

THE QUANTITATIVE REASONING IN THE FINANCIAL DECISION-MAKING OF THE LATIN AMERICAN UNIVERSITY STUDENTS

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Summary

The research had as objective to describe the effect of the quantitative analysis in financial decision-making in students of Latin America and the Caribbean. Methodologically sought a review study through a content analysis, in which we employed the search engines Redalyc, Scielo and Google scholar, using as key words: (a) quantitative reasoning, (b) decision making, (c) finance, (d) management, (d) financial education and selecting through a sample based on the following criteria: (a) documents with information of authorship, (b) to address the quantitative reasoning and decision making in finance, (c) allow to understand the implications for education of the variables in the study, allowing to discriminate a total of 30 articles to review. The analysis of the texts allowed us to identify three categories of analysis (a) quantitative Reasoning, openness to the structured thought; (b) Decision making, cognitive process of high-level; (c) financial Management, a turning point towards economic emancipation, which led them to conclude that the financial culture, understood as a whole within the economy of the students, it should be one of the transversal axes in which the curricula of higher education centers should venture, in order to transform the current realities of students in the region.

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Introduction

Since the emergence of the universities, these have aimed to give an answer to the problems most senses of the society, therefore, have become a gear essential between the development of societies and the generation of knowledge, from the training of professionals with diverse capabilities (Medina Coronado, 2018). Currently, due to the profound changes that are generated from the reality of globalization and the industrial revolution 4.0, the universities must create a scaffolding complex that provides professional training with the tools necessary to cope with the realities of everyday life that he must face (Carvajal Sánchez, 2017).

One of the apices in which you should pay special attention is related to what is known as the quantitative reasoning (Mikenberg, 2016), understood as a process of complex analysis, in which students not only solve problems, but that underpin their claims through arguments, which helps to promote the acquisition of significant learning (RicraMayorca, 2022). Therefore, you should understand that this may represent an essential element for the improvement of the shots of financial decisions on the same.

In this sense, the culture, and financial education, are the pivots of primary importance for the establishment of a society with a greater possibility for the comprehensive development of all the individuals that make it up, especially in regions such as Latin America and the Caribbean, is known for being one of the most unequal in the world (Tello, 2010), in which it is recognized that at least 34.7% of its inhabitants are in a situation of poverty (Dannemann, 2021).

Faced with the above reality, universities are called to apply educational strategies that promote a transformation of this reality, and that is when quantitative reasoning enters the scene, as a driver for financial decision-making, whose effectiveness has been demonstrated in various research, for example, the one developed by Vergara Jiménez et al, (2015), which has shown a change in the participating students through the use of educational technologies, which give an account of a process of analysis of various financial scenarios, promoting decision making in risk scenarios.

Understanding the importance of quantitative analysis in financial decision-making, there arose the question How does the training of professionals through the method of quantitative analysis in financial decision-making? Reason for which it was established aim to describe the effect of the quantitative analysis in financial decision-making in students of Latin America and the Caribbean

1. Methodology

The study was of an informative bibliographic type, which as explained (Barrutia Barreto et al., 2021) seeks "...to reveal about what is preeminence with a specific content..." (p. 18), whereas for the case of this research the quantitative reasoning in the financial decision-making of the Latin American university students

The content analysis is described by Berelson(1952) as: "...a research technique for the objective description, systematic and quantitative of the manifest content of communication" (p. 18), however, may also be implemented within qualitative studies where you look for to recognise the characteristics of the categories that emerge from the text (Berelson, 1952; Sarabia-Sanchez, 1999); for this reason, the content analysis differs from other techniques of review documentary on the who appreciate bias due to the subjectivity of the researcher (López Noguero, 2022).

Now, the basics of content analysis lie in the ideal, all communication is intended to convey ideas, feelings, among others, which have a character design, allowing readers to recognize what is the purpose of the idea that is presented in the text (Martín López, 1963).

Following the postulates of TintoArandes(2013) the research followed a series of steps or moments to its development, including the definition of the objective of the study, the collection of the texts of the review, the construction of categories, analysis, and interpretation of the material and assessment of the same.

