education sciences

MDPI

Article

Soft Skills and Employability of Online Graduate Students

Alejandra Bedoya-Guerrero [1], Andrea Basantes-Andrade [2,*], Francisco Orlando Rosales [3], Miguel Naranjo-Toro [2] and Rocio León-Carlosama [1]

[1] Grupo de Investigación en Gestión Financiera Contable y Auditoría (GIFCA), Universidad Técnica del Norte, Ibarra 10105, Ecuador; abedoya@utn.edu.ec (A.B.-G.); forosales@utn.edu.ec (R.L.-C.)
[2] Network Science Research Group e-CIER, Universidad Técnica del Norte, Ibarra 10105, Ecuador; menaranjo@utn.edu.ec
[3] Facultad de Posgrado, Universidad Técnica del Norte, Ibarra 10105, Ecuador; rgleon@utn.edu.ec
* Correspondence: avbasantes@utn.edu.ec

Abstract: In the current context, with the growing influence of Artificial Intelligence, soft skills emerge as a crucial and distinctive factor for professionals. This research focuses on assessing the relationship between soft skills and their importance in the employability of online graduate students. A mixed methodological, non-experimental and explanatory level approach was used; a sample of 192 online graduate students from a university in northern Ecuador was analyzed. Data collection was carried out through an online survey, validated with a Cronbach's Alpha coefficient of 93.2%. The survey addressed socioeconomic data and the evaluation of soft skills through a 30-question questionnaire with a five-point Likert scale. According to the students' perception, the soft skills most in demand for employability are leadership and teamwork. After the reduction of dimensions using multiple correspondence analysis (MCA), respondents were classified into three clusters. Individuals in clusters one and three developed soft skills such as self-regulation, effective communication, leadership and innovation.

Keywords: soft skills; employability; online graduate students; online education; skills development; student development; innovative training; social development

Citation: Bedoya-Guerrero, A.; Basantes-Andrade, A.; Rosales, F.O.; Naranjo-Toro, M.; León-Carlosama, R. Soft Skills and Employability of Online Graduate Students. *Educ. Sci.* **2024**, *14*, 864. https://doi.org/10.3390/educsci14080864

Academic Editors: Haisheng Pan, Xinqiao Liu, Geng Wang and Wenjuan Gao

Received: 28 March 2024
Revised: 19 July 2024
Accepted: 25 July 2024
Published: 9 August 2024

1. Introduction

In the contemporary era, globalization has driven profound and rapid transformations spanning multiple spheres, including disruptive technological innovation, the socioeconomic and political sectors [1], and the educational arena [2]. In response to this dynamic scenario, a growing demand has been observed for professionals who, beyond possessing technical or hard skills, are proficient in interpersonal skills, underscoring the importance of the latter in the labor market [3].

The constant evolution towards a more holistic approach in the training of professionals highlights the importance of adapting not only to the demands of a digitally transformed economy and society [4], but also to the expectations of a constantly changing labor market [5]. In this context, higher education institutions face the challenge of renewing their teaching processes to respond effectively to these requirements [6]. It includes the need to provide specialized education, promote professional development, and foster the acquisition of up-to-date knowledge [4].

In response to the growing demand, the implementation of online master's degree programs emerges as an innovative solution [4]. Online programs offer the possibility of adaptive learning, provide accessibility through mobile devices and time flexibility, and allow adaptation to the challenges of the working world [7] and challenges of the 21st century [5,6].

Therefore, higher education institutions should aim to foster a participatory and dynamic learning environment that prepares students to successfully meet the challenges of the world of work [4]. This implies going beyond technical knowledge; it

is essential to foster the development of soft skills such as communication, teamwork, innovative, and analytical thinking [8–11]. Graduates are expected to exhibit skills in communication, collaboration, leadership, self-discipline, adaptability, teamwork, innovative, and analytical thinking [1,8,9,11]. The skills outlined span the interpersonal, social, and cross-cutting spectrum, are crucial for employability [12], and play a key role in promoting responsible citizenship [13].

