# Generating Value in Higher Education: A Quantitative Analysis in a Public Hei

## *A Geração de Valor no Ensino Superior: uma Análise Quantitativa em uma IES Pública*
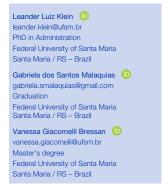
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**ABSTRACT**

The objective of this article is to evaluate the perceived value generation in higher education. The theoretical outline of this work was essentially guided by the definitions of value generation, academic activities and organizational support in higher education, as well as outputs of acquired knowledge and skills. Quantitative survey research was carried out using a questionnaire. The target population of this study are alumni and students in the final stages of an undergraduate course at a public HEI based in the state of RS, southern Brazil. A sample of 1220 respondents was obtained. Data were analyzed using descriptive and multivariate statistics. Among the main results of this research, it can be highlighted that the formation of six factors for analyzing academic activities and organizational support and four factors that address knowledge outputs and acquired skills. Regarding these factors, the results indicate that there were significant differences in perception between the groups of men and women, enrolled and graduated students, income range and whether or not the individual works in their area of study in the course they are taking. The conclusion of this work is that the generation of value is a pressing need in HEIs and some specific activities and actions contribute more effectively to the conception of value, in this case from the student's point of view.

**Keywords:** Value Generation, Academic activities, Skills acquired, Higher Education.

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**RESUMO**

O presente artigo tem como objetivo avaliar a geração de valor percebida na educação superior. O delineamento teórico desse trabalho foi orientado essencialmente sob as definições de geração de valor, atividades acadêmicas e suporte organizacional no ensino superior, bem como saídas de conhecimento e habilidade adquiridas. Realizou-se uma pesquisa quantitativa do tipo *survey* por meio da aplicação de um questionário. A população alvo deste estudo são os egressos e alunos em fase final de curso de graduação de uma IES pública sediada no

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**RESUMO**

estado do RS, sul do Brasil. Obteve-se uma amostra de 1220 respondentes. Os dados foram analisados através de estatística descritiva e multivariada. Dentre os principais resultados dessa pesquisa, pode-se destacar que a formação de seis fatores de análise das atividades acadêmicas e suporte organizacional e quatro fatores que abordam saídas de conhecimento e habilidades adquiridas. Quanto a esses fatores, os resultados indicam que houveram diferenças de percepção significativas entre os grupos de homens e mulheres, alunos matriculados e egressos, faixa de renda e o fato de o indivíduo trabalhar ou não em sua área de estudos no curso que realiza. A conclusão desse trabalho é que a geração de valor é uma necessidade premente nas IES e algumas atividades e ações específicas contribuem de maneira mais efetiva para a concepção de valor, nesse caso do ponto de vista do estudante.

**Palavras-chave:** Geração de Valor, Atividades acadêmicas, Habilidades adquiridas, Ensino Superior

## Introduction

The definition of value for a product or service originates from private organizations, where central definitions involve a clear conception of what the customer is willing to pay. LeMahieu et al. (2017) explain that value is something that, from the customer's perspective, is worth paying for, meaning that it constitutes things that add value. For the private sector and most industries, this definition becomes easier with a clear customer identification.

However, this conceptualization is not so simple to apply to the education sector, regardless of the level being considered. What complicates the mere application of the aforementioned definition is that the customer generally considered the student, has certain "obligations and reciprocities" to fulfill in teaching and learning activities and, in the case of higher education institutions (HEIs), also in research and extension activities. For this student, the concept of value as something that, from their perspective, is worth paying for cannot be applied because their academic training requires them to perform and "pay" for content and activities that may not interest them or that they would not choose on their own.

In this logic, HEIs, however, cannot be exempted from the concept of value generation because they are accountable to "investors" and society (especially in the case of public HEIs) for the returns on the investments made. In addition to their

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essential role in extension activities and as developers of research, HEIs are also held accountable for the quality of their teaching practices and the preparation of students for the job market (Dicker et al., 2018; Succi & Canovi, 2020), given the skills and knowledge acquired by them.

The students themselves, even though they are aware that they need to do their part, are also demanding more from the academic activities they need to undertake and get involved in during their university life. Woodall et al. (2014) already argued that students are increasingly demonstrating behavior similar to that of a "customer" and are now demanding even more "value delivery" from educational institutions. In the university context, after students have attended/participated in a class or completed an academic activity, they evaluate whether that university moment facilitated or helped in the acquisition and applicability of knowledge in the job market of their field of study (da Silva et al., 2021). Such university moments and experiences also create the need for value generation in the activities carried out and their evaluation in HEIs. The fact is that little progress has been made in evaluating value generation for students in association with their perceived outcomes and acquired skills.

Given this situation, this article has the objective of evaluating the perceived value generation in higher education. To this end, a survey was conducted with 1,220 graduates and students nearing course completion at a public HEI in southern Brazil.

With this study, it is possible to advance the understanding of the concept of value generation and the evaluation of activities carried out in HEIs from the perspective of their central user, the student. The practical contributions of this study lie precisely in the evaluation of the activities and actions promoted by HEIs that generate added value from the student's perspective. This evaluation, besides providing elements to understand what students think and how they behave, can generate guidelines to improve the activities provided by HEIs. From a theoretical point of view, the realization of this work is justified by the narrowing of the notion of perceived value in higher education (Tomlinson, 2018) and the skills acquired by students (Pastore et al., 2022; Zhoc et al., 2019). Such research on value generation also helps to improve and adapt the "educational service provided" to the needs of students (Foroudi et al., 2019) and the requirements of the market.

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# Theoretical Framework

## VALUE GENERATION

The premise of value generation is based on the definition of added value from the perception of the customer who buys a product or uses a service. In other words, value can be understood as what the customer/user is willing to pay for and that does not "carry" waste in its composition (Alves, 2011). The generation of value for the customer or user of a service is associated with the company's ability to generate services that meet their needs (Busanelo, 2014).

