-referencing of two or more sources (CHARRES ET AL., 2018). This strategy is crucial to ensure the reliability and validity of findings, providing a solid basis for the formulation of recommendations and strategies.

To determine the continuing education needs of students in the public accounting programmed, which in turn will contribute to managing effective business solutions, the deductive method will be used. This approach will systematically identify and analyze the competences and knowledge required by future accountants to support SMEs in their development. Various research techniques will be employed, including direct participant observation,

content analysis, surveys and interviews. The target population of the study includes students of the public accounting programmed of Bogotá Virtual y a Distancia, specifically from the localities of Engativá, Fontibón, Mártires, Ciudad Bolívar, Suba, Santa Fe, Usaquén, Chapinero, Puente Aranda and Barrios Unidos. These students, together with local SMEs, represent the core of the study.

Sixth, seventh, eighth and ninth semester students of the Public Accounting programmed were selected and surveyed, providing a confidence margin of 95% and a margin of error of 5%. In addition, five SMEs per locality were selected by simple random probability sampling, ensuring an adequate and equal representation of the different areas. The collaboration between students and SMEs will allow for the identification of critical variables that influence the management and implementation of business strategies. Through this approach, it is hoped not only to improve the education of public accounting students, but also to offer practical and effective solutions to the challenges faced by SMEs in these localities. In summary, this study seeks to integrate theory and practice to develop competencies in future accountants and support SMEs in their economic development. The combination of applied and mixed research, together with a triangular approach and the use of the deductive method, ensures an in-depth and multifaceted analysis of business needs and solutions.

3 Theoretical frameworks

According to PRADA y CORREDOR (2023), I-TOURNAMENT is an innovative gamification strategy developed by Guillermo Solano and Nelson Mora at the Innovation Centre. This strategy transfers in a practical way the methodology and tools necessary to carry out innovation processes in organizations. By incorporating game components in a non-playful and non-recreational environment, I-TOURNAMENT allows the organization's human talent to apply innovative strategies and ensure results with a high level of novelty, relevance and low risk. The I-TOURNAMENT innovation process framework is based on the application of levels of achievement, effort and learning. It integrates different types of competition to encourage active and balanced participation: It promotes competition between individuals to stimulate creativity and ingenuity. It fosters collaboration and teamwork, enabling the combination of diverse skills and knowledge. Encourages self-improvement and continuous development, focusing on individual progress. Challenges participants to innovate and improve existing processes by facing structural challenges.

To balance the effects of losing situations and ensure a positive experience for all participants, I-TOURNAMENT implements a series of strategic actions: Participation is voluntary, without prior imposition by management, creating an environment conducive to intrinsic motivation. Teamwork is encouraged, which strengthens cohesion and a sense of belonging among employees. A long-term game is implemented, avoiding definitive victories or defeats, which maintains interest and motivation over time. We eliminate rewards that can generate demotivation, ensuring that rewards are fair and motivating. Mechanisms are generated to have dynamic teams between different seasons, promoting diversity and adaptation. Strategies are applied to vary the types of challenges, opening possibilities for all problem-solving styles and ensuring that all participants have opportunities for success.

The use of new pedagogical strategies works as a motivation for teachers to be trained and to have the support of their institutions, so that students have easier access to virtual classes, all this without leaving aside the problem that isolation can represent for the students, when migrating the typical master class in the classroom to a virtual form, as it generates feelings of anguish, distrust and uncertainty for the parties. It is in this instance that teachers foster their creative capacity to guide their classroom sessions. Constant innovation is a necessity for the academic community, leading to collective participation in higher education institutions. Innovation encompasses the improvement of both teachers and students, not to mention those involved administratively in the educational cycle, who through various resources make it possible to complete the circle of knowledge-learning, since in times of pandemic it is of vital importance to combine the entire teaching process with the available resources (ESCOBAR, 2020).

The learning process and its innovation requires a whole globalization within the classroom, which is why the preparation of a virtual class requires prior planning to implement the new applicable methodologies. Failure to implement new methodologies to effect academic innovation is not new. Education is facing a series of challenges in a changing world, which is why it must review its mission and redefine many of its substantive tasks. When talking about failures in the implementation of new educational pedagogies, we enter into the question of what skills students have when it comes to innovating, five skills are essential for innovation: 1) Partnering: thinking differently; 2) Questioning: asking questions to generate reflection; 3) Observing: paying attention to the environment; 4) Networking: connecting ideas and sharing knowledge and 5) Experimenting: trying new experiences to gain information. It is here that students become self-taught in learning and in the innovation of the

academic model. The development of a student body's skills is based on learning to learn (GAMARRA Y DOMINGUEZ, 2021).