Education, as highlighted by Kraja et al. [3], plays a crucial role in the development of social skills, preparing students for a continuous training process that responds to the demands of the labor market and the fulfillment of their tasks [14]. It guides students to adopt versatile and constructive behaviors that facilitate adaptation to change [15,16]. These behaviors are crucial for the development of skills and to expand networking. In contrast, the absence of soft skills often limits individuals in achieving their full potential [17].

Postgraduate education, especially master's degrees, has become crucially relevant in the employment landscape, characterized by increasing competition and the need for highly qualified professionals [3,18], and is capable of providing advanced technical and social skills [19]. However, the fast pace of modern life prevents many people from dedicating time to face-to-face study while working. That is why higher education institutions have developed online specialization programs, which allow professionals to access high-level instruction [20] and, "which makes access to education possible for people who otherwise would not be able to do so" [21] (p. 8). Fajaryati [1] points out that e-learning, also known as E-Learning, has emerged as an alternative widely adopted by professionals seeking to continue their studies at the graduate level.

Therefore, the study of soft skills becomes a fundamental research topic, reflecting its importance in the formation of capable and adaptive professionals for the labor market. In this sense, the objective of this research is to explore master's students' perceptions regarding the importance of soft skills for their employability and professional development. Additionally, it aims to identify groups of online graduate students based on the development of soft skills using cluster analysis and clustering techniques

It is worth mentioning that the institution of study manages an integrative model. This emphasizes flexibility, which allows combining technical knowledge with problem solving, and the projection to entrepreneurship, which brings the student closer to the labor reality, in addition to regulating the application of online education as one of the most important pillars for internationalization [22].

This research is expected to contribute to the understanding of labor market requirements and the role of higher education in fostering professionals equipped with a balanced set of hard and soft skills. It aims to provide results for educational policy makers, higher education administrators, and trainers for the development of educational strategies.

2. Theoretical Background

Since 1993, some authors, but mostly world order agencies, have studied emotion management skills as a fundamental prop to be eligible in a workplace, but, above all, to create stability. Initially, these were called life skills [23]. In Italy, they worked with a conceptual model on how to base and articulate the National System of professional training, which defines them as transversal skills [24]. With a more global action, the European Union (EU) created the Tunning Project and also, through its executive committees, called them generic competencies and key competencies for lifelong learning, also known as transferable skills [25–27]. In 2009, they were established as the skills of the 21st century [28], which is also supported by the Institute for the Future, whose acronym is IFTF, which has conducted several studies since 2011 and called them the skills for the future document, in which it projected their importance for 2020 [29]. The Organization for Economic Cooperation and Development (OECD), since 2012, has determined them as key competencies for the success of life and the proper functioning of society [30]. Manpower group calls them soft skills for talent, and this is the most-used name in current times [31].

Soft skills encompass emotional and social aspects, which enable professionals to perform effectively in the environment [14]. Raciti [32] points out that soft skills are defined as personal attributes, qualities, and habits that improve the capacity for social interaction, highlighting their influence on people's learning, thinking, and behavior [3,12,33]. They are innate or are learned by different experiences and means [33]. They are complemented by hard skills [34], and they provide the plasticity for hard skills to develop and remain current in a changing environment [35]. They are those skills that are not related to a specific task, as they refer to relationships with other people collaborating in the company [35]. They precede hard or technical skills [4]. They go beyond the technical requirements of the profession [36]. These skills facilitate the creation of solid links that promote process flow and contribute to increased productivity.

These skills facilitate strong connections that promote process flow and enhance productivity.

"Soft skills involve multiple stakeholders: providers such as teachers, employers, schoolmates, and colleagues can help develop them." [35] (p. 126). Incorporating soft skills into the curriculum is feasible through didactic methods like project work, simulations, case analysis, educational games, and complementary seminars and workshops [35]. Soft skills are categorized from various perspectives. Grisi [36] classifies them into personal, social, and methodological skills based on common characteristics, as detailed in Table 1.

Table 1. Interpersonal skills.