When this concept of value is brought into the context of education, it should be analyzed considering its peculiarities and the multiple stakeholders involved, such as the government, society, students, teachers, and administrative professionals. For this study, students are considered the main customer/user of an HEI because they are the primary beneficiaries of the services provided by these institutions and the central element of the activities carried out (Sunder & Mahalingam, 2018).

Considering that students can be considered customers of academic centers, their expectations regarding the services provided by educational institutions play a fundamental role in their perceptions of quality (Dlačić et al., 2013). Academic institutions, by conducting quality assessments, achieve the possibility of improvements in their processes and in the development of their students' skills (Camilleri, 2021). Therefore, understanding what students perceive as added value from actions and activities carried out at HEIs helps them recognize areas for improvement and offer higher-quality academic activities for students (Dicker et al., 2018).

Value generation in the educational environment is related to motivation and the construction of meaning for both teachers and students (Debnath et al., 2007). According to Chung and Mclarney (2000), when planning a course, regardless of the level, the selected tasks and assignments must offer value to students; otherwise, their interest in academic tasks and satisfaction may decrease.

## VALUE IN ACADEMIC AND RELATED ACTIVITIES IN UNDERGRADUATE STUDIES

Students' perception of value concerning their academic experience depends on a series of factors, such as the course's instructional design, the applied teaching

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methodology, learning resources, curriculum, and educational activities that stimulate the development of attitudes, skills, and competencies expected by employers (Zighan & EL-Qasem, 2020; Ansary et al., 2023). In this sense, it is necessary to present a theoretical foundation that supports the definition of these variables and factors, which is done in the following paragraphs.

The first factor to consider is classroom and/or extracurricular activities, which help develop skills such as leadership, decision-making, and self-confidence, and positively influence commitment to the institution (Zhoc et al., 2019). In the classroom, these activities refer to seminars, group work, case studies, and other evaluative activities that promote the development of the mentioned skills. Extracurricular activities, such as lectures, simulations, technical visits, and internships, among others, should allow students to visualize how the knowledge and skills acquired are beneficial and generate utility value for their present and future goals, such as entering graduate school or the job market (O'Neil & Hopkins, 2002), and make them more informed about the needs and skills to be developed for the market (Debnath et al., 2007).

The role of course instructors is another essential factor in students' academic lives, as their tasks, such as acquired knowledge, teaching practices, interest, and accessibility, affect the quality of education provided to students (Tetteh, 2018). Studies show that students who encounter pedagogically prepared teachers capable of conveying knowledge clearly and precisely and offer support beyond the classroom tend to provide a more enjoyable teaching experience, making the learning experience more valuable for students (da Silva et al., 2021). Teachers' "pedagogical care" positively impacts the perceived value of students, as they should act as facilitators of knowledge, focusing on motivating students, improving the teacher-student relationship, and enhancing collaborative learning opportunities (da Silva et al., 2021; Dicker et al., 2018).

In line with the above, teaching practices and course organization refer to the pedagogical characteristics of the courses, such as curriculum adequacy, teaching methods and materials used, teaching methodology, program content, schedules, and rules for the operation of academic services (Pastore et al., 2022). The trend is that students' learning experience is more enjoyable when teaching practices are better developed (da Silva et al., 2021).

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Infrastructure is highlighted as another factor influencing student training, as it includes tangible elements of the HEI facilities, such as laboratories, libraries, classrooms, cafeterias, and internet availability, which can impact service quality. Infrastructure positively influences teaching care by instructors and perceived value by students (da Silva et al., 2021; Tetteh, 2018). Additionally, the quality of infrastructure influences student retention or dropout rates (Santos et al., 2017).

Aligned with this, the literature highlights the importance of the course office's support, which plays a fundamental role in managing administrative tasks and students' university experience through operational activities, information provision, accessibility, and courtesy towards students (López-Miguens et al., 2021; Tetteh, 2018). The administrative and operational services provided by institutions should be considered and evaluated to improve the quality of the services they offer (Dicker et al., 2018; Tetteh, 2018).

Finally, some studies highlight the importance of market opportunities promoted by HEIs. These refer to actions promoted with potential employers that bring future graduates closer to the job market, favoring employability (López-Miguens et al., 2021; Abbas et al., 2024). Actions include job fairs, selection exams on university premises, and dissemination of job opportunities, among others. Universities that have the structure to promote students' integration with the job market should act as a link to promote learning and narrow opportunities and knowledge (da Silva et al., 2021).

## KNOWLEDGE OUTPUTS AND LEARNING OUTCOMES

Universities worldwide have sought to describe and highlight the skills and knowledge their graduates acquire throughout their academic lives. Education must be planned based on the skills and competencies that students need to develop, rather than the content that teachers intend to teach, thus shifting the focus from the teacher to the student's learning outcomes (Erikson & Erikson, 2019). Learning outcomes can be described as the set of skills and attributes that students perceive and acquire during their involvement with the HEI. These outcomes have been the focus of studies on student satisfaction, engagement, and graduate employability (Garnjost & Lawter, 2019; Jorre de St Jorre & Oliver, 2017).

In this study, four dimensions are used to evaluate the learning outcomes and skills acquired by HEI students. Learning outcomes refer to student's percep-

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tions of the knowledge acquired throughout the course, such as theoretical content, critical judgment capacity, communication skills, and teamwork, for example. Data obtained from learning assessments are considered good indicators to ensure the quality of higher education (Oliver & Jorre de St Jorre, 2018; Pastore et al., 2022). Evaluating learning outcomes allows generating quality indexes and comparing institutions, as well as providing feedback for improvements.