Motivation, creativity and the identification of a social receptor are fundamental for students to act within a new academic model, "one of the most important skills for innovation is creativity, which is modifiable and can be learned". To realize this requires the teaching staff to become facilitators of information, becoming guides and directors. Implementing a new model of educational innovation implies considering some components, among them the methodology to be applied, as well as the possible paradigms that may arise to create a whole educational system capable of planning, coordinating, executing, evaluating and replicating.

PRA seeks to obtain reliable and useful results to improve collective situations, basing the research on the participation of the collectives to be investigated; it is about population groups going from being the "object" of study to the "subject" of participation (ALBERICH ET AL., 2019). SMEs are a crucial factor for economic growth and employment generation in Colombia. They represent a significant part of the country's business fabric, contributing to the diversification of the economy and regional development. These enterprises not only create jobs, but also drive innovation and competitiveness in the market. They are responsible for a significant proportion of jobs in Colombia, providing employment opportunities for a wide range of people, including young people and local communities. Despite facing multiple challenges, SMEs are often an engine of innovation, adapting quickly to market conditions and developing new solutions and products.

They play an essential role in the economic development of regions, especially in rural and less urbanized areas, contributing to a more equitable distribution of economic growth. This study not only seeks to achieve its objectives through a rigorous and well-structured methodology, but also to highlight the importance of SMEs as fundamental pillars of economic and social development in Colombia. The data collection and analysis will allow for the development of specific recommendations to support and strengthen these enterprises, thus contributing to a more inclusive and sustainable economic development. They are the business sector that faces the most difficulties for their development and for their financing, especially long-term financing, since it is with this that investment and growth in business is supported (MALDONADO, 2020).

According to Law 905 of 2004, Colombia establishes a specific classification for small and medium-sized enterprises (SMEs) based on their assets and number of employees. This categorization is crucial for the implementation of economic support and promotion policies aimed at these sectors, which are fundamental for the country's economic development. A small company is defined by law as one that meets one of the following criteria: it has total assets ranging from 501 to 5000 current legal minimum wages. For 2018, this range of assets translates into a monetary value of between \$391,402,242 and \$3,906,210,000. This range includes both tangible and intangible assets that are part of the company's equity. Employs between 10 and 50 workers. This criterion reflects the company's operating capacity and scale of production, influencing its organizational structure and internal processes. On the other hand, a medium-sized company is characterized by: Having total assets that vary between 5001 and 30,000 current legal minimum wages. For the year 2006, this range corresponded to values between \$2,040,000,001 and \$12,240,000,000. It is important to note that these values may be updated periodically to reflect inflation and economic changes. Having a workforce ranging from 51 to 200 employees. This criterion identifies companies that, although they are not large corporations, have a structure of between 51 and 200 employees. This criterion makes it possible to identify companies that, although they are not large corporations, have a significant structure and considerable capacity to influence the market.

The classification of firms into small and medium-sized enterprises is essential in several respects: It allows the government to design and implement specific support policies that address the unique needs and challenges of each category. This includes subsidies, access to financing, training programs and technical assistance. It facilitates the application of specific rules and regulations that are better suited to the capabilities and resources of SMEs. This avoids imposing disproportionate regulatory burdens that could stifle their growth. It provides a sound basis for statistical data collection and economic planning. Information on the number and characteristics of SMEs is crucial for assessing their contribution to GDP, employment and innovation. It helps businesses identify and access specific resources and programs that may be available only to small and medium-sized enterprises. This includes development funds, internationalization programs and business support networks.

