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Analysis of the Impact of University Accounting Education on Micro Companies. An Ecuadorian Case.

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Abstract
The present study of the Research Project: "Analysis of University Accounting Education for Microenterprises in Ibarra" carried out by the Technical del Norte University, allowed to analyze the impact of accounting education with contribution for small companies in the sector, because higher education establishments need advance and innovate accounting academic management, with teaching and student attention, for practical support, in tune with the reality of the organizational environment. The type of exploratory, descriptive methodology, with the use of the statistical method, applied probabilistic sampling and the census, to examine 40 microenterprises and 83 accounting specialization university students; Once the diagnosis was applied, the information was classified and two databases were entered into the SPSS program for statistical analysis. The results were satisfactory, finding Cronbach's Alpha with a reliability level of (0.850) for microenterprises and (0.810) for students, which agrees with the effect of correlation and application of Varimax orthogonal rotation, reflecting the accounting training tax; Thus, the impact of medium-high accounting education was determined, with (40%) and (25%) micro-enterprise satisfaction and medium-high support of (28%) and (58%) of student reception. Finally, it was reflected that the results of the study raise awareness of the high responsibility towards continuous innovation in academic processes, facilitating the accounting culture for small companies, with sustainability and applicability of educational strategies for relevant financial accounting management, according to current trends in the economic and social context.
Keywords: accounting education; university; students; micro business

1. Introduction

Accounting education favors business development in all areas. The study presented below analyzed the impact of accounting education and its contribution to microenterprises. Starting from (I21) Analysis in Education, as a fundamental pillar of development of society worldwide, because (P20) Social Education in the formal educational context, positions the view of the discipline and its discourse as a challenge for educational proposals. future (García,2022); Thus (N86) the History of Microenterprise has been analyzed by numerous writers, highlighting the attempts of yesteryear to achieve organizational progress with inclusive accounting education, with the support and dissemination of international education guides and the global studies for the training of public accountants.

In this sense, the University has a high responsibility in guaranteeing the disciplined fulfillment of the teaching-learning process, with attention to the teaching staff and the students, with the updating and effective fulfillment of the study plans, because the university statistics programs and data science, have allowed the collaboration of students in increasing skills for data analysis (Dalzell & Evans, 2023), applying accounting educational practice, in tune with the demands of today's world; because attention to the innovation of teaching strategies is necessary, according to the reflections of the study by (Vance, 2021) on the successful programming of the course, which reflected good results in the teaching of reproducible data science workflows, where it is Notable communication and collaboration, according to the review of academic policies, the use of new mechanisms with educational inventions in the financial field, the support of systematized accounting software, the mastery of current technology, because the contribution to educational accounting actions With digital strengthening it is consolidated in the business field.

It is important to review the comparative synthesis of the purposes for professional training in the educational and labor field, (Morales, Resa, & Salas, 2021) for the preparation of university students, towards the contribution to the economic development of the countries, to improve the productivity and competitiveness of companies, through the optimization of organizational resources. The fundamental role of (M41) Accounting allows the analysis, accounting processing and presentation of reliable and irrefutable financial information, with (N96) the financial support and technical knowledge of accounting professionals, who contribute to the application of controls. timely, in the different activities carried out according to business needs, in the context of the global economy. Because the support of the disciplines in (M40) Accounting and Auditing provide the guidelines for professional practice, based on international accounting and sustainability standards (IASB & ISSB, 2023) and the observance of legal standards, with the principles, internal control components and processes, to achieve effective management in organizations. Future professional students in public accounting require the provision of specialized knowledge with permanent updating, to provide effective responses in the labor field, meeting the expectations of international accounting standardization, with the support of sufficient competencies, according to the pronouncements international training programs of the IFAC, which under the ethical principles, the requirements of the accounting profession and practical training, strengthen students in the development of necessary skills during the university educational process, for future accounting performance in microenterprises and organizations, where effective financial management and control support guide the ventures that contribute to economic growth, with dynamism and fluidity to strengthen competitive markets.

The objective of this research is to analyze the impact of university accounting education for microenterprises in Ibarra in the North of Ecuador, according to the scientific arguments of the research on the topic of study; to use the research methodology: exploratory, descriptive and correlational, through the use of software and the statistical method. To apply the delimitation and diagnosis to microenterprises in the sector and to university students of the Accounting and Auditing Career, who completed the last level of accounting specialization (October 2022-March 2023); With the data obtained in the research process, statistical tests and automated processing were carried out in the SPSS Program, to determine the Cronbach indicators on the reliability of the study and the frequencies of the descriptive statistics to show the impact of education. accounting, with the analysis of factor loadings and the support of orthogonal relationship, which finally raises awareness of advancing in innovative accounting education, with the incentive articulated from universities, for the organizational strengthening of entities at the national and international level.

1.1. Context of the Accounting Education Study

Education in accounting and the culture of financial management throughout the world allows the strengthening of companies, organizations and businesses, because companies rely on the professional service of public accounting to control economic figures with management strategies. to achieve prosperity, growth and innovation. Because Accounting Education as the set of training processes, with learning mechanisms, and with legitimately authorized facilitators, develops the intellectual, moral and emotional capacity of future public accountants, generating in them the skills required to fulfill their social commitment and professional (Ospina H. G., 2022). Because participatory education and accounting practice entails strengthening the exit profile of students, who fit into professional advice for effective practice, being constructive professional elements of support for public and private entities.

“Accounting education starts from establishing in the subject, through theories, models and techniques, concepts to understand and mediate their relationships with others and to conceive themselves.” (Ospina, Gómez, & Rojas, 2014, page 203). Therefore, examining work well-being among university professors is very substantial (Kim, Pongsakornrungsilp, Pongsakornrungsilp, Horam, & Kumar, 2023), because related universities seek mechanisms to stimulate teachers to strengthen their training action, considering that The teacher is a trigger that facilitates the students' requirements, following the teaching-learning processes and encouraging collaborative teamwork. In this way, the teacher is a researcher of his educational practice and the classroom is a workshop where solutions are built (Ospina Z. Carlos M., 2009).