The second dimension refers to acquired cognitive outcomes, which concern skills that allow understanding complex ideas, thinking analytically, reflectively, critically, and creatively, and addressing unfamiliar problems, motivating the individual (Kensington-Miller et al., 2018; Zhoc et al., 2019). These types of skills are highly relevant for promoting graduate employability and facilitating their professional tasks (Suleman, 2018).

The third dimension, social outcomes, concerns students' ability to communicate and understand people, live and work collaboratively with different cultural and ethical backgrounds, and leadership aptitude, which enhance university experience satisfaction (Zhoc et al., 2019). These skills are more easily acquired through peer interaction and teamwork that encourage students to adapt, promote empathy, self-confidence, and leadership (Zighan & EL-Qasem, 2020).

Finally, self-growth outcomes refer to the development of personal traits such as time management, critical self-reflection, and autonomous learning (Zhoc et al., 2019). This skill encourages students to develop initiative and self-development, building personal time management capacity and productivity, autonomy, taking responsibility, and being accountable in an ethical and professional manner (Oliver & Jorre de St Jorre, 2018; Zighan & EL-Qasem, 2020).

## Method

This study employed a quantitative survey research design, suggested for data collection involving a large population and aiming to obtain a representative sample (Hair et al., 2022). The research was conducted at a public higher education institution (HEI) located in the state of Rio Grande do Sul, in southern Brazil. The target population of this study includes graduates from undergraduate courses at this HEI

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since 2015 (8,483 individuals) and currently enrolled students who have completed 50% or more of their course credits (approximately 9,400 students at the time of data collection). Non-parametric convenience sampling was used to achieve a minimum sufficient sample size for the statistical analyses proposed in this article, resulting in a valid sample of 1,220 respondents.

Data collection was conducted through a structured questionnaire consisting of 65 closed-ended questions. Responses were measured using a 5-point Likert scale, as shown in Table 1. Additionally, the authors defined eight questions to characterize the respondents' profiles, covering aspects such as gender, age, race, marital status, year and semester of graduation (or course enrollment for current students), professional activity, and income.

**Table 1.** Dimensions and organization of the research instrument.

| Dimensions evaluated | No. of questions | References | Scale used |
|---|---|---|---|
| Infrastructure | 8 | • Tetteh (2018) | 1 = No value |
| Classroom and Extracurricular Activities | 13 | • Tetteh (2018) | 2 = Little value |
| Course Instructors | 7 | • Dicker et al. (2018) | 3 = Medium value |
| Teaching Practices | 6 | • Da Silva et al. (2021) | 4 = High value |
| Market Opportunities | 5 | • Da Silva et al. (2021) • López-Miguens et al. (2021) | 5 = Extreme value 9 = Unaware of this item or did not see it in the course |
| Administrative Support | 5 | • Tetteh (2018) | |
| Learning Outcomes | 6 | • Oliver & Jorre de St Jorre (2018) • Pastore et al. (2022) | 1 = Not at all 2 = Very little |
| Skill: Cognitive Outcomes | 5 | • Zhoc et al. (2019) | 3 = Little 4 = Quite a bit |
| Skill: Social Outcomes | 5 | | 5 = Completely |
| Skill: Self-Growth Outcomes | 5 | | |

**Source:** Prepared by the authors.

To create the instrument, the questions from the referenced studies (column of references in Table 1) were first translated by one of the authors (fluent in

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English) and subsequently adapted to the context of the public HEI studied. Next, the structured questionnaire was reviewed by four expert researchers in this type of research and the study area. The purpose of this content validation stage was to gather feedback on the understanding and appropriateness of the questions to the research objectives, which allowed for the revision of ambiguously interpreted questions and obtaining improvement suggestions. Consequently, a preliminary final version of the questionnaire was obtained and subjected to a pre-test with seven potential respondents from the study's target population. Following feedback and adjustments, the researcher who translated the original questions verified the instrument again to avoid possible changes in the original meanings. These content validation procedures were deemed necessary since the original scales were written in English.

Data collection was conducted online with the assistance of the DPC (Data Processing Center) of the HEI where the research was conducted. An "electronic" version of the questionnaire was created and sent to the target population via an email invitation. Responses were automatically recorded and stored in an electronic spreadsheet for later editing in Excel. Data analysis was performed using IBM SPSS v.23 software.

The analysis procedures and techniques included descriptive analysis of the respondents' profiles and the variables in the questionnaire. Next, Exploratory Factor Analysis (EFA) was conducted to estimate the correlation structure among a large number of variables and define a smaller set of factors containing strongly interrelated variables (Hair et al., 2022). To verify the factorability of the data obtained, Bartlett's test of sphericity and the Kaiser-Meyer-Olkin (KMO) measure were used. Variables with communalities below 0.5 were excluded. EFA was performed using the principal components method and Varimax rotation. The number of factors was determined using the Eigenvalue criterion (>1) and the percentage of explained variance (>60%) (Hair et al., 2022). Cronbach's alpha was calculated as a measure of factor reliability, with values greater than 0.7 considered acceptable.

Finally, t-tests and ANOVA tests were conducted to examine mean differences between respondent groups. According to Hair et al. (2022), the t-test assesses the statistical significance of the difference between the means of two independent samples for a single dependent variable. Univariate analysis of variance (ANOVA) is

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a statistical technique used to investigate differences in perception between three or more groups for a given dependent measure – factor (Hair et al., 2022).

The existence of associations between variables and the intensity of these relationships were investigated using Pearson's correlation coefficient (*r*) (Malhotra, 2019). The r coefficient, ranging from -1 to +1, indicates that when one variable increases, the other also increases proportionally if the value is positive, or when one variable increases, the other decreases if the value is negative. The strength of the association varies from very low (up to 0.2) to very high (between 0.9 and 1) (Pestana & Gageiro, 2014).