The competitive development of SMEs is due to factors such as human and intellectual resources and to the relationships established by economic agents (HEREDIA y DINI, 2021). In Bogota, several higher education institutions are implementing advanced innovation systems, with the aim of generating and transferring knowledge

and technology to support the local industrial environment. These initiatives not only strengthen the competitive capacity of the region's companies, but also boost the economic and social development of the city and its surroundings. They are adopting multidisciplinary and collaborative approaches to foster innovation. These systems include centers dedicated to applied research, business incubation and the development of innovative projects. These centers act as hubs where academics, students, entrepreneurs and funders come together to collaborate in the development of new technologies and business solutions. Higher education institutions are investing in I+D programs ranging from basic sciences to engineering and social sciences. These programs are oriented to solve specific problems of the local industrial sector, thus promoting the transfer of technology and knowledge. They are establishing strategic alliances with the public and private sectors to promote innovation projects. These collaborations make it possible to leverage resources and knowledge from different actors, creating synergies that enhance the impact of the initiatives. Academic and continuous training programs are being developed to educate professionals in the field of innovation. These programs include courses, diploma, master's and doctoral programs that prepare students to face the challenges of the modern labor market.

Higher education institutions in Bogota are playing a crucial role in building a robust and dynamic innovation environment. Through the generation and transfer of knowledge and technology, they are supporting industrial development and contributing significantly to the economic and social progress of the region. These initiatives not only benefit local businesses, but also prepare students to be leaders in an increasingly competitive and technologically advanced world. An innovation system is the set of institutions that together and individually contribute to the development and diffusion of new technologies (ALFONSO ET AL., 2016).

Without innovation programs and projects, it is very difficult to propose productivity and quality improvements that respond to the demands of market globalization; thus, training represents a great challenge for research (BECERRA y ÁLVAREZ, 2011). Therefore, the innovative cultural thinking is located in an initial state, it is evidenced in the centralized decision making and low specialization in the collaborating personnel in charge of product development, so a high percentage of these organizations are family businesses, these characteristics together with the use of information sources, mainly the internet and magazines, are evidenced in the predominant type of innovation in the offer, centralized by the adoption of international referent (LÓPEZ ET AL., 2014). Personal aspects on the part of entrepreneurs can be determinant for the functioning of the organization and that it is essential to determine the relationship between technological and innovation capabilities and organizational development for the SME, especially given the recurrent figure of the entrepreneur-manager, who are sources of ideas for innovation and at the same time are at the head of their organization. Finally, many SME entrepreneurs recognize that their firms have problems in the management of production, quality, and development of new products (PLACER, 2016), the above goes hand in hand with the lack of budget for innovation activities, which generates that entrepreneurs have difficulties in measuring the contribution of innovation to gross revenues, in production costs and in profit margin. Consequently, innovation becomes just another activity, but one that is not formally managed (NAMAAYANDE Y KHAMSEH, 2019).

According to DINI Y STUMPO (2021), SMEs in Colombia contribute about 38% of total GDP, a considerably low figure considering that in some developed economies they can participate in up to 50% or 60% of national production. As for the results of the companies evaluated, the trend is similar for the entire national territory, i.e. there are no regional differences that condition the conclusions. Companies are willing to innovate, however, there are paradigms that prevent this from materializing, as mentioned by (NATES Y RÍOS, 2016), the belief that a large amount of resources is required, that it is not possible for SMEs to develop innovation because there is too much risk, that innovation is not possible in soft technologies and that alliances cannot be made for fear of losing intellectual property rights, that ideas may be taken by others and patented by third parties, and finally that there is no trained or committed personnel to carry out such processes, are the greatest impediments to growth.

According to the "Frascati Manual" published for economic cooperation and development (OECD) "Innovation can be defined as any activity whose result is the creation or commercialization of new products and processes, including changes in management (organizational, financial, commercial, human resources, among others)". VARGAS ET AL., (2020), describe that the basis of knowledge are people, being these an important factor to analyze in the business environment, these generate innovation of any kind: Radical Innovation, when the development totally changes the way of seeing and interpreting a product or service, Incremental Innovation, when already existing products or services are improved, Product Innovation, when changes in the product are developed, Process Innovation, when there are changes in the processes of elaboration of products and services and Service Innovation, when attributes of services are improved, all these applicable to business structures (IZARD, 2015).