It also enhances “the university organizational image, for the operation of an HEI, for the students and for the staff of this type of organizations.” (Pérez & Torres, 2016, page 109). Because innovative educational changes allow the effective result of action in the practical field, where the entities represented by employers in the contemporary world are framed in accounting actions with high financial demands and in accordance with the changes that are occurring rapidly at the level. of the entire world. The research studies reflect the importance of collaborative projects with action research principles and practices, creativity is shown to strengthen the Schoolweavers tool for the transformation of the educational ecosystem (Mireia, Moisés, & Jordi, 2023) with new strategies to form collaborative learning networks where students actively participate in innovative education projects. Likewise, the ECN (Education in Collaborative Networks) to achieve innovative capabilities, not only in educational strategies but to achieve the strategic alignment of community professionals who already produce innovative solutions (Jordi, Mireia, & Joan, 2013). So, accounting education becomes effective in the business environment, so that the professional puts the skills into practice, according to the characteristics and requirements of the entities, with the manifestation of educational strengths, which allow transforming and generating new results in the entrepreneurial processes from development, establishment, structure, prosperity, results and feedback; Since public organizations are part of the ecosystem, therefore, changes in the administrative structure of the government lead entities to seek to adapt to the changing environment on their own (Bernardo & Isabella, 2022).

Depending on the nature of the companies and the economic activities they carry out, in many cases, decision-making must be made quickly and based on the best information available at the time (Alemán & Jiménez, 2022, page 29). In accordance with the existing needs, in the current business environment, it is required, without a doubt, that academies undertake the verification of programs, to improve accounting educational practice, incorporating concepts related to cryptocurrencies for the training of prepared professionals. , according to the demands of the current market (Ordóñez, 2021). It is appropriate, then, that Higher Education Institutions (HEIs) carry out the permanent review of the curricula, study plans and the delivery of teaching in the academies, always counting on a model (Dimartino, Boff, &Barbei, 2021) that allows us to take the strengths, from the different alternatives to teach the classes; because the transition from accounting focused on financial information, as a basis for decision making, advances towards integrated accounting for sustainability and alignment with the fulfillment of goals is proposed, considering global sustainability standards (GSSB, 2023); Because organizations need to make use of standardizing practices and those that facilitate understanding and articulate dialogue with the different groups that their activity impacts. (Sánchez, 2022, page 10).

Because the report by (Elamer, 2019) based on Albrecht and Sack (2000) indicated that accounting educational modules continue to have too limited a focus on the development of skills according to the curricula. Because accountants are not at the forefront (Davey & Coombes, 1996), to reflect the sustainable contribution in financial information. Therefore, it is necessary to know the needs of students and employers, to provide effective responses according to social needs, so that staff and new professionals develop in a changing educational environment, considering the impact that this can have, in both curriculum planners, so that teachers, in attention to student requirements, can meet the demands in their classes that they carry out on a daily basis. (Villiers, 2010).

In this way, the transcendental function of the teacher involves bringing the best proposals to the students (Casero Béjar & Sánchez Vera, 2021) since the change in education modality due to the pandemic allowed teachers to make a great effort, to develop the most suitable means and resources to strengthen learning. Since, the emphasis on the educational space strengthens the critical thinking of students, applying the principles of equity and justice; to strengthen the support of knowledge and the construction of new ideas and desires for a better future, (Rosero & De La Ossa, 2022). In this sense, education facilitates learning by obtaining new knowledge, granting skills and abilities to people, for the development and continuity of the accounting educational culture in today's society. Because of the first attempts to globalize accounting education in the 90s (IFAC, 1996), the International Federation of Accountants showed the international education guides and the World Curriculum for the training of professional accountants, proposed by the United Nations Conference on Trade and Development of the United Nations (UNCTAD), (ISAR 5 and 6, 1999), where (Vásquez 2002 p4) established the minimum requirements to take into account in professional education, because the (

IFAC F. I., 2023) supporting control entities in developing countries, is contributing to the advancement and scientific knowledge, the strengthening of competencies in professional education profiles and in graduates, with special skills, according to the contents of general education, with practical experience, training, competency exams and professional values. (López Sánchez, 2013).

The self-preparation and initiative of public accounting students is essential during professional training, because the public accountant needs to be updated and prepared according to the demands of Industry 4.0 and with version 2.0.2.3. with the following "Public Accountant Skills" (De la Fuente Molina, 2023, page 2). The importance of the International Training Pronouncements (PIF), which encourage the application of an effective method for the development of professional skills, reducing universal differences in performance requirements, because global mobility was facilitated, providing points of international reference of good practices for training in the profession (IFAC F. I., 2019). Proposing new ways to strengthen accounting education and the skills that a public accountant must have, to respond to the needs and requirements demanded by organizations, the State, families and the community in general. (Aguilar, Ceballos, & Andrade, 2015). Because security is a process of continuous improvement (AEC, 2022) in entities. To combat risks, with emphasis on internal control, since "the loss of control and direction of decisions can lead to changes in perspectives that positively or negatively affect the interests of those who are part of the organization" (Guevara, Pulgarín, & Gaviria, 2023, page 121).

2. Materials and Methods

The development of the research of the project "Analysis of University Accounting Education with Contribution in Microenterprises of Ibarra, which was developed by the Technical University of the North" (UTN), made it possible to determine the impact of accounting education, beginning with the verification of information on microenterprises and the students, in order to delimit the field of investigative action. The research methodology used was exploratory, descriptive and correlational, of a quantitative order, which used the census and probabilistic sampling, to analyze the educational and accounting impact on the northern Ecuadorian service microenterprise and also the perspectives of criteria exposed by the students who completed the last level of the Accounting and Auditing Career (CCA) of the (UTN) Ecuador.

2.1. Population and Sample of Microenterprises

The population of microenterprises providing restaurant, lodging and other services was determined, which allowed the selection of 45 establishments, which were subjected to the application of the sample size. As shown in Table 1 and 2. For this, it was necessary to verify the information, according to the National Indicators (in % with respect to the EAP) as of February 2023, in Ecuador the following data was presented: Global participation rate with 65 .60. Adequate employment rate with 32.90. Underemployment rate with 21.60. Unemployment rate with 3.90. Likewise, the Directory of Companies and Establishments (DIEE) was reviewed based on the administrative records of the INEC. It was found that the number of companies in 2021 was 849,831 of which, in Ibarra, there are a total of 15,367 entities (INEC, 2023).