Personal	Social	Methodological
Learning skills	Communication	Creativity and innovation
Commitment	Customer orientation	Decision making
Professional ethics	Teamwork	Management skills
Tolerance to stress	Leadership	Adaptability to change
Self-awareness	Negotiation	Result orientation
Self-balance	Conflict management	Continuous improvement
Cultural adaptability	Networking	
Research and management skills		

Source: [36].

For Bernstein et al. [37], soft skills are equivalent to three domains of basic skills: autonomous capacity (active learning, autonomous learning, research skills, critical thinking), digital interactivity (digital skills, ingenuity), and ability to work in heterogeneous groups (communication, collaboration). According to Snape [38], higher education students should develop a variety of soft skills to succeed in their professional development. These skills include critical thinking, problem solving, collaboration, adaptability, entrepreneurship, and teamwork. Additionally, communication, information search, and analysis, as well as curiosity and imagination, are also essential. To these are added adaptability, teamwork, work organization, autonomy, results orientation, negotiation skills, and responsibility [39]. The United States Agency for International Development (USAID) [40], for its part, contemplated the development of soft skills in higher education institutions, such as self-management, self-awareness, relational skills, higher-order thinking skills, and communication skills.

Online education has been the subject of numerous studies evaluating its impact on the development of soft skills. Recent research indicates that online education provides a flexible and accessible environment conducive to developing key competencies such as self-regulation, effective communication, and leadership [6,8]. The temporal and spatial flexibility of online programs allows students to develop time management and self-motivation skills, essential for both academic and professional success [7]. García et al. [41] noted that b-learning university environments are effective in developing soft skills, such as comprehension, teamwork, and conscientiousness. These skills are strengthened through blended or remote assignments, where students rotate roles, collaborate, and self-regulate

under the supervision of the lecturer. In this modality, specific competences and evaluation criteria are established to assess the acquisition of these skills.

In addition, there are online platforms that include social skills, which have been shown to be useful in university contexts, facilitating the acquisition of essential social skills for academic and work success [42].

Moreover, online education can enhance communication and collaboration skills through interactive technologies and collaborative learning platforms [38]. Synchronous and asynchronous communication tools, such as discussion forums, videoconferences, and online group projects, facilitate interaction between students and teachers, promoting teamwork and conflict resolution skills [5].

However, some studies have highlighted challenges in online education related to developing certain soft skills. For instance, the lack of face-to-face interaction can limit the development of interpersonal skills and leadership capacity [32]. Additionally, self-efficacy and self-regulation can vary significantly among students, suggesting the need for additional support and specific pedagogical strategies to foster these competencies [6].

The literature also identifies obstacles, which include organizational, contextual and faculty, and student factors [43].

It follows that universities should focus on creating and enhancing soft skills in their students to ensure a successful transition between higher education and professional life [44].

The perception of employers regarding the importance of soft skills is reflected in the increasing inclusion of these competencies in training and professional development programs [45]. A comparative study between students and employers highlights that, while students may underestimate the importance of certain soft skills, employers consider them critical for employability and effective job performance [46]. Employers expect graduates to not only achieve good academic qualifications but also to be equipped with the soft skills necessary for the current workplace environment. Globalization and the growing integration of diverse sectors increase the demand for advanced soft skills in graduates [47].

Regarding technical skills, they are linked to discipline-specific knowledge and focus on the practical application of concepts or tools, such as mathematics, processes, and models, among other examples [2,48]. They enable workers to perform their functions from a mechanical point of view [12].

According to the Organisation for Economic Co-operation and Development (OECD), the development of soft skills in education plays a determining role in employability [30]. This approach is aligned with Sustainable Development Goal 4, which seeks to promote quality education as the premise for training more productive and competitive workers [49].

Along the same lines, the World Labor Organization (WLO) created a manual of activities to improve soft skills [50] based on studies conducted by international organizations such as the Inter-American Development Bank (IDB), World Economic Forum, OECD, Partnership for 21st Century Learning, and The Economist Intelligence Unit, which establishes the soft skills most in demand by organizations, including creativity and innovation, communication, teamwork or collaboration, and leadership focused on results. For the present study, self-regulation, a basic skill for taking online classes, has also been taken into account [30,42,51].