Micro, small and medium-sized enterprises (MSMEs) are one of the most relevant sectors in Colombia's economic development. According to the National Administrative Department of Statistics (DANE), SMEs represent 99.5% of the national economy. They are responsible for 35% of the Gross Domestic Product (GDP) and generate approximately 80% of employment in the country. In the post-COVID context, 90% of SMEs have experienced a significant decline in competitiveness, with human capital being the most affected aspect. The pandemic has imposed unprecedented challenges, exacerbating pre-existing vulnerabilities and severely affecting the sustainability and growth of these enterprises. The Bogota Chamber of Commerce and the Gran Encuesta Pyme (GEP) conducted by the National Association of Financial Institutions (ANIF) have identified several critical shortcomings in this sector. Among the main ones is the short-sightedness of many SMEs, where 60% of companies only apply for financing to cover cash flow rather than investing in innovative activities. This lack of focus on innovation limits their ability to adapt and grow in the long term. To overcome these challenges and strengthen their role in the economy, it is essential that SMEs adopt more sustainable and innovative strategies. Some key factors include Investment in Innovation. It is crucial that SMEs shift their focus to a long-term vision, prioritizing investment in innovation. This includes the development of new products, services and processes that improve their competitiveness in the global marketplace. Strengthening Human Capital: Training and continuous development of human capital is essential to improve efficiency and productivity. Investing in training and skills development programmed can help SMEs adapt to technological and market changes. Access to Finance: Improving access to flexible and adequate finance is vital. This involves not only covering cash flow needs, but also financing expansion, modernization and innovation projects. Digital Transformation: Adopting digital technologies can boost operational efficiency and open new market opportunities. SMEs should adopt digital solutions that enable them to improve their management, production and customer relations. Strategic Partnerships: Fostering partnerships with other companies, academic institutions and government can provide additional resources and expertise. These collaborations can facilitate technology transfer and the implementation of innovative practices. Support from government and financial institutions is essential for strengthening SMEs. Public policies aimed at improving access to finance, providing tax incentives and encouraging innovation can have a significant impact. In addition, business counselling and mentoring programmed can help SMEs to develop the strategic and operational capabilities necessary for their growth (AGENCIA NACIONAL DE INVESTIGACIÓN E INNOVACIÓN URUGUAY, 2014).

However, according to PÉREZ (2021), innovation is not generated from one day to the next and not all companies are aware of its importance, therefore there are two cases, the first are the conscious companies that invest and potentiate the abilities, skills and knowledge of the people in their business environment, which allows them to have structured knowledge and be able to generate creative ideas that develop and innovate their structures and strengthen their organizational culture (HERNÁNDEZ Y GUSTAVO 2009). The second are those companies that only dedicate themselves to live day by day, leaving aside the capabilities of human capital, they do not project or prepare for the future; for this reason it is essential to say that every organization is human, because there are values, attitudes and behaviors that identify its members, characterizing them against other human groups (MANPOWER, 2012), for this reason business investment must take into account the variables R + D + I (Research + development + innovation) that involve people in the development of competitive economies; being these variables a strategic tool in the competitive positioning of companies in the market; impacting the capacity to generate employment and being a substantial element to develop relationships with the stakeholders of a company. VÁSQUEZ DE PARRA Y VÁSQUEZ, 2006), in their paper entitled "Human Management and transformational leadership in the new times" consider organizational learning as a process with people oriented to strategic leadership while directing companies to give value to man as the most important asset or belonging that the organization has, since they refer to the fact that technological advances have not been possible without the mind and help of the human being, leading these organizational parameters to reach the top of success in any of the areas that the company performs. The authors focus their idea of success in the good understanding and application of the values of productivity, entrepreneurship, flexibility, and innovation capacity of people and that the company must be ready to respond to any demand of society as a change arises that affects either the person, business technology or the company directly among its principles at the time of founding the organization. Therefore, when innovation is mentioned, it is essential to talk about Human Talent Management, people generate innovation both for companies and for the social environment, they are the basis of growth and competitiveness of these, due to the distinctive capabilities and competencies that each one has, which are crucial to achieve the desired competitiveness. From this perspective, it is imperative to generate strategies to endure and grow in a highly competitive environment, it is necessary to apply innovation, training of qualified human capital, in general, all aspects related to the management of human talent, aspects that will allow SMEs to be an important agent for economic development (CRESPI, 2011).