Also important was the management carried out in the control organizations for the extraction of data, the database of (SRI, 2022) was verified according to the analysis and purification of this data, the micro business sector was identified to delimit the service microenterprises that are operating in the town of Ibarra, likewise, the review and comparison of data records of the establishments was carried out according to the tax portal of (GAD, 2022) the existence of 793 establishments was found that distributed by type of activities according to their nature, the significant percentage of 61% corresponds to commercial microenterprises, followed by 18% that belong to the services sector (restaurant, lodging, transportation, consulting, maintenance, photocopying and others); 13% was represented by construction and 9% included production, agricultural, leasing and other activities.

Finally, 45 microenterprises were found as the study population. Using the statistical me of data obtained was applied, according to the ordered procedures of the exploration carried igation requires its own statistical design to verify its premises. (Monroy & Nava, 2018).

$$n = \frac{N * Z_{\alpha}^2 * p * q}{e^2 * (N-1) + Z_{\alpha}^2 * p * q}$$

Table 1*Microenterprise data review details*

Establishments according to the Tax Portal of the Municipal Entity					
ClassificationofMicroenterpriseActivities	**Microenterprise details**	**% of Activities**	**Analysis (N)**	**N**	**n**
Services	140	18%	103	**45**	40
Commercial	481	61%			
Production	30	4%			
Construction	107	13%			
Agriculture	15	2%			
Leasing and others	20	3%			
Total Establishments	793	100%			

Source: Data classification (GAD Ibarra, 08-2022). (Ubillus, Vera, Monge, & Monge, 2023).

The breakdown of data for determining the sample size, according to the statistical calculation formulas, is detailed in Table 2.

Table 2*Detail of calculations for determining the size of the microenterprise sample.*

DetailofApplied Formula	Data
N = Population size for selected service microenterprises	N = 45
n = Sample size, for the study of service microenterprises	n = 40
Z = Statistical parameter of the reliability level of the study (1.96)	Z = 1,96
p = Probability of occurrence for data selection and proportion	P = 0,50
q = Probability of success or failure (1-p), for achievement and scope of data	q = 1-0,50
e = Estimation error for the study of microenterprises (5%)	e = 5%

Source: Author contributions, based on scientific theory. (Ubillus, Vera, Monge, & Monge, 2023).

2.2. Student Population

It was important to obtain the database of teachers inserted in higher education in Ecuador, according to (SENESCYT, 2023) which reflected that by 2018, university professors from public HEIs reached 58% of registrations, in relation to all 35,324 teacher records, it was also important to know the statistics of the students of the University which for the Period: 2022-2023 amounted to 10,189 students enrolled in general, from this source it was also known that in the Faculty of Administrative and Economic Sciences (FACAE) in that period, there were 2,553 students enrolled in the first academic cycle, with information verification from (UTN, 2022). As a complement to these data, it was learned that, in the enrollment record of the Accounting and Auditing Career, in this same period, there are a total of 583 students, of which 344 correspond to the face-to-face modality and 249 to the blended modality.

From this analysis, for the present study, the population corresponding to 83 students enrolled in the (CCA) of the Faculty of Administrative and Economic Sciences (UTN) was obtained, proceeding to study 55 students who correspond to the face-to-face modality and 28 students who They belong to the blended modality, which totals 83 students, who were surveyed in their entirety, through the application of the census, to know their opinions on the impact of accounting education, as shown in Table 3.

Table 3. ***Student data details***

Details of Faculties	**Students**			
	Total	**% Total**	**% Total Accumulated**	**% Higher**
Faculty of Administrative and Economic Sciences	**2553**	**25%**	**25%**	**25%**
FacultyofHealthSciences	1150	11%	36%	
Faculty of Education, Science and Technology	3982	39%	75%	39%
Faculty of Engineering in Applied Sciences	1491	15%	90%	
Faculty of Engineering in Agricultural and Environmental Sciences	1013	10%	100%	
Total	10189	100%		
Faculty of Administrative and Economic Sciences				
Details of Students by Major	**Students in Accounting and Auditing Career**			
	Total per Race	**% Total per Race**	**8vo. Level**	**% 8vo. Level**
In person modality	344	58%	**55**	66%
Blended modality	249	42%	**28**	34%
Total	593	100%	**83**	100%

Source: (NorthernTechnicalUniversity, 2022)

2.3. Data collection instruments

The validation of the technical instruments was important, because the field application questionnaires were developed with the objective of making them understandable, accessible and manageable by the study participants (Manchado, Alonso, &Delicado, 2023, page 92), for the collection of data from microentrepreneurs and students with an exit profile. The study subjects: microentrepreneurs and students, were directly informed to receive collaborative participation and the application of technical field research instruments.(2 Questionnaires) were prepared and validated:

• *Questionnaire 01* was applied through diagnosis to the identified microenterprises, according to the selection of the sample obtained for subsequent processing and data tabulation according to Tables 1 and 2.

• *Questionnaire 02* was applied through the diagnosis made to the students, according to the census, according to Table 3.

In this way, the classified physical information was obtained, with 2 databases obtained from the SPSS program, product of 2 questionnaires, to provide continuity in the process of analysis of results, which reached the determination of the impact of accounting education and expedited the information with the socialization of results, in such a way that the technical contributions of the study are supported by the research portfolio of the project management.

2.4. Data collection and analysis procedure

The participation of teachers, students and microentrepreneurs was important in the diagnostic application to microenterprises and accounting students with an exit profile, with the physical information from two data questionnaires obtained, they were reviewed sequentially, which were processed in the SPSS Program, generating the tests statistics with two databases of the participants, to provide continuity in the analysis process, which finally applied the correlation of variables, the results of the investigative reliability of the study were determined, having obtained the calculation of the Alpha of Cronbach for: microbusinesses 0.850 and for students 0.810. according to Table 4 presented in the results section. Likewise, the descriptive statistics showed the impact of accounting education.

3. Analysis of results

In the development of business operational management at a global level, financial accounting management is immersed, which entails the optimal participation of the human resources involved in economic and financial management, therefore, attention to innovative university accounting education of the future professionals, based on the analysis of academic instruction that prepares man for the exercise of life, the incentive towards continuous research and permanent updating. In this sense, Higher Education Institutions have a high educational and social commitment to guarantee quality education, with disciplined compliance with the teaching-learning process, diagnosing the requirements of university teachers and students, through permanent communication. and participation in educational networks and joint collaboration of educational actors.