# Results and Discussion

## DESCRIPTIVE ANALYSIS OF THE RESPONDENTS AND INSTRUMENT VARIABLES

The first procedure of data analysis involved a descriptive analysis of the respondents and the instrument variables. The sample consists of respondents with an average age of 31 years, coming from different undergraduate courses at the researched institution. Table 2 shows the profile of the research participants.

**Table 2.** Respondent profile.

| Variable | Alternatives | Frequency | Percentage |
|---|---|---|---|
| Gender | Male | 494 | 40,5 |
| | **Female** | **726** | **59,5** |
| Ethnicity/Race | **White** | **1031** | **84,5** |
| | Black/Brown/Indigenous | 155 | 13,5 |
| | Prefer not to declare | 24 | 2,0 |
| Marital Status | **Single** | **775** | **63,5** |
| | Married | 399 | 32,7 |
| | Other | 46 | 3,8 |

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|---|---|---|---|
| Are you currently acting professionally? | **Yes, in the field of study** | **722** | **59,2** |
| | Yes, in another field | 214 | 17,5 |
| | No | 284 | 23,3 |
| Most important criterion that made you choose UFSM to pursue your degree | **Quality of education** | **502** | **41,1** |
| | Location | 237 | 19,4 |
| | Tuition-free | 407 | 33,4 |
| | Other | 74 | 6,1 |

**Source:** research data.

It is observed that the sample is predominantly composed of female individuals (59.5%). Regarding ethnicity/race and marital status variables, 84.5% of respondents self-identify as white, and 63.5% declared themselves as single. In terms of professional activity, more than half (59.2%) of the respondents are working in the field in which they graduated, showing a significant total. When asked about the most important criterion that made them choose the institution for their undergraduate studies, most people interviewed responded that it was due to the quality of education (41.1%), followed by the tuition-free criterion (33.4%).

## EXPLORATORY FACTOR ANALYSIS OF VARIABLES

The second data analysis procedure was the exploratory factor analysis (EFA) to verify the arrangement of questions into sets of factors considering the collected sample. As described in the methodology, the questionnaire was designed with 2 different scales for the set of items, hence two EFAs were conducted.

The EFA for the set of items 1 to 44 showed that the KMO test results (value = 0.954) and Bartlett's sphericity test (Chi-square value = 16232.144; sig = 0.00) were satisfactory and indicate the factorability of the data. The item "Exams without consultation (tests)" (communality = 0.362) was excluded from the analysis for having a value less than 0.5. The variable "Class schedule compliance" was also excluded from subsequent analyses as it was isolated in a single construct.

Table 3 shows the EFA results, where the factor loadings and mean values of each variable are presented, as well as the Cronbach's Alpha values and the explained variance of each factor.

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**Table 3.** EFA of variables related to academic activities.

| Factors and observed variables | Average | Loads Factorial |
|---|---|---|
| **Factor 01 – Teachers and Teaching Practices - Cronbach's Alpha (0.952) – Explained variance (17.29%)** | | |
| Teachers' ability to spark my interest in the subject taught in class | | ,817 |
| Teaching practices by teachers | 4,238 | ,802 |
| Teachers' ability to express their ideas clearly and objectively | 4,328 | ,795 |
| Teachers' interest in students' progress | 4,112 | ,768 |
| Teachers' responsiveness | 4,271 | ,744 |
| Teachers' knowledge | 4,583 | ,700 |
| Appropriate educational methodology | 4,077 | ,689 |
| Teachers' accessibility | 4,330 | ,686 |
| Adequate teaching materials | 4,133 | ,665 |
| Use of different teaching methods | 4,018 | ,619 |
| Receiving feedback on various activities performed | 4,047 | ,606 |
| Course curriculum organization | 4,097 | ,536 |
| **Factor 02 – Market Opportunities - Cronbach's Alpha (0.951) – Explained variance (10.62%)** | | |
| Organization of job fairs | 3,205 | ,851 |
| Dissemination of job opportunities during graduation | 3,678 | ,819 |
| Invitation to managers/employers for lectures or seminars | 3,714 | ,819 |
| Promotion of student integration with the job market | 3,665 | ,792 |
| Holding selection tests by organizations on university premises | 3,324 | ,780 |
| **Factor 03 – Infrastructure - Cronbach's Alpha (0.880) – Explained variance (10.17%)** | | |
| Research laboratories | 4,196 | ,717 |
| Computer laboratories | 3,936 | ,674 |

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|---|---|---|
| General campus facilities and infrastructure | 4,371 | ,673 |
| Auditoriums and conference rooms | 4,082 | ,665 |
| Availability of medical services | 3,450 | ,654 |
| University restaurant | 4,502 | ,618 |
| Library collections | 4,283 | ,610 |
| Internet access | 4,299 | ,585 |
| **Factor 04 – Secretary support -** **Cronbach's Alpha (0.950) – Explained variance (9.52%)** | | |
| Availability of secretarial staff to help in any situation | 4,340 | ,888 |
| Receiving answers to my questions from secretarial staff | 4,402 | ,877 |
| Accessibility of secretarial staff during working hours | 4,339 | ,874 |
| Provision of correct information by secretarial staff | 4,446 | ,851 |
| Courtesy of the secretarial staff | 4,293 | ,813 |
| **Factor 05 – Classroom Activities -** **Cronbach's Alpha (0.834) – Explained variance (7.99%)** | | |
| Presentation of seminars in class | 4,081 | ,743 |
| Participation in academic week | 4,139 | ,693 |
| Participation in seminars with external guests | 4,277 | ,689 |
| Group work preparation | 4,022 | ,673 |
| Case study resolution | 4,237 | ,527 |
| Evaluative activities with consultation | 3,898 | ,503 |
| Preparation of the Final Course Project (TCC) | 4,332 | ,467 |
| **Factor 06 – Extracurricular Activities -** **Cronbach's Alpha (0.803) – Explained variance (6.93%)** | | |
| Completion of extracurricular internship | 4,447 | ,799 |
| Completion of supervised internship | 4,552 | ,748 |
| Being a scholarship holder in Scientific Initiation or Extension | 4,394 | ,676 |
| Participation in Junior Enterprise | 3,506 | ,541 |
| Participation in study trips/technical visits | 4,265 | ,537 |

**Source:** Research data.

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The results in Table 3 demonstrate the organization of variables into 6 factors, with a total cumulative explained variance of 62.95%. It is also observed that the Cronbach's Alpha results are satisfactory (> 0.7) for these formed factors. The factor loading of the variables was also considered satisfactory, as all presented values higher than 0.5, except for the variable "Preparation of the Final Course Project (TCC)" (loading = 0.467), which was considered important for the composition of the respective factor and therefore was not removed from the analyses.