No model or theoretical trend is superior to another, simply what must be analyzed is the adaptability to the company or organization in question, because in one way or another are intertwined with each other. However, there

is one element that is common to all of them, and that is that each of them in one way or another allude to Human Talent as the decisive factor in the innovative process that guarantees the survival and prosperity of Organizations, some give it greater weight, others less, but the truth is that it is present in all of them. However, it is the trend that has fewer practical followers, since its fruit is not generated by the Talent itself, but by the effect of its Management, which is why business managers understand that it is a source of progress, but they have not made it aware enough to apply it successfully.

Creativity is a higher order human ability that allows the student to present new ideas to solve problems, ideas that go beyond traditional conceptions to offer alternatives linked to innovation. From this conception it is inferred that the student must first develop creative thinking to then develop innovation, an indispensable requirement for the differentiation and competitiveness that the current professional who graduates from a higher educational entity must have, to face real and business situations. The rise of collaborative dynamics in the educational space makes necessary the competition of new learning techniques and activities, where the most abundant input is information and the tool that allows to reach it are the technologies, so that the adaptation to this scenario and its continuous changes comes to make learning in community combining academic knowledge and real problems. In higher education, one of the great challenges is to obtain professionals who eliminate the boundaries between academia and the profession applied to the labor field, thus reducing the gap that separates professional graduates from the needs of their employers, under this scheme, the student not only needs to be number one in what he/she learns, but also must know how to apply that knowledge to the real world, i.e., he/she must develop transversal skills such as critical thinking, problem solving and collaborative work.

I - Tournament, promotes collaborative learning is important, it is a strategy that is responsible for developing a learning construct, for it uses the interaction between students, the exchange of ideas on the topic they develop and the knowledge is transferred between group members who perform a task assigned by the facilitator, whose fulfillment is not the only thing, but also focuses on the development of individual and group skills through the exchange of roles that occurs in the interaction within the group all based on challenges.

4. Results

According to studies carried out in the project "types of innovation in SMEs in Santiago de Cali", micro companies are those with fewer than 10 workers. Small and medium-sized enterprises (SMEs), although they are currently referred to as SMEs, are a decisive link in the formation of production chains and in the generation of employment. Based on the study of types of innovation in SMEs, these organizations have greater obstacles to face market changes and undertake innovative projects. Several of these problems faced by SMEs derive from three major aspects: the first limitation is access to financing, either due to the low use of instruments, lack of access to them or simple ignorance; the second is a precarious technology, due to a fragile research culture; the low relationship of the organization with research entities such as universities and research centers and, finally, the identification of deficiencies in organizational management (LAITÓN Y LÓPEZ, 2018); (BOUZA, 2002). The financial system is an important actor for the growth of SMEs, every time it allows the leverage of their investments. According to the Gran Encuesta PYME conducted by the Asociación Nacional de Instituciones Financieras, ANIF (2006 - 2019), the financing resources of entrepreneurs in the different economic sectors are obtained mainly from banks.

SMEs in the city of Bogotá D.C. account for 99% of the total number of companies (CONFECÁMARAS, 2022). According to the Survey of Infrastructure SMEs, conducted by the COLOMBIAN CHAMBER OF INFRASTRUCTURE (2020), 57% of small and medium-sized companies that develop activities in the country's infrastructure sector carried out innovation activities in 2016. The percentage is higher for builders (61%) than for consulting firms (55%). Among the results of the survey, it is also pointed out that the biggest obstacles to carry out innovations are lack of budget and funding sources, low level of qualification of their collaborators, among others. In consulting and construction firms, similar results were given lack of financial resources (43% of responses in 2016 vs. 31% in 2013), lack of qualified human resources (14% vs. 10%) and lack of adequate infrastructure (10% vs. 7%).

Based on a population of 1250 students, sample of 295 students, confidence level of 95% and margin of error of 5%), we determine that:

Using the sample size formula for a finite population, we can determine the size needed to obtain a 5% margin of error with a 95% confidence level. The formula is:

$$\frac{\frac{z^2 \times p(1-p)}{e^2}}{1 + \left(\frac{z^2 \times p(1-p)}{e^2 N} \right)}$$

N = population size
 e = margin of error (percentage expressed with decimals)
 z = z score
 n = sample size
 Replacing the values provided:

$N = 1250$
 $e = 5\%$
 $z = 1.96$
 $n \approx 295$

According to the information collected, it is identified in Table 1 that the preferences of accounting students to implement the I - Tournament methodology are as follows.