Today's world requires taking on new challenges in educational advancement, therefore, an educational exercise that provides competitive skills for professional accounting practice is essential, taking into account the creativity and proactive development of students, with the skills and competencies for accounting action, with technical familiarization and technological use, with the management of automated accounting and auditing software, management of digital platforms, installation and management of control systems, tools for fraud detection, management of data volumes , management of specialized logs and digital evidence of all processes, with monitoring, control and innovation. As stated (Gómez & Janampa,2020) that professionals in the area must develop the skills to take on the challenges of industry 4.0 taking into account the basic points. Considering multi-area preparation, high added value, communication skills, strategic alliances, applicability of neuroscience, finance, professional quality, professional competence, updating, encouragement of personal investment effort and the advancement of the public accountant.

Therefore, the results of the study reflected the impact of medium-high university accounting education, with the referential foundation of the relevant academic acceptability, with emphasis on professional improvement in the exit process of the students, because the study carried out through The census, with eighty-three students enrolled in the face-to-face and blended modalities of the eighth level of the Academy's Accounting and Auditing Career, needs permanent strengthening in the development of skills, to reflect the results of innovative practical application in companies. and organizations. It is essential to strengthen skills, with the practical educational application in companies and organizations, finding acceptance and satisfaction in the opinion expressed by 40 microenterprises that collaborated in the study.

So, the results of the study applied to microenterprises were subjected to statistical processing through the use of the SPSS Program, for the revelation of the correlation of variables and the determination of the impact of accounting education for microenterprises and students, according to the operations. to verify the reliability of the research, where the value of the Cronbach Index was found with the detailed results that appear in Tables: 4, 5 and 6, because the results of the research reflected the impact of university accounting education and its contribution to microenterprises.

3.1. Research reliability verification operations

According to the development of the research project, following the corresponding process, the theoretical references and the methodology of applied research were analyzed, to show the analysis of the results of the field exploration, with the data obtained from microenterprises and students, which were subjected to statistical processing through the use of the SPSS Program, to show the impact of accounting education for microenterprises and students, likewise the reliability verification operations of the research, found the value of the Cronbach Index with important results, which are detailed in Table 4.

Table 4 ***Results of Cronbach's Alpha analysis***

Reliability statistics			
Cronbach's alpha		**Cronbach's alpha based on standardized items**	**Number of elements**
Microbusinesses	0,850	,799	69
Students	0,810	,839	33

Note: All processed elements of the study have an approximation of 1, which indicates that the study is reliable. Because the acceptability of the study and the synthesis of the statistical processing of the reliability of the research are revealed.

With this applied research, it was known that the academic processes taught by the University have significant acceptability support, because both microenterprises and students reflect satisfaction with the services they receive in the academic field, because the teaching-learning process is focused in the advancement and generation of research quality, to which is added the importance of paying attention to permanent educational innovation, with the applicability of new educational advancement mechanisms, in accordance with the requirements of the latest generation of scientific knowledge, the itself, which is revolutionized throughout the world. Therefore, strengthening educational innovation is essential, to reflect in learners the differentiation and distinction of the exit profile with practical support competencies with performance priority, in accordance with the latest advances in accounting, economic, social and economic sciences. financial with sustainability support.

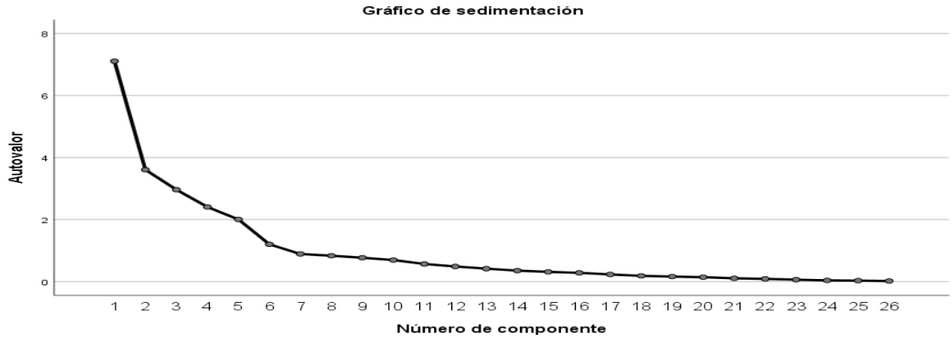
3.2. Principal component analysis. Questionnaire 1 Microenterprises

Following the statistical tests to identify the result of the principal components, this time the inclusion of 26 items was carried out, which were subjected to the test, to determine the varimax orthogonal rotation. With the representation of the Kaiser-Meyer-Olkin sampling adequacy measure, which determined a value of 0.60, which, supported by the theory of (Velicer, 1976), (Kaiser, 1974) and (Tabachnick& Fidell, 2007), proved that the sampling adequacy is moderate.

According to the values of the anti-image matrix that were lower than the value of 0.5 (for items 2.1.05, 3.1.10, 5.1.02, 7.1.04, 7.1.07, 8.1.01 and 8.1.15), but that were kept for the analysis, because they presented high factor loadings and contributed to the corresponding analysis.

The application of Bartlett's test of sphericity showed the results, which influence the existence of sufficient evidence to reject the null hypothesis of non-existence of correlations between the variables, with χ^2 (325) = 743.430, $p < 0.01$. In such a way that all the communalities were obtained and these were greater than 0.5, as were the values reflected in the diagonal of the matrix of the reproduced correlations. In the initial analysis, 13 components were found with eigenvalues greater than one, following Kaiser's (1960) criterion. As reflected in the image Figure 1, the sedimentation graph was somewhat irregular, however, the cutting of the secant lines of both parts of the graph suggested that the 5 factors can be taken for the analysis. Since this number of factors coincided with the theoretical construct, it was decided to extract five factors in the final analysis. Likewise, the results of the factor loadings resulting from the analysis are reflected in Table 5.

Figure 1*Sedimentation Chart of Variables-Microentrepreneurs*



With these results obtained, the % variance of 7.105 was determined when analyzing the university accounting education variable with the learning expectations, skills, specialization and strategies that are reflected in the new accounting professionals involved in business. Similarly, the variance was determined for all the variables reflected in Table 5 according to the professional contribution, the technical tools used, teaching-learning, the systems used and the accounting standards applied.