This research adds to the literature by exploring how master's degree students in online programs perceive the importance of soft skills for their employability and professional development. Using a cluster analysis approach, we identify groups of students based on their soft skills development, providing a detailed view of how these competencies are valued and developed in an online educational environment.

Research Questions

In today's dynamic labor market, the importance of soft skills such as leadership and teamwork has increasingly garnered attention, especially among master's students pursuing their studies online. Understanding how these skills influence employability

and professional growth is crucial for educators and students alike. This research aims to address two fundamental questions:

1. What are master's students' perceptions regarding the importance of soft skills, for their employability and professional development?
2. How do online graduate students cluster and differentiate based on the development of studied soft skills using cluster analysis?

3. Materials and Methods

This work was conducted in accordance with the Ethical Guidelines for Educational Research of the British Educational Research Association [52] and the code of ethics of the Northern Technical University [20]. Master's students who voluntarily chose to participate in this study gave written consent. The Research Council of the Northern Technical University (UTN-CI-2023-386-R) approved this study in order to guarantee the confidentiality and anonymity of the participants.

The research employed a quantitative, non-experimental design with an explanatory level. The target population consisted of 230 graduate students, most of whom had completed more than 50% of their study plan and belonged to eight different master's programs. From this population, a representative sample of 192 students was selected using a convenience sampling method from a university in northern Ecuador. Convenience sampling was used due to the ease and speed of accessing available participants at the time of the study.

The technique chosen for sampling was stratified random sampling. This technique was selected to ensure that different subgroups within the population, specifically students from the eight different master's degree programs, were adequately represented in the sample. Stratified random sampling helps in achieving a higher degree of representativeness by considering the proportion of students in each program. This approach minimizes sampling bias and ensures that the findings can be generalized to the entire population of master's students at the university. By using this technique, the study aimed to capture the diverse perspectives and experiences of students across various disciplines, thereby providing a comprehensive understanding of the development of soft skills among graduate students.

For data collection, an online survey was administered, and the instrument was validated using Cronbach's Alpha coefficient, achieving a reliability of 93.2%. The database included 192 observations and 54 variables, with 3 being quantitative and the rest categorical. The survey was structured into two main components: socioeconomic data and soft skills, which included self-regulation, communication, teamwork, focus on results, innovation, and leadership (Table 2). A set of 30 questions was prepared according to Table 2, using a 5-point Likert-type response format ranging from "always" (5) to "never" (1). Higher scores indicate greater mastery of soft skills, while lower scores reflect less skill development.

Table 2. Items to measure soft skills.

Self-Regulation
A1. I plan and organize my academic tasks.
A2. I feel confident setting goals and following a study plan.
A3. I stay motivated and meet deadlines.
A4. I am able to manage stress during assessment periods or assignments.
A5. I maintain a balance between my online academic life with my work and family.
A6. I am persistent in getting help from the instructor through the means of communication established by the online master's program.

Table 2. *Cont.*

Effective Communication
C1. I am comfortable interacting with my online professors and peers.
C2. I participate in online discussions and contribute to academic debates.
C3. When I use my communication skills I resolve a conflict and reach an agreement.
C4. I make sure that my messages are understood in the virtual environment.
C5. I adjust my tone of voice, pace, and gestures when communicating in the virtual environment.
Leadership
L1. I have served as a leader in some project or online study group
L2. I lead and motivate the team to achieve results.
L3. I feel comfortable leading my colleagues in the academic environment.
L4. I have the ability to resolve conflicts and maintain harmony in the team.
L5. I assume responsibility for the results and success of a project.
L6. I value the contributions made by my team members.
Teamwork
T1. I have worked in virtual teams during my online master's program.
T2. I make sure that all team members collaborate in the different academic activities.
T3. I am willing to compromise on my opinions when necessary for the good of the team.
T4. I am willing to compromise on my opinions when necessary for the good of the team.
T5. I adopt the teamwork approach as a means to achieve results.
Innovation
I1. I have participated in online academic projects that require creative solutions or novel approaches.
I2. I am willing to try new ways of learning.
I3. I investigate new self-learning strategies
I4. I am motivated by challenges and problems that require creative solutions.
I5. I am willing to try new ways of approaching problems, even if they are different from conventional ones.
Focus on Results
E1. I am committed to clear goals and objectives.
E2. I am very persistent and do not give up easily, even when faced with obstacles.
E3. My main focus is to achieve measurable and tangible results.
E4. I look for opportunities to learn and improve based on results.
E5. I take responsibility for results and seek solutions when things do not go according to plan.
Relation to Employability
RE1. Do you consider that your level of soft skills may influence your future employability?
RE2. Have you participated in internship programs related to your field of study during your online program?
RE3. Do you believe that your online training can provide advantages in your job search?
RE4. I can apply what I learn in my online master's program directly to my job, which benefits my career.
RE5. Which of the following soft skills do you think are important for employability? Select up to three