It is important to note that, for the recovery of the information, we performed a thorough search through the search engines Redalyc, Dialnet and Google Scholar, using a combination of key words: (a) quantitative reasoning, (b) decision making, (c) finance, (d) management, (d) financial education; which threw them into the main search of a total of 189 studies, therefore it was necessary to apply selection criteria to determine which would be included within the review, these were: (a) documents with information of authorship, (b) to address the quantitative reasoning and decision making in finance, (c) allow to understand the implications for education of the variables in the study, which allowed defining 30 research review (Table 1).

Table 1.
Documents retrieved and included database.

Database	Documents retrieved	Documents including
Redalyc	36	10
Dialnet	45	8
Google Scholar	108	12
Total	189	30

It should be noted that the documents were compiled and analyzed from the technical tab of the literature, and content analysis was developed by using of craft techniques for the recognition of words with higher repetition within the text, so that they support in the use of digital tools for this purpose.


2. Results

The corpus retrieved and selected for the construction of the review is shown in table 2, taking into account the studies emerging from the key words and authorship from which it is obtained units of analysis referred to use of the quantitative reasoning as a fundamental factor in the financial decision-making in college students

Table 2.
Corpus of documents reviewed

Keyword	Author/Year
quantitative Reasoning	Rojas Álvarez (2014); Mikenberg (2016); Palpa Galván (2018); Vera Rodriguez (2019); Vergara Jimenez et al. (2019); Ávila Nano (2020); Pita Pedraza et al (2020); Mendoza et al (2021); Ricra Mayorca (2022); Ortiz Armorer (2022)
Taking of decisions; financial education	Murillo Junco & Cáceres Castellanos (2013); Caranguí Velecela et al. (2017); Barcia Fierro (2018); Tinoco Hinojosa (2018); Canahuire Nolasco & Portugal Cueva (2019) López Castaño et al. (2020); Ladrón de Guevara-Cortés et al. (2020); Mejía Casas & Zapata Rúa (2020); Huacchillo Pardo et al. (2020); Valbuena - Duarte et al. (2020);
Management; finance	Delfino (2002); Pinto Prieto et al. (2013); Moreno Caro (2015); Liz Reynoso (2016); Lopez Vera (2016); Beltrán Pinto & Gómez Martínez (2017); Quilca Quispe (2018); Guilherme de Almeida & Arrechavaleta Guarton (2018); Chica Otaño (2021); Avendaño et al. (2021)

Now, in figure 1 shows the keywords that emerged from the analysis of the documents, which guide the construction of the units of analysis that guided the development of the research, these



2022). Thus, these strategies should be directed towards the appropriation of the technologies, as a fundamental element to achieve an adequate quality of life, being used as a recourse to determine the financial possibilities that are presented to the new contexts, brewing in itself, is a dual-purpose training of quality and to the life and development of the knowledge management for the decision making in this new scenario (Vera Rodriguez, 2019).

Up to this point, has made mention of the possibilities of quantitative reasoning in the context of financial decision-making, however, in the formative process from this strategy, it is understood that is achieved by the formation of the structured thought from what is known as the problem-based learning-oriented skills training, resulting in acquisition of learning from a dynamic approach and integral (Vergara Jimenez et al., 2015).

As presented in the above discussion, the quantitative reasoning is one of the key elements for the proper financial decision-making, especially, because this is a strategy oriented to the development of critical thinking from meaningful learning, which seeks that the student be able to solve problems of everyday situations and close to him, so that involves a complex construct of scaffolding, such as described in Ausubel(2000), allowing the construction of a structured thought.

3.2 Decision making, cognitive process of high-level

It should be understood that, the decision making as a cognitive process of high-level, corresponds to a process of knowledge construction from the critical thinking, which is considered as a fundamental element for the construction of the thought - structured, so that it is assumed, that are associated through a binding relationship (López Castaño et al., 2020; Ladrón de Guevara-Cortés et al., 2020)

In this sense, it should be understood that the decision making makes use of a qualitative and quantitative analysis, where we raise a variety of scenarios and potential risks to take, where you are looking, the selection of the most viable alternative, in search of efficiency, effectiveness, and sustainability of the personal finance (Mejía Casas&ZapataRúa, 2020), however, the decision making, from the foundation of the quantitative reasoning, can't be isolated from a suitable education, and management of the financial culture, which will ensure access to students to the complex construct that represents the economy (Tinoco Hinostroza, 2018; Canahuire Nolasco & Portugal, Cueva, 2019).