Table 5 ***Matrix of principal components for exploratory analysis of the questionnaire applied to microentrepreneurs***

Detail-Items-Rotated-Microentrepreneurs	**Rotated Factor Loads**				
	1	**2**	**3**	**4**	**5**
	Edu_Accountant	**Ap_Professional**	**Tools**	**Teaching-Learning**	**System_Normas**
3.1.02.Rate your level of te	0,859				
2.1.04. Are you sure that y	0,798				
2.1.05.¿En qué escala, actu	0,752				
3.1.06. In the learning proc	0,719				
3.1.04. Rate your satisfacti	0,711				
3.1.03.¿Califique su confor	0,708				
3.1.01. Do you rate the tea	0,681				
2.1.01.Rate what is the im	**0,555**				
5.1.02. To what extent did		0,814			
5.1.05.How do you rate the accounting contribution?		0,795			
5.1.04.How do you rate the		0,795			
5.1.01.How do you rate the		0,721			
5.1.07.How do you rate yo		0,72			
5.1.03. To what extent did		0,718			
8.1.06 Does the microenter			0,884		
7.1.03. Does the microente			0,851		
8.1.08. Does the microente			0,791		
7.1.04. Does the microente			0,788		
7.1.01. Does the microente	0,401		0,631		
3.1.10. Rate your level of s				0,89	
3.1.09. Rate your satisfacti				0,8	
3.1.11. Rate your satisfacti				0,79	
3.1.12. Rate your level of c				0,68	
8.1.01. Does the microente					0,872
7.1.07. Does the microente					0,787
8.1.15 Is the microenterpri					0,768
Own values	**27.329**	**13.871**	**11.396**	**9.258**	**7.713**
% of variance	**7.105**	**3.606**	**2.963**	**2.407**	**2.006**
Cronbach's alpha	**0.83**	**0.87**	**0.87**	**0.85**	**0.74**

Source: Own, using the Extraction Method: principal component analysis. Rotation method: Varimax with Kaiser normalization. to. The rotation has converged in 5 iterations

3.3. Principal Component Analysis Student Questionnaire

The result of the study according to the questionnaire applied to the students, according to the principal components corresponding to 14 items, which followed the application of varimax orthogonal rotation (Méndez & Rondón, 2012). To reflect the extent that according to the criteria of (Kaiser-Meyer-Olkin, 1960) the sampling adequacy was achieved, to know the value of 0.79 which, according to the bibliography obtained for this type of analysis, was considered good, according to (Stevens James, 2009) (Wan, 2019). Because in the same way, all the values of the diagonal of the anti-image matrix (KMO values for individual elements) were greater than 0.5, which ensures that the variables will be well represented by the principal components (Ozkok, 2018).

For its part, Bartlett's sphericity test, χ^2 (91) = 374.187, p<0.01, indicated that there is sufficient evidence to reject the null hypothesis of no correlations between the variables. The determinant of the correlation matrix obtained was 0.008. The initial analysis showed the existence of 4 components with eigenvalues greater than unity, according to Kaiser's criteria (1960). The cut that summarizes the straight line of the sedimentation graph (Figure 2) and the one that joins the ends of the horizontal part, would support the idea of taking 3 factors (Accounting education, student problems and academic support, as referred to (Cattell, 2016) to include common error in factor extraction.

Given that the number of the three factors has coincided with the theoretical construct of the research for accounting education analyzed, it was decided to extract these three factors that show the final analysis according to the determinations reflected in Figure 2. Table 6 shows show the factor loadings resulting from the principal component analysis performed with orthogonal rotation.

Figure 2*Sedimentation Chart of Variables-Students*

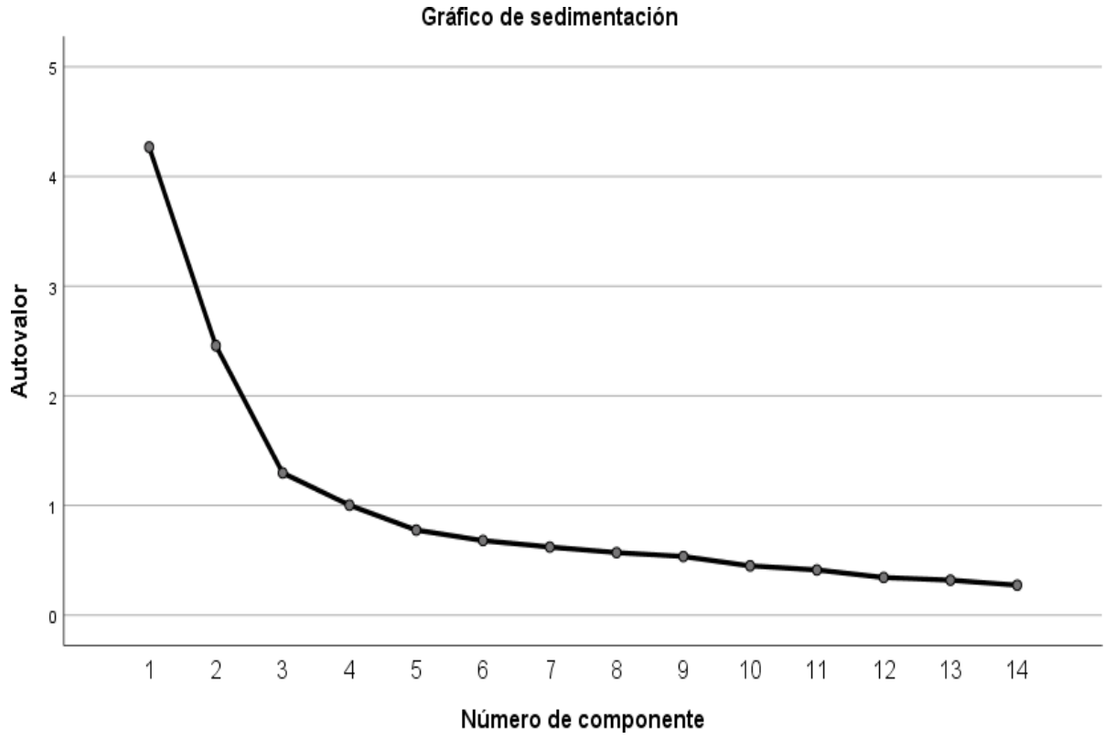


Table 6 *Matrix of principal components for the exploratory analysis of the questionnaire applied to the students.*