Table 1. Preference categories. Own source

Categories	Number of students	Percentage
Challenges	89	30%
Problem-solving	53	18%
Skills competition	38	13%
Monopoly	27	9%
Environment simulation	76	26%
Case studies	12	4%
Total	295	

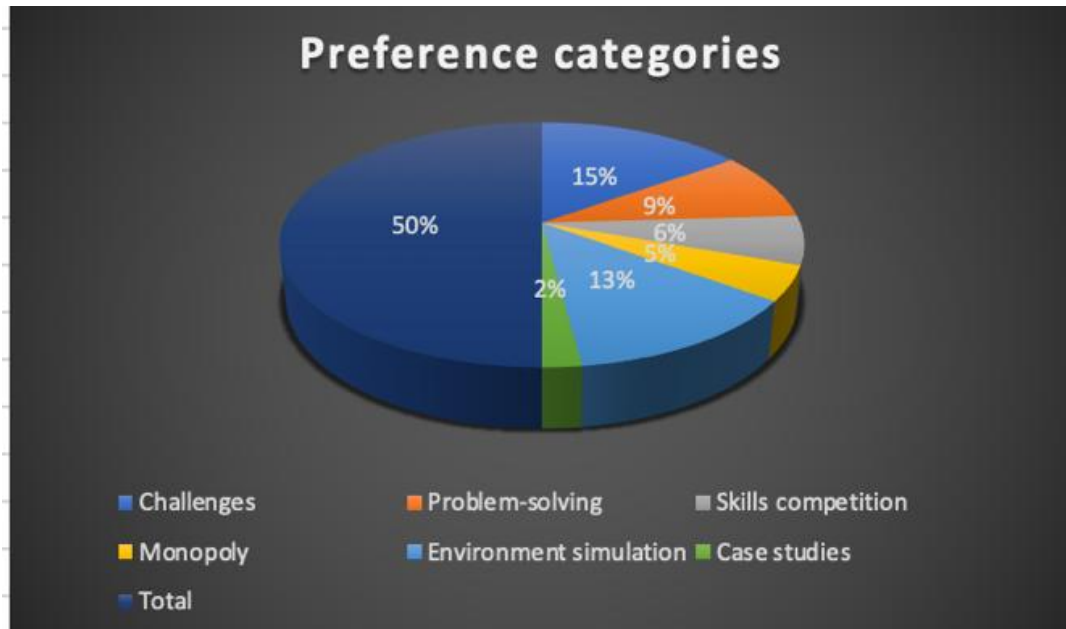


Figure. 1. Preference categories- Own source.

Challenges: 30% of the students show a preference for challenging activities, showing that there is a significant interest in facing challenges in the accounting context. This indicates that students value the opportunity to apply their theoretical knowledge in practical and complex situations.

Problem solving: About 18% of the students show a preference for activities focused on solving accounting problems, highlighting the interest in developing analytical and critical skills. Students value the opportunity to face specific challenges and find solutions in the accounting field.

Competence by skills: Approximately 13% of the students showed interest in activities that promote competition for accounting skills. This indicates that there is a motivation to stand out and demonstrate their abilities in a competitive environment, which reinforces the importance of fostering the development of solid accounting skills.

Monopoly: With about 9% of students expressing a preference for activities based on the Monopoly game, the value of incorporating playful elements into the accounting learning process is evident. Students show interest in a more interactive and entertaining approach to understanding key concepts.

Simulation of environments: About 26% of the students showed interest in activities involving the simulation of accounting environments. This suggests that they value the opportunity to experience practical and realistic situations related to Public Accounting, allowing them to apply their knowledge in contexts closer to reality.

Case studies: With approximately 4% of the students prefer activities based on case studies, the importance of analyzing and solving real or hypothetical problems is evident. Students value the application of their knowledge in practical situations, which fosters the development of critical thinking skills.

The application of the I-Tournament methodology with the seventh, eighth and ninth semester students of the Public Accounting program of the Corporación Universitaria Minuto de Dios, it was possible to establish that:

Impact on the Learning of Public Accounting Students

Improvement of Knowledge Comprehension and Retention:

Students participate in tournaments that challenge them to apply accounting concepts in practical situations, such as preparing financial statements for different types of businesses. This practical application leads to better understanding and retention of concepts, as students not only learn them theoretically but actively implement them.