The second EFA was conducted with items 45 to 65, corresponding to questions about learning and acquired skills. The results of the KMO tests (value = 0.957) and Bartlett's sphericity test (Chi-square value = 21062.492; Sig = 0.00) were also satisfactory, and for this set of variables, all communalities presented values higher than 0.5. Table 4 shows the results found.

**Table 4.** EFA related to variables on learning and acquired skills..

| Factors and observed variables | Average | Loads Factorial |
|---|---|---|
| **Fator 07 – Learning - Knowledge Outputs - Cronbach's Alpha (0,924) – Explained variance (21,22%)** | | |
| Acquire valuable knowledge for my profession. | 4,035 | ,810 |
| Acquire continuous training skills useful for my profession. | 4,025 | ,776 |
| Acquire useful communication skills for my profession. | 3,947 | ,758 |
| Learning how to make critical judgments for my profession. | 4,081 | ,751 |
| Learn useful theoretical content for my profession. | 4,224 | ,707 |
| Learn to work collaboratively. | 4,032 | ,671 |
| **Fator 08 – Acquired Skills -Social Outputs - Cronbach's Alpha (0,912) – Explained variance (20,23%)** | | |
| Understand others better. | 3,902 | ,767 |
| Get along with people from different cultural and ethnic backgrounds. | 4,065 | ,765 |
| Work collaboratively with others. | 4,116 | ,748 |

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| | | |
|---|---|---|
| Communicate effectively with others. | 3,859 | ,721 |
| Develop leadership skills. | 3,602 | ,620 |
| Maintain personal and professional ethics | 4,348 | ,472 |
| **Fator 09 – Acquired Skills - Cognitive Outputs - Cronbach's Alpha (0,906) – Explained variance (17,13%)** | | |
| Thinking analytically and critically. | 4,149 | ,802 |
| To think reflectively and creatively. | 3,998 | ,749 |
| See things from a global perspective. | 4,057 | ,734 |
| Develop advanced knowledge. | 4,022 | ,656 |
| Dealing with unfamiliar problems. | 3,377 | ,476 |
| **Fator 10 – Acquired Skills - Self-growth Outputs - Cronbach's Alpha (0,875) – Explained variance (14,53%)** | | |
| Learning a new skill or knowledge on your own. | 3,980 | ,828 |
| Manage time more effectively. | 3,629 | ,746 |
| The ability to critically self-reflect. | 4,028 | ,626 |
| Develop continuing education | 3,997 | ,596 |

**Source:** Research data.

The results in Table 4 show that all the factors formed are practically the same as those originally proposed in the studies from which they were taken. The only change that has occurred is that the variable "Maintaining personal and professional ethics" is now part of the "Social Exits" factor (originally, this variable belonged to the "Self-growth Exits" factor). The total cumulative explained variance of the factors is 73.31% and the factor loadings of all the variables are greater than 0.5, results which are considered adequate for this analysis. Finally, it should be noted that the Cronbach's Alpha results are also satisfactory for these factors, since they all showed values above 0.7.

## TESTS OF DIFFERENCES IN PERCEPTION BETWEEN GROUPS

In this subsection of the article, a series of mean difference tests (t-tests and ANOVA) were carried out with the factors obtained in the exploratory factor analysis (subsection 4.2) and variables from the sample's profile characteristics (subsec-

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tion 4.1). With these tests, we can check whether there is a difference between the means presented by the groups formed with regard to the factors analyzed.

Firstly, the t-test for independent samples was carried out with the groups formed based on the gender variable. The results of this test are shown in Table 5.

**Table 5.** t-test for gender variable.

| FACTOR | Male | | Female | | T test | |
|---|---|---|---|---|---|---|
| | Average | Standart Deviation | Average | Standart Deviation | Value | *Sig* |
| Teachers and teaching practices | 4,05 | ,836 | 4,30 | ,741 | **-5,371** | **0,000** |
| Market opportunities | 3,38 | 1,292 | 3,77 | 1,188 | **-5,151** | **0,000** |
| Infrastructure | 4,04 | ,768 | 4,23 | ,761 | **-4,176** | **0,000** |
| Secretariat support | 4,33 | ,836 | 4,38 | ,838 | -1,036 | 0,300 |
| Classroom activities | 4,01 | ,745 | 4,22 | ,673 | **-4,890** | 0,000 |
| Extracurricular activities | 4,16 | ,901 | 4,40 | ,797 | **-4,756** | **0,000** |
| Learning - Knowledge outputs | 3,95 | ,900 | 4,10 | ,833 | **-2,169** | **0,030** |
| Acquired Skills - Social outputs | 3,86 | ,908 | 4,04 | ,870 | -2,900 | 0,004 |
| Acquired Skills - Cognitive Outputs | 3,88 | ,927 | 3,95 | ,882 | -1,275 | 0,203 |
| Acquired skills - Self-growth outputs | 3,88 | ,939 | 3,92 | ,904 | -0,687 | 0,492 |

**Source:** Research data.

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The analysis of Table 5 allows us to verify that the average perception of men and women differs for most of the factors demonstrated. Another point to be highlighted is that the evaluation of men is worse for all the factors investigated, that is, the perception of value generation and outputs/acquired skills is not as good for them compared to the group of women. The more positive perception of the female group in relation to the generation of value and skills acquired in higher education is in line with the use and participation of women at this level of education and the gender and diversity policies promoted by governments for a long time. According to data from the Ministry of Education (MEC, 2007), there was a much greater jump in female participation in higher education and this was also reflected in master's and doctoral courses, as well as among the teaching staff and the job market. In view of the aforementioned publication, numbers and studies involving gender must question the perceived differences in skills, professional vocation and cultural alignment to improve curricular and university training. The results of this study help to understand and guide the teaching logic regarding the way men and women perceive academic activities and practices, collaborative work, critical judgments, learning critical content for the profession and communication skills, among others. aspects.

The t test was also performed to check possible differences in the evaluation of factors between the group of graduates and the group of enrolled students, who are still taking their respective courses. The results of these tests are presented in Table 6.

**Table 6.** t-test for Graduate/Enrolled Student.

| FACTOR | Student Graduate | | Enrolled student | | T-test | |
|---|---|---|---|---|---|---|
| | Average | Standart Deviation | Average | Standart Deviation | Value | *Sig* |
| Teachers and teaching practices | 4,18 | ,789 | 4,25 | ,789 | -1,501 | 0,131 |
| Market opportunities | 3,44 | 1,282 | 3,93 | 1,098 | **-6,370** | **0,000** |
| Infrastructure | 4,13 | ,730 | 4,22 | ,842 | -1,893 | 0,059 |
| Secretariat support | 4,33 | ,841 | 4,42 | ,825 | -1,623 | 0,105 |

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|---|---|---|---|---|---|---|
| Classroom activities | 4,10 | ,702 | 4,22 | ,718 | **-2,837** | **0,005** |
| Extracurricular activities | 4,28 | ,862 | 4,36 | ,815 | -1,473 | 0,141 |
| Learning - Knowledge outputs | 4,00 | ,850 | 4,17 | ,876 | **-3,189** | **0,001** |
| Acquired Skills - Social outputs | 3,97 | ,867 | 4,01 | ,931 | -0,785 | 0,433 |
| Acquired Skills - Cognitive Outputs | 3,88 | ,897 | 4,00 | ,904 | **-2,150** | **0,032** |
| Acquired skills - Self-growth outputs | 3,90 | ,907 | 3,92 | ,942 | -0,248 | 0,804 |

**Source:** Research data.

The results demonstrate that there were some significant differences between the two groups analyzed. Firstly, it can be seen that the group of enrolled students evaluates, on average, market opportunities better, that is, they perceive better the integration of the university with the job market, as well as job opportunities, trade fairs employment and organization of lectures with managers/employers of organizations. This result may come from greater interaction and opening of courses to the market in recent years, as well as due to the fact that relational and behavioral aspects are being more valued nowadays than technical learning.

The previous result is in line with the significant differences also presented between the two groups for cognitive skills and acquired learning, factors that also evaluate aspects such as thinking critically and creatively, dealing with unfamiliar problems, communication and leadership skills, among others. For these two factors, the average evaluation of the group of students was better than that of the group of graduates.

The results in Table 6 also show a better perception of value (and with a significant difference) among the group of students for the activities carried out in the classroom. This demonstrates that activities such as presenting seminars in class

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and with external guests, group work, case studies and participation in academic weeks are generating more value in the perception of students and shows a practical application in the conduct of teachers regarding their classroom activities.

It should be noted that the fact that there is a significant difference in the evaluation of means between the groups does not mean that the group with a lower average evaluates a certain factor poorly. As can be seen in the results, the group of graduates also positively evaluated these factors in which there was a difference in average, which indicates that for them these factors also generated value for their professional and personal development.

Another test carried out was to determine whether there was a difference in the mean between the groups for the color/race variable. However, the results for this test did not reveal any significant difference between these groups, which demonstrates that academic activities and the organization of courses, as well as learning and acquired skills, are perceived equally among the target audience researched at this university, without distinction of race or color.

Next, the ANOVA test was carried out to check possible significant differences in the means of responses to the factors regarding the groups formed by the respondents' income. Table 7 displays the results obtained for this test.

**Table 7.** Anova Test for Income Ranges.

| FACTOR | Average responses for groups - income ranges. | | | | | Test | |
| --- | --- | --- | --- | --- | --- | --- | --- |
| | No income | Up to 3 salaries | From 4 to 6 salaries | From 7 to 11 salaries | Above 11 salaries | Value | Sig |
| Teachers and teaching practices | 4,21 | 4,25 | 4,19 | 4,10 | 3,86 | 2,027 | 0,092 |
| Market opportunities | 3,77 | 3,60 | 3,53 | 3,48 | 3,51 | 1,455 | 0,214 |
| Infrastructure | 4,29* | 4,15 | 4,10 | 4,01* | 3,84* | 4,301 | **0,002** |
| Secretariat support | 4,36* | 4,41* | 4,32* | 4,11 | 3,93* | 3,580 | **0,007** |

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|---|---|---|---|---|---|---|---|
| Classroom activities | 4,12 | 4,17 | 4,15 | 4,08 | 3,82 | 1,805 | 0,129 |
| Extracurricular activities | 4,33 | 4,31 | 4,29 | 4,36 | 4,11 | 0,714 | 0,582 |
| Learning - Knowledge outputs | 4,08 | 4,04 | 4,12 | 3,95 | 4,00 | 0,825 | 0,509 |
| Acquired Skills - Social outputs | 3,91 | 4,00 | 4,07 | 3,97 | 3,67 | 2,263 | 0,063 |
| Acquired Skills - Cognitive Outputs | 3,90 | 3,95 | 3,96 | 3,85 | 3,64 | 1,516 | 0,195 |
| Acquired skills - Self-growth outputs | 3,81* | 3,90 | 4,05* | 3,92 | 3,71* | 2,889 | **0,023** |

**Source:** Research data.
**Note:** *demonstrates the groups in which there are significant differences

The results demonstrate that there are significant differences between income groups for three factors studied. The first factor is the infrastructure of the university and the courses. For this factor, it can be seen that the group of individuals without income has, on average, a better evaluation than individuals who receive more than 7 and 11 minimum wages, which means that the infrastructure generates more value for these groups of respondents no income. This can be understood by the fact that they often do not have access to the internet, laboratories, computers and medical services in the same way as people with higher income, and thus these infrastructure elements end up generating more value for this group of respondents who have no income.