	Rotated factor loadings		
Detail-ItemsRotated-educators	**1 Accounting education and academic satisfaction**	**2 Student problems in exit profile**	**3 Academic contribution and educational commitment**
3.1.09. Rate the level of satisfaction in your academic performance as a student	**,707**		
3.1.08. Rate if in the learning process you applied accounting practice with complete resolution exercises	**,699**		
3.1.10. Rate your level of satisfaction with the class days and the assignment of activities	**,674**		
2.1.04.Did the Academy contribute enough creativity and innovation for you to take on challenges in accounting education in microenterprises?	**,660**		,426
2.1.01. Rate the impact of your current accounting education and its influence on microbusinesses	**,652**		
3.1.13.Rate your level of commitment to educational advancement	**,610**		**-,471**
3.1.12. Rate your satisfaction with the level of teaching attention in academic tutoring	**,592**		**-,544**

3.1.07. Rate your satisfaction and preference with teachers' educational use resources	**,589**		
2.1.05. Please rate if you are sure you have sufficient skills for professional performance?	**,537**		,520
4.1.03. Are you experiencing difficulties that are affecting your health?		**,723**	
4.1.06. Do you suffer symptoms or illness after the Post-pandemic?		**,664**	
4.1.05. Do you experience stress in the exit profile?	,438	**,642**	
4.1.07. Is your student performance affected by low grades?		**,610**	
4.1.09. Are you exhausted by multiple assigned tasks?	,451	**,512**	
Ownvalues	4.268	2.457	1.296
% Variance	30.484	17.548	9.26
Alfa Cronbach	0.84	0.76	0.73

Note: As can be seen in the analysis of the principal component with orthogonal rotation, the results of Variance were finally found according to the three factors: Accounting Education with the % of 30,484, the factor of student problems with the percentage value of 17,548 and the support academic with the percentage of 9.26.

3.4. Discussion

According to the results obtained, the degree of reliability of the study and the correlation of the research applied to microenterprises and students and the determination of the positive impact of accounting education were verified, because it is essential that university accounting education is developed in harmony and relevance of practical action, paying attention to constantly updated educational programs and plans for the evolution and competencies of students, according to the requirements and principles of the accounting profession.

It is important that students are familiar with the knowledge of current accounting standards, with the application of the basic postulates, and mastery of computerized accounting packages. Because the adoption of innovative accounting practices allows the evolution of entities, because when analyzing the conservatism that he mentioned (Albuquerque, Fabio; Quirós, Joaquín Texeira; Justino, Rosário, 2016), since the structural and financial study of organizations is important , in order to solve the problems that companies are going through, therefore, the organizations, the administration of academic entities, the contribution of the university community and the student body, need to be framed in the continuity and correspondence of four-party collaborative action , encouraging and strengthening research in universities, to continue innovating educational processes, in order to counteract organizational problems (Yuzzelli, Aarón Oyarce, 2018).

Knowing that the teaching support in the Accounting and Auditing disciplines, in the field of accounting education, provides learning guidelines for the application of future professional practice, complying with the legal provisions of each country and in the jurisdiction of action, where it is Fundamental is the familiarization and knowledge of international standards, audit standards and procedures, quality standards, standards for the eradication of crimes and fraud, internal and external standards, legal standards in each country, the components, processes, policies, strategies and other instruments for adequate organizational control. Because the development of student skills within the educational field strengthens future performance in organizations and ventures that shed light on the new capital markets, because the action of public accounting is present in every economic activity.

Because the arguments of many writers expressed the historical business advances, reflecting important contributions to accounting education, from the use of the first accounting parchments and the use of double entry, which later with the evolution of specialization highlighted the use of guides, international plans, standardized application standards for accounting education, throughout the world, these are the events of intervention in the training of public accountants.

On the other hand, accounting discernment is important, starting from the thinking of the topics indicated in the work of (Cevallos, Cera, & Mejía, 2020), to analyze the importance of the sustainable recognition of the elements of the financial statements, by raising awareness of the environment and the articulation of the accounting process, according to the criteria for assessing environmental wealth, attending to organizational needs, human preferences and other aspects that give rise to the opening of critical, reflective and innovative thinking, focused on the sustainability of the environment. , with the assessment of water, atmospheric, biotic and geological wealth. It is important to analyze the economic items obtained from the bio-accounting statements, for the presentation and disclosure of the complete financial statements, based on the sustainability that implies the environmental assessment and the reduction of the effects and waste that are affecting the origin and the conservation of natural sources.

According to the analysis of descriptive statistics, according to figure 03, it was observed that the educational impact reached the value of 0.652, which is equivalent to 0.7, which agrees with the specified analysis on the impact of accounting education on microenterprises. reaching the medium positive %, because 18% of the microentrepreneurs guessed an excellent educational participation, likewise 40% of the participants are satisfied with the affirmation of a very good accounting education, 25% of the respondents affirmed good education as business support and the remaining 18% incurred the need for improvements in the financial field, making mention of the training of future professionals in the use of automated accounting programs, with the incentive for collaborative and communicational work.

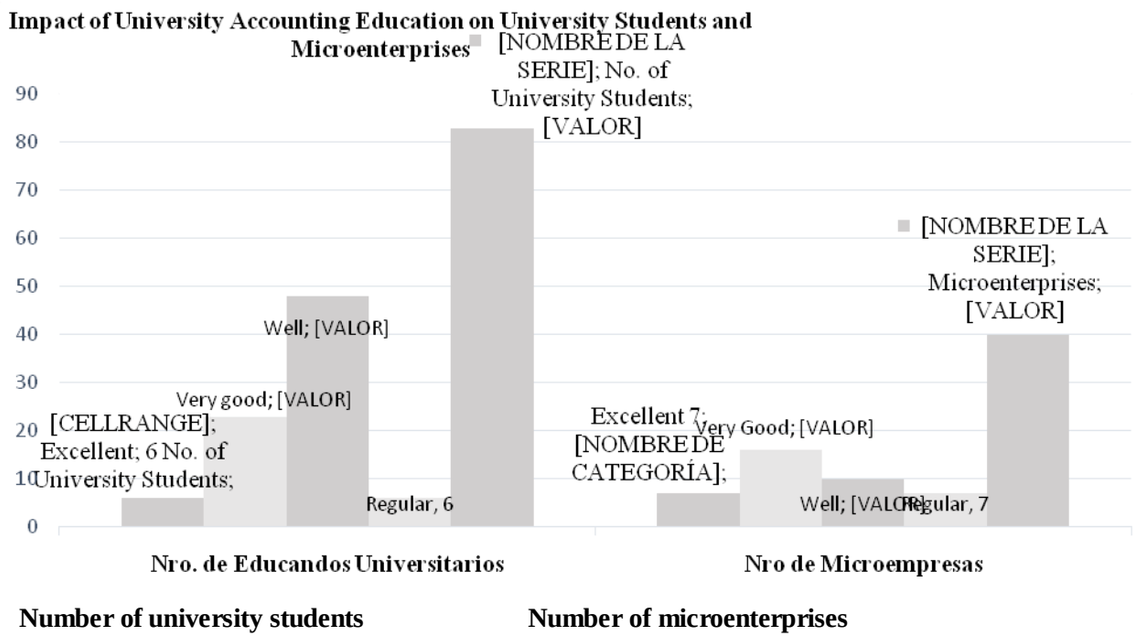
The accounting educational impact was determined from the students' version, which showed the average positive result, identifying that 7% of the students are completely satisfied with the knowledge they received in the academy, 28% of the participants expressed very good In accordance with current education, 58% of those surveyed stated that the education received is good and the remaining 7% expressed the need for academic tutoring to strengthen their abilities and skills for professional performance, as reflected in Table 7 and the Figure 3.