Development of Critical Thinking and Analysis Skills:

By facing complex accounting problems in a competitive format, students develop critical thinking and analytical skills. This better prepares them for real challenges in the professional world, where they must evaluate and make decisions based on financial data.

Increased Motivation and Engagement:

The gamified nature of I-Tournament increases students' motivation and engagement with the study material, making learning more engaging and less monotonous.

Impact on Problem Solving in SMEs

Improved Financial Decision Making:

SME owners and employees can use I-Tournament to simulate financial scenarios, which helps improve their financial decision-making skills. This practice enables them to better anticipate and handle real financial challenges, such as cash flow management and investment planning.

Continuous Training and Knowledge Upgrading:

I-Tournament can be used to keep staff up to date on the latest regulations and practices in accounting and finance. Continuous training is crucial for SMEs, enabling them to adapt to market changes and remain competitive.

Fostering Teamwork and Collaboration:

By using I-Tournament in a business environment, teamwork and collaboration among employees is promoted. This is especially valuable in SMEs, where team synergy and efficiency can have a significant impact on the company's success.

To develop a comparative study between I-Tournament and other gamification tools, as well as with traditional teaching methods, several key aspects can be considered. These include learning effectiveness, student engagement, practical skill development, and ease of implementation. This hypothetical analysis is based on the general characteristics of gamification and traditional teaching methods.

I-Tournament vs. Other Gamification Tools.

Learning Effectiveness:

I-Tournament: Promotes strong practical application of accounting concepts through competitions and challenges.

Other Tools: May focus more on gamification aspects, such as points and medals, which do not always guarantee a deeper dive into the study material.

Student Participation:

I-Tournament: Their focus on tournaments and competitions can significantly increase student participation and engagement.

Other Tools: They vary in their ability to engage students, depending on how they integrate game elements into learning.

Practical Skills Development:

I-Tournament: Strong emphasis on practical skills and decision making, crucial in accounting and business management.

Other Tools: May focus more on theoretical knowledge than practical application.

Ease of Implementation:

I-Tournament: Requires careful integration into the curriculum to be effective, which could be challenging.

Other Tools: Some may be easier to implement, but others may require similar adjustments to the curriculum.

I-Tournament vs. Traditional Teaching Methods**Learning Effectiveness:**

I-Tournament: Promotes active learning and long-term retention through practice and challenge.

Traditional Methods: Often focus on passive teaching, which may not be as effective for long-term retention.

Student Engagement:

I-Tournament: Increases engagement through competition and play.

Traditional Methods: May struggle to maintain student engagement, especially on complex topics.

Practical Skills Development:

I-Tournament: Focused on practical application of knowledge, crucial for accounting and finance.

Traditional Methods: Often focus on theory, with less emphasis on practical application.

I-Tournament: May require more resources and planning to implement effectively.

Traditional Methods: Generally easier to implement, as they are well established and require fewer resources.

In summary, I-Tournament stands out for its hands-on, participatory approach, which could outperform both other gamification tools (which may focus more on superficial gamification) and traditional teaching methods (which are often more passive and theoretical). However, its success depends largely on careful integration into the curriculum and the resources available for its implementation.

Educational institutions, the holders and distributors of knowledge, are no longer the only sources of knowledge and learning. Much knowledge that was once the exclusive preserve of schools can now be found in a variety of places. ICTs are giving students access to unlimited sources of knowledge, to multimedia tools that allow them to expand their knowledge of information. ICT has undoubtedly transformed the current learning environment from a traditional teacher-centered one to a student-centered one, as the teacher is no longer the main source of information and the main transmitter of knowledge but a guide or driver of learning, and the student is no longer a passive receiver of information but an active participant in his or her own learning. ICT is offering new ways of learning and teaching, with useful solutions for education and training (DELGADO ET AL., 2008).

Creativity is an inherent condition of the human being, this characteristic distinguishes and differentiates him from other living beings, so that, being an innate capacity, it is only required to stimulate, develop and use it, creative thinking is the ability to present new points of view or alternatives to the same subject of study, which can be a problem or a new way of doing what is known a priori. This context implies that the situation under study goes through a process of analysis where the object is taken, analyzed, decomposed into its basic elements and each of them is understood to understand the operation and present a new way for the same objective.