Source: [8,36,40].

For data analysis, multiple correspondence analysis (MCA) was used to examine categorical variables. MCA, which is based on the analysis of a multiple contingency table known as Burt's table, allows us to examine the relationships between more than two variables, unlike simple correspondence analysis (SC), which is limited to pairs of variables [53,54].

The technique decomposes the Burt matrix using eigenvalue decomposition to discover patterns of association between variables. These patterns are presented in a two-dimensional space and illustrated through a biplot graph, facilitating the visualization of the relationships between the different categories of data [55,56].

To group the data, cluster analysis was applied according to the similarity of their characteristics, without prior supervision. This exploratory method aims to identify natural structures and patterns, organizing the observations into clusters where each group is more homogeneous internally than with respect to others. Several measures of distance and association were used, such as Euclidean and Manhattan distance, in addition to Pearson's correlation to define similarities [56].

The analysis was applied in a multidisciplinary context, focusing on hierarchical techniques for detailed classification of the data. These methods build a hierarchy of clusters, where at each step of the process, observations or clusters are grouped based on their similarity, and this grouping is represented in a tree structure or dendrogram [53,54].

4. Results

4.1. Socioeconomic Analysis

Table 3 presents a breakdown of social, educational, and economic frequencies of the population sample. The descriptive statistical analysis indicates that in the distribution of the sample, the female sex predominates with 57.3%, compared to 42.7% male participation, showing a greater inclination towards female participation in the educational context considered. Regarding marital status, the data reveal that most of the respondents are single, followed by married.

Segmentation by educational modules shows a significant concentration in the seventh module, with 49.0% of the respondents, which could indicate an advanced stage of education in the sample. Regarding the academic level, most of the respondents, 84.9% of the participants, have a bachelor's degree. A minority are pursuing their second master's degree.

Table 3. Social, educational, and economic frequencies.

Variable	Description	Frequencies	% of Total	% of Cumulative
Sex	Male	82	42.7%	42.7%
	Female	110	57.3%	100.0%
Marital Status	Married	67	34.9%	34.9%
	Divorced	14	7.3%	42.2%
	Single	98	51.0%	93.2%
	Unmarried	13	6.8%	100.0%
Age	Average	35 years old		
Educational Level	Master's Degree	29	15.1%	15.1%
	Third Level	163	84.9%	100.0%
Master's Degree Program	Business Administration with mention in competitiveness and quality management	21	10.9%	10.9%
	Visual Arts	12	6.3%	17.2%
	Computer Science with mention in Computer Security	13	6.8%	24.0%
	Communication, mention in Digital Communication	11	5.7%	29.7%
	Local Development with specialization in social and solidarity economy projects	15	7.8%	37.5%
	Finance, with mention in Financial Management	27	14.1%	51.6%
	Occupational Health and Hygiene	59	30.7%	82.3%
	Educational Technology and Innovation	34	17.7%	100.0%