Table 7 ***Analysis of Educational Accounting Impact of Microenterprise and Students***

Questions	Excellent	Very good	Well	Regular	Total
Rate the impact of your accounting education on business	7	16	10	7	40
% of Qualification (Microbusiness)	18%	40%	25%	18%	100%
Rate the impact of your current accounting education and its influence on microbusinesses	6	23	48	6	83
%Qualification (Students)	**7%**	**28%**	**58%**	**7%**	**100%**

Note: In this study, according to Table 7, the trend of responses of the informants can be visualized, in relation to the variables studied and their respective analysis, as shown in Figure 3.

Figure 3 ***Image of the impact of accounting education on microenterprises and students***



Note: Information obtained according to the descriptive statistics, which agrees with the description and value of the components related to the accounting educational impact, through the statistical analysis and the result of the correlation achieved in the study determined in Tables 5 and 6.

Because the support of teaching in the Accounting and Auditing disciplines, in the field of accounting education, provided the learning guidelines for the application of future professional practice, complying with the legal provisions of each country and in the jurisdiction of action, where it is Fundamental is the familiarization and knowledge of international sustainability accounting standards, audit standards and procedures, quality standards, standards for the eradication of crimes and fraud, internal and external legal standards that govern each nation, the components of internal control. , processes, policies, strategies and other support instruments to exercise adequate control of organizations, because the aim is to transform companies towards sustainability (Wenzig, Nuzum, &Schaltegger, 2023).

Conclusions

The results of the impact of accounting education were determined, knowing that the accounting profession requires the preparation and development of skills and competencies in the future public accountant, to contribute to the solution of problems, according to the organizational requirements in the fourth industrial revolution, the which requires a high commitment and responsibility, based on the principles, requirements, code of ethics, accounting standards and other provisions that assist the profession of public accountants.

The analysis of the methodological process was applied, using research techniques and instruments to collect information from microenterprises and students, which was subjected to statistical tests by entering the data into the SPSS program, from which the Cronbach Indicators were obtained. with the reliability sample for learners at 0.81 and for microenterprises at 0.85, contributing to the reliability of applied research.

With application of the principal component test with orthogonal rotation. Thus, the medium positive impact of accounting education was obtained with a value of 0.652 reflected in the application matrix of orthogonal rotation and by analyzing the opinion responses of the students, it was known that a 58% good equivalence was applied by the students who They expressed agreement with the level of learning. The analysis of 14 items was obtained, with the application of varimax orthogonal rotation, with a sampling adequacy value of 0.79, the values of the diagonal of the anti-image matrix with 14 analyzed questions reflected a result greater than 0.5; Likewise, the determinant of the correlation matrix obtained of 0.008 with three factors analyzed, indicated that the teaching-learning process is focused on the advancement and generation of research quality, with attention to permanent educational innovation, the applicability of new educational mechanisms. , in accordance with the requirements of the latest generation in scientific knowledge.

Likewise, the educational impact for microenterprises was reflected, which dealt with the 40% very good equivalence on the acceptability, opinion and support of the academy, the statistical tests dealt with the variables of accounting

education, with the professional contribution, the tools used, teaching-learning, accounting systems and regulations, that according to the set of 26 items, the impact of accounting education was verified, reaching the contribution of 0.555 of correlation and educational assessment, with satisfaction in teaching-learning, because the The University is part of continuous improvement to achieve high quality standards and permanent innovation, in accordance with the latest scientific advances and challenges demanded by today's world. It is essential that academies expedite the application of programs framed in computer systems, for the educational accounting support of students, through dynamic training and generation of technical skills, so that they reflect results of innovative scope in accordance with the financial demands of businesses.

Contribuir Supplementary Materials

The figures and tables are reflected in the content of the article.

Author Contributions

Author contributions were: Conceptualization, G.E.A.C, M.O.A, H.G.M. V.A.P; methodology, G.E.A.C.; software, G.E.A.C.; validation, G.E.A.C..; formal analysis, G.E.A.C.; research, G.E.A.C.; resources, G.E.A.C., H.G.M., C.C.M., data correlation G.E.A.C., L.P.G.; writing the original draft, G.E.A.C.; writing, review and complete editing, G.E.A.C.; supervision, G.E.A.C., V.A.P.; project administration, G.E.A.C.; acquisition financing, G.E.A.C.; H.G.M., C.C.M.

Data Availability Statement

All data obtained in the analysis of the study were reflected in the development of the manuscript with the results.

InformedConsent Statement

For the present study, direct socialization was carried out with the participants before beginning the exploratory field application, therefore, it does not include an individual letter of informed consent.

Data Availability Statement

The file that supports the analysis of research data, in its entirety, rests in the institutional file of the Research Project Directorate, available at the Universidad Técnica del Norte, in accordance with the Code of Ethics of the Academy, the right is reserved of confidentiality.

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Disclosure Statement

The present study was reviewed by all the authors and their consent for processing and publication was expressed, therefore the authors declare that there is no conflict of interest. Because the funding did not intervene in the design of the study, nor in the collection and analysis of data, so the writing of the manuscript was developed independently for the present publication.