5. Conclusions

Based on the findings and benefits of the I-Tournament methodology, there is a significant opportunity for both organizations and public accounting students. The implementation of this tool in academic training allows strengthening the apprehension of knowledge and the ability to solve the needs present in organizational processes. To maximize the success of the methodology, it is essential to provide clear instructions and guidelines on its effective use. In addition, an inclusive and supportive learning environment must be created that encourages active participation and collaboration among learners. It is also crucial to periodically analyze and evaluate the effectiveness of the I-Tournament tool in achieving the learning objectives and make the necessary adjustments to optimize its application. Organizations should invest in adequate resources and technology to ensure a smooth integration of the I-Tournament tool into their processes. By following these recommendations, both organizations and academia can maximize the potential of the I-Tournament methodology and significantly improve the learning outcomes of public accounting students.

According to estimates by the National Association of Financial Institutions (ANIF), SMEs generate almost 73% of employment and account for 53% of gross production in industry, commerce and services. In a context where academia seeks to provide solutions to make organizations more competitive, it has been identified that SMEs underestimate the importance of innovation and knowledge. These elements should be central to improve their competitiveness and productivity. Changing market and economic dynamics require SMEs to prioritize innovation to stay relevant and avoid being displaced by more innovative and competitive firms. Chinese, Chilean and Brazilian companies represent a strong competitive barrier for domestic SMEs. Globalization presents a constant challenge, and companies that do not innovate run a high risk of being driven out of the market. Companies must act as centers of social responsibility and develop a long-term strategic vision, asking themselves where they will be in 30 years. Despite the positive entrepreneurial environment in the country (fourth in the world in positive attitudes towards entrepreneurship according to the University of Munich), only 50% of Colombian SMEs survive the first year and only 20% make it to the third year.

The National Association of Financial Institutions' (ANIF) large survey of SMEs (2006-2019) revealed a strong correlation between the behavior of SMEs and the country's macroeconomic performance. In addition, low levels of access to formal finance, low export vocation (only about 20% export), and limited innovation capacity (35% do not take any action to improve their business) were identified. The objective is to involve a significant number of companies interested in participating in innovation projects, to generate the necessary capacities that will allow them to implement tools to improve their processes and human talent. It is essential to continue generating competences in innovation for students who support companies, transforming them into vehicles of change both for the organizations and for the training processes within UNIMINUTO and the Public Accounting programmed. With these actions, the aim is not only to improve the competitiveness of SMEs, but also to strengthen the training of future public accountants, integrating innovation as a fundamental pillar in their professional development.

One of the most complicated challenges of education is to develop critical thinking in the student, which cannot be achieved if we insist on a traditional methodology, under this situation, the traditional paradigm of considering the teacher as the center of learning and provider of knowledge has been displaced to give way to new experiential methodologies where the student is the focus of education. Critical thinking is a self-regulated judgement that is elaborated for a specific purpose, which has employed the methodological tools available to obtain it. In this respect, it is also defined as a student's ability to understand a specific situation, for which he/she uses analysis and diagnosis to have a clear idea of the situation and make the most assertive decision to achieve the stated purpose. Critical thinking involves four components: explanation, inference, interpretation and analysis. In the same line, the development of critical thinking with the application of the I-Tournament methodology occurs when the student makes contact with a real problem that motivates him to want to solve it because he feels that what he does is useful, therefore, he strives to find the best solution to the problem, taking into account that this must be a lasting solution in time and that benefits the greatest number of people. However, to achieve this purpose it is important that the student is motivated, there must be something that awakens their interest in the subject of study, obtaining that effective tool it is possible to involve the student to manage a method of problem solving according to the conditions imposed by reality using critical thinking. One of these motivations is to provide them with a real-life experience, transferring knowledge for applications in real contexts, allowing a greater appropriation of the subject matter.

Creativity could not be conceived without innovation and sustainability, which can be determined as characteristics or dimensions of creativity. Also, creative thinking involves other components such as proposal, redesign and invention. The proposal is understood as a proactive attitude to understand the current condition of a situation and design an important change in it, for this purpose it is required to abstract from the situation with the intention of

finding new solutions. In other words, lateral thinking is the input of creativity in the development of new ideas for a specific purpose, the redesign considers the ability to present a new prototype, to make the process again, but in a different way. Invention, on the other hand, is the final version after having gone through a series of processes to improve the prototype.

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