A similar situation can also be perceived for the secretariat support factor, while the groups of respondents "No income", "Up to 3 minimum wages" and "From 4 to 6 minimum wages" present a higher (and significant) average perception in relation to to the group of respondents who receive "Above 11 salaries". This means that support from the course secretariat generated more value for these three lower-income groups during their "academic life" at the university. It is worth highlighting that the evaluation here is in relation to the "value generation" of the factors

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evaluated, that is, the fact that respondents with income "Above 11 salaries" have a lower average for support from the secretariat, does not mean that the course secretaries were not courteous or treated them poorly.

Finally, Table 9 demonstrates that there were significant differences in the evaluation of self-growth outputs. In this case, the group with an income of "4 to 6 minimum wages" evaluated this factor better both in relation to those who "have no income" and those who earn above "11 minimum wages". In other words, the group of respondents with an income of 4 to 6 minimum wages perceived and assimilated in a more positive way the learning about managing time more effectively, learning a new skill or knowledge alone and/or developing the ability to have self-reflection criticism.

Finally, the last mean difference test carried out was for the groups formed by the variable work/intern professionally. To this end, an Anova was carried out, the results of which are presented in Table 8.

**Tabela 8.** Teste Anova para atuação profissional.

| FACTOR | Average responses for the groups - works/interns professionally | | | Test | |
|---|---|---|---|---|---|
| | Yes, in the course area | Yes, but in another area | No work or internship | Value | *Sig* |
| Teachers and teaching practices | 4,21 | 4,13 | 4,25 | 1,222 | 0,295 |
| Market opportunities | 3,59 | 3,50 | 3,73 | 2,149 | 0,117 |
| Infrastructure | 4,16 | 4,05* | 4,22* | 3,210 | **0,041** |
| Secretariat support | 4,38 | 4,26 | 4,39 | 1,923 | 0,147 |
| Classroom activities | 4,17* | 4,03* | 4,13 | 2,896 | 0,046 |
| Extracurricular activities | 4,38* | 3,95* | 4,30* | 8,779 | **0,000** |
| Learning - Knowledge outputs | 4,11* | 3,91* | 4,04 | 4,483 | **0,011** |

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|---|---|---|---|---|---|
| Acquired Skills - Social outputs | 4,03 | 3,91 | 3,92 | 2,432 | 0,089 |
| Acquired Skills - Cognitive Outputs | 3,95 | 3,89 | 3,86 | 1,067 | 0,344 |
| Acquired skills - Self-growth outputs | 3,95* | 3,91* | 3,69* | 3,259 | **0,039** |

**Source:** Research data.
**Note:** *demonstrates the groups in which there are significant differences.

The first significant difference that can be verified is regarding the infrastructure factor, in which the group of respondents who "I don't work or do an internship" demonstrates a higher average than those who already work/intern, but in an area other than the course they undertake. . The explanation for this result is in line with what was previously described regarding the income analysis. In other words, those who do not yet work or intern end up needing more of the infrastructure of the courses and the university and, therefore, perceive the generation of value provided by this factor as better.

Another significant difference perceived is in relation to the classroom activities factor, for which the group that works/interns professionally in the same area of the course considers that these activities generate more value than the group that works/interns professionally, but in a different area of the course. your course. This result is understandable due to the potential interconnection between the activities carried out in the classroom and the activities carried out at work or internships of these individuals, which tends to generate more value for them. Along the same lines and potentially for the same reason, significant differences can be seen for the factor relating to extra-class activities. In this case, the group of respondents who already work/intern professionally, but in an area different from their course, evaluates this set of extra-class activities in a worse way than those who work or intern in the same area of the course and also in relation to those who still they do not act professionally.

The learning and knowledge outputs also demonstrated significant mean differences between the group that works/interns in the same area of the course and the group that works/interns professionally, but in a different area of their course.

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This result can also be understood by the alignment between the area of study and professional activity, as the potential for generating value from theoretical content, knowledge, learning, judgments and communication and training skills is greater when the person works or interns in the same area of study. course you take. This reinforces the need for teachers to increase relationships with teaching and practice in the field of study in question, whether through teaching cases, real examples of work situations and proximity to the job market.

The last significant mean difference observed was regarding the self-growth skills factor. In this case, the difference is between the group that does not work or intern and the groups that already do so (regardless of the area). That group evaluates self-growth skills more poorly, which is understandable, as the individual often more easily develops skills related to this factor (such as managing time more effectively, learning a new skill or knowledge alone, and critical self-reflection) if you are already carrying out a professional activity, be it employment or internship. This result also generates reflection for higher education professionals and their practices in the classroom. Acting as a teacher at an HEI requires much more than simply replicating theoretical content and replicating theory on slides. Encouraging students to manage their activities and routines, ethical and correct attitudes and promoting critical and constructive reasoning is also necessary for the "training" and learning of academics.

## CORRELATION ANALYSIS BETWEEN FACTORS

Finally, in addition to the mean difference tests carried out, Pearson correlation analysis was carried out between the factors to verify the existence or not of correlation and the degree of association between them. The results are shown in Table 9.

**Table 9.** Correlation between factors.

| FATOR | F1 | F2 | F3 | F4 | F5 | F6 | F7 | F8 | F9 | F10 |
|---|---|---|---|---|---|---|---|---|---|---|
| Teachers and teaching practices (F1) | 1 | ,591** | ,511** | ,467** | ,555** | ,370** | ,616** | ,508** | ,511** | ,493** |
| Market opportunities (F2) | | 1 | ,420** | ,330** | ,383** | ,405** | ,458** | ,330** | ,356** | ,315** |
| Infrastructure (F3) | | | 1 | ,381** | ,484** | ,444** | ,350** | ,294** | ,310** | ,287** |

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|---|---|---|---|---|---|---|---|
| Secretariat support (F4) | 1 | ,337** | ,308** | ,334** | ,314** | ,317** | ,290** |
| Classroom activities (F5) | | 1 | ,507** | ,480** | ,447** | ,465** | ,425** |
| Extracurricular activities (F6) | | | 1 | ,281** | ,222** | ,242** | ,217** |
| Knowledge outputs (F7) | | | | 1 | ,695** | ,702** | ,638** |
| Social outputs (F8) | | | | | 1 | ,749** | ,742** |
| Cognitive Outputs (F9) | | | | | | 1 | ,712** |
| Self-growth outputs (F10) | | | | | | | 1 |

**Source:** research data.
**Note:** **significant at 1%

One of the points to be highlighted is the correlations that exist to a moderate degree between the factors "Teachers and Teaching Practices" and "Classroom Activities" with all the outputs and skills evaluated in this work. This demonstrates that the actions, practices and attitudes taken by teachers in the classroom and their teaching practices have a positive and valuable impact on these assessed skills. This result corroborates the study by Da Silva et al. (2021), which describes that care in teaching, such as availability to answer questions, guidance, demonstration of interest in students' development and professional future, positively influences students' perception of value and, consequently, cognitive assessment. It was also observed that extra-class activities have a low-level correlation with the studied activities. It is understood, therefore, that extra-class activities are little associated with the student development of these highlighted skills.

## Work Conclusions

The role and activities carried out by universities are relevant whether for the local and regional development of a location, for the innovation of organizations and the

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social growth of individuals, or for the transformation of knowledge, thinking and action in a society. Several other factors could be enumerated to describe the importance of universities as institutions that transform economic, social and cultural issues in a nation. The fact, however, is that to develop and constantly improve their transformative role in society, universities need to generate value for their main stakeholders. One of these, without a doubt, is the student, given their centrality mainly in teaching activities in these institutions. Therefore, this article was developed with the objective of evaluating the perception of value generation in higher education in relation to aspects such as academic activities, infrastructure, organization of courses and skills acquired in higher education from the point of view of the end user. , in this case students and graduates.

The results of this article demonstrated that, for the factors obtained from the exploratory factor analysis, there were significant differences in perception between some groups of respondents. For example, t-tests demonstrated a significant difference between the groups of men and women, as a better perception of the latter group for the analyzed factors. Other differences were noticed between the groups of students still enrolled and those who graduated, the income range and whether or not the individual works in their area of study in the course they are taking. The analysis of these differences in perception facilitates the identification of specific continuous improvement actions, such as the valuation and improvement of practices carried out in the classroom and their alignment with market needs.

Furthermore, based on the Pearson correlation results, significant and positive correlations can be verified between all the factors studied. Among the intensity of these correlations, the correlations between "Teachers and Teaching Practices" and "Classroom Activities" with all learning and knowledge outputs evaluated stand out. Market opportunities also demonstrated a moderate correlation with knowledge output and deserve to be highlighted in this study. These results demonstrate the importance that still exists for activities and actions associated with the different practices promoted in the classroom, as well as the need for teachers to always monitor developments and innovations in their area of study and work.

The outline of these results promotes relevant theoretical contributions to the field of study. Firstly, this research meets the need to understand the generation of value from academic-administrative activities and services from the student's point

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of view, as highlighted by Zighan and El-Qasem (2020) and Petrusch and Vaccaro (2019). Second, it is demonstrated that among the purposes of higher education, such as preparing students for the job market, there is a need to promote their personal growth and enrichment, in parallel with social development and progress (Brooks et al., 2021). Furthermore, the results of this work instigate reflection and re-consideration regarding classroom practices and the results obtained through them, in other words, how much the moment in class and the teaching practice used add to the student's knowledge for their area of knowledge and applicability as a professional in the job market (da Silva et al., 2021; Abbas et al., 2024).

As a practical and managerial contribution of this study, it is highlighted that results and data such as those obtained in this work provide an overview of the generation of value from academic practices for the student's educational and training context. Managers, course coordinators and decision makers can reevaluate activities based on a set of elements present in the students' academic lives, the results obtained and the prospecting of labor market needs. For higher education teachers, the results of this study demonstrate the need for teaching based on different practices and methodologies that stimulate students in their different learning and knowledge "outputs"; that is not merely the replication of theory and the application of assessments that measure students' memorization capacity, and not the knowledge and learning acquired. Universities can apply the scale used to better understand the generation of perceived value from the point of view of students and graduates of their institution, and thus bring the services offered closer to the needs outlined by them.

The interpretation of these results must, however, consider some limitations of this work. The main one refers to the failure to obtain a stratified sample in all areas of teaching and knowledge. Future studies can consider this limitation and advance the understanding of value generation and the "two by two" comparison between respondents from specific areas of knowledge (e.g.: technology x health courses; natural and exact sciences x social and applied social sciences) . Another suggestion is the development and validation of a value generation scale specifically considering academic activities carried out in a higher education institution. Finally, it is suggested that studies be developed that combine the perception of value with the employability assessed by graduates.

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