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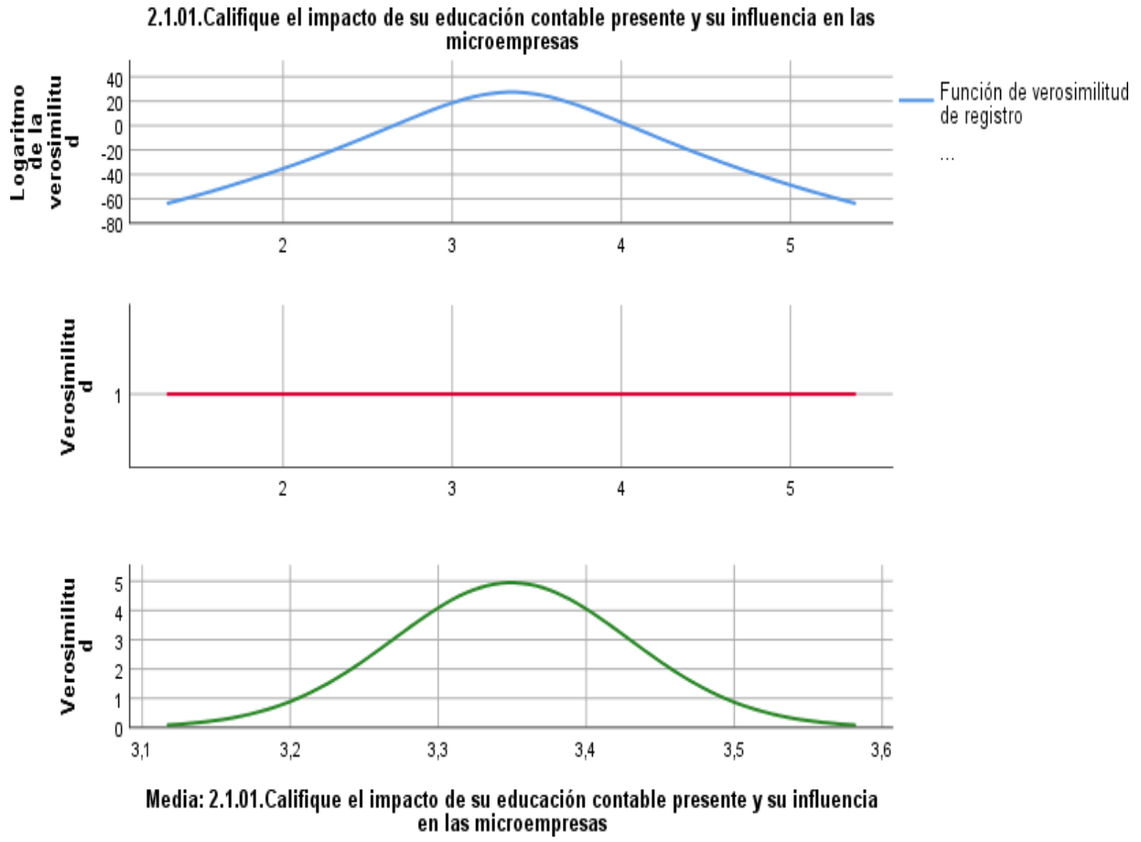

Estadísticos descriptivos Estudiantes

Items	N	Mínimo	Máximo	Media	Desv. Desviación
2.1.01. Rate the impact of your current accounting education and its influence on microbusinesses	83	2	5	3,35	0,72
2.1.02.Rate your level of satisfaction with the current university education system	83	2	5	3,43	0,89
2.1.03. In your work practice experience, do you meet the perspectives that accounting education implies?	83	1	5	2,94	0,92
2.1.04. Did the Academy contribute enough creativity and innovation for you to take on the challenges in accounting education in MSMEs?	83	1	5	3,16	0,99
2.1.05. Please rate if you are sure you have sufficient skills for professional performance?	83	1	5	3,10	0,84
2.1.06. On what scale, do you currently exercise accounting expertise and specialization?	83	2	5	3,04	0,65
2.1.07.On what scale, do you currently have mastery of Basic Accounting?	83	2	5	3,42	0,78
3.1.01. Rate the level of relevance in the teaching that the University has given you	83	2	5	3,64	0,76
3.1.02. Rate the level of academic management management of the academy	83	2	5	3,45	0,78
3.1.03. Rate your level of satisfaction with the fulfillment of the academic curriculum	83	2	5	3,31	0,84
3.1.04. Rate your level of skills in teaching-learning that you have received at the academy	83	2	5	3,49	0,72
3.1.05. Rate your agreement with the teaching accounting educational strategies taught	83	2	5	3,45	0,78
3.1.06. Rate your satisfaction with the educational resources provided by the academy that you used.	83	2	5	3,53	0,82
3.1.07. Rate your satisfaction and preference with the resources for educational use taught by the teachers	83	1	5	3,51	0,86
3.1.08. Rate if in the learning process you applied accounting practice with complete resolution exercises	83	1	5	3,37	0,85
3.1.09. Rate the level of satisfaction in your academic performance as a student	83	2	5	3,33	0,68
3.1.10. Rate your level of satisfaction with the class days and the assignment of activities	83	2	5	3,45	0,75
3.1.11. Rate your level of satisfaction in the recovery of classes you received	82	1	5	3,17	0,97
3.1.12. Rate your satisfaction with the level of teaching attention in academic tutoring	83	1	5	3,37	0,93
3.1.13. Rate your level of commitment to educational advancement	83	1	5	3,55	0,84
4.1.01.Short availability of economic resources	83	1	5	3,05	0,92
4.1.02.You maintain financial debts for education	83	1	5	1,63	1,07
4.1.03.You are experiencing difficulties that are affecting your health	83	1	5	1,83	0,95
4.1.04.Family problems affect your performance	83	1	5	2,41	1,20
4.1.05.Do you experience stress in the output profile	83	1	5	3,01	1,24
4.1.06. Suffer symptoms or illness after the Post pandemic	83	1	5	1,65	0,93
4.1.07.Student performance is affected by low grades	83	1	5	2,37	1,11
4.1.08.You experienced repetition in specialty subjects	83	1	4	1,87	0,93
4.1.09.You are exhausted by multiple tasks assigned by teachers	83	1	5	2,66	1,06
4.1.10. Do you consider that the study is a very high burden	83	1	5	2,41	1,12
4.1.11.You have the confidence to face challenges and generate ventures	83	1	5	3,57	1,15
4.1.12.You are afraid to perform in the workplace because you lack feedback on what you have seen throughou	83	1	5	3,33	1,21
5.1.01. Education Risk	83	1	3	1,98	0,66
N valid	82				

Source: Accounting Education Study Database