Table 3. *Cont.*

Variable	Description	Frequencies	% of Total	% of Cumulative
Module	Fifth	43	22.4%	22.4%
	Sixth	55	28.6%	51.0%
	Seventh	94	49.0%	100.0%
Type of employment	Private employee	80	41.7%	41.7%
	Public employee	92	47.9%	89.6%
	Unemployed	20	10.4%	100.0%
Workload	Part-time	9	5.2%	5.2%
	Full time	152	88.4%	93.6%
	Part-time (less than 4 h)	11	6.4%	100.0%
Monthly income	1351–1800	17	9.9%	9.9%
	1801–2250	0	4.7%	14.5%
	451–900	71	41.3%	55.8%
	901–1350	64	37.2%	93.0%
	More than 2251	3	1.7%	94.8%
	Less than 450	9	5.2%	100.0%
Work Experience	4 years or more	119	69.2%	69.2%
	Between 1 and 3 years	41	23.8%	93.0%
	Less than 1 year	11	6.4%	99.4%
	None	1	0.6%	100.0%
Job level	Operational	29	16.96%	16.96%
	Administrative	114	66.67%	83.63%
	Middle management	17	9.94%	93.57%
	Authority	9	5.26%	98.83%
	Members of Board	0	0.00%	98.83%
	Own business	2	1.17%	100.00%

The distribution by master's degree program shows a marked preference for the Occupational Hygiene and Health program (30.7%) and Educational Technology and Innovation (17.7%), which could suggest an inclination towards fields related to health and educational technology. These programs, along with Finance, with a mention in Financial Management (14.1%), represent the predominant areas of interest among the graduate students surveyed.

Regarding economic factors, the majority of the master's students are working in the public (47.9%) and private (41.7%) sectors. The predominant positions are in administrative (66.66%) and operational (16.96%) areas of the entire population, having a full-time load in their respective jobs (88.44%). The salary range oscillates between USD 451.00 and USD 1350, which may mean that developing the master's program can be used as a tool to access better remuneration and climb professional positions.

4.2. Perception Regarding Employability

Master's students' perceptions of the importance of soft skills for their employability are shown in Figure 1. The results suggest that students value first and foremost a focus on results, followed by leadership. At the same level, teamwork, effective communication, and innovation stand out. Finally, there is self-regulation. These findings highlight the importance of integrating the development of soft skills into master's programs in order to fully prepare students for today's labor market.

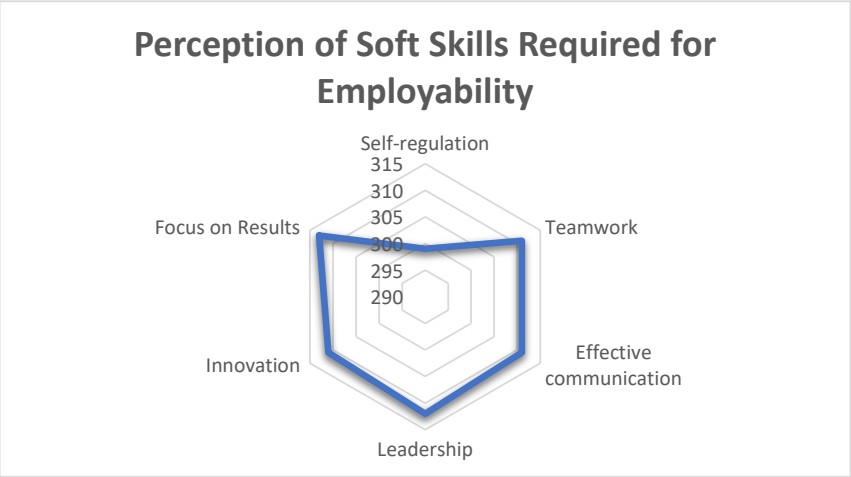

Figure 1. Perception of soft skills required for employability.

4.3. Clusters and Cluster Analysis

First, this technique allows for the identification of homogeneous groups within a data set, facilitating the understanding of how soft skills are distributed and related among online graduate students. By grouping students according to similar characteristics, patterns and trends that might otherwise go unnoticed can be identified.

In order to evaluate the relationship between soft skills in the academic development of the students, a cluster analysis was carried out.

Since 49 categorical variables are treated as a multivariate description, we proceeded to reduce dimensions with the technique known as multiple correspondence analysis (MCA). Once the MCA was adjusted, the optimal