For this reason, the training of critical thinking in university students from the perspective of quantitative reasoning, aims to reduce the scenarios of bad financial decisions that can be evidenced in the management of the economy, personal and even business (Huacchillo Pardo et al., 2020), on the understanding that, the personal finance directly influence the macro-economic development of a region, so that a cognitive process of high-level decision making, helps students to effectively manage their income and expenses (CaranguiVelecela et al., 2017; Valbuena - Duarte et al., 2019).

In the light of the approaches described above, it should be noted that the decisions should emerge from the availability that students can have the information (Murillo Junco&Cáceres Castellanos, 2013), for which reason, the management of knowledge through technology is essential for enhancing a suitable cognitive process leading to the selection of the best financial situations (Barcia Fierro et al., 2018).

In short, the decision making, as a product of a cognitive process of high-level, it is essential in regard to the proper handling of the personal finances of the students, so that, the quantitative reasoning has an important impact on this. It is for this reason that, from the universities, teachers who have the responsibility of providing courses based on the use of mathematics, must create scenarios for discussion, problem solving, analysis of situations, that provide students with the largest number of skills as possible to the management of their personal economy and possibly business.



3.3 Financial management, a turning point towards economic emancipation

The quantitative reasoning to the financial decision-making leads to a deep reflective process that lead to a process of management of the personal economy, it is considered as a turning point that leads to the economic emancipation of the students (Avenidaño et al., 2021). This opportunity is closely related to the possibilities offered by the innovation of technology markets (Beltrán Pinto & Gómez Martínez, 2017; Guilherme de Almeida & ArrechavaletaGuarton, 2018).

The fact of the matter rests on the different strategies that you can implement teacher training critical thinking and reflective (Liz Reynoso, 2017), because, as has been said in the lines above, this is promoted from quantitative reasoning, which adapts the learning to the realities of everyday life in which the students are working (Delfino, 2002). One of the elements that must guide this practice, it is the reality of youth unemployment has been seen in the past few years, so that the financial management is promoted from the decision making should lead to evaluate all the possibilities, including the intentions of entrepreneurship of the university (QuilcaQuispe, 2018).

It cannot, however, be understood that this training process should be a key part in the learning of students and to promote the use of various teaching strategies and technology, without which this suggest as an activity to generate fun, but to be understood as information-exchange activities to strengthen skills in the handling of the personal finance (ChicaOtalvaro, 2021), which, you can become a possible diagnosis of the scenarios to which they can face the students in the future (López Vera, 2016).

In this sense, the learning that promotes the financial management of students from quantitative reasoning, opening the door to various possibilities that they can have to promote actions leading to the emancipation financial (Moreno Caro, 2015), ensuring the economic sustainability of the same short -, medium-and long-term (Pinto Prieto et al., 2013).

4. Conclusions

This possibility of analysis has allowed to establish a common scenario in the financial education of students, from the use of the strategy of mathematical reasoning as the engine that drives the critical thinking, which is essential for decision making in regard to the management of the personal economy.

In Latin America and the Caribbean, a region that is considered the most unequal in the world, due to the unequal distribution of wealth, the financial decision-making becomes one of the key elements to take into consideration when developing learning sessions in which they can innovate in the quantitative reasoning, with the intention of promoting in students an adequate financial education.

The financial culture, understood as a whole within the economy of the students, you must be one of the axes of the transversal that must venture the curricula of institutions of higher education, with the aim of transforming the current realities of the students in the region.

The university, must become not only a center of academic debate and scientific, but the breaking of his sphere of influence to the promotion of actions that will allow students to develop ventures, which can be successful if they lead through the quantitative reasoning for decision making.

The invitation remains open to future research that can be developed from the paradigm sociocrítico, especially from the participatory action research, in order to demonstrate the effectiveness of an intervention where use is made of the quantitative reasoning for the improvement of the decision-making abilities of the students in the financial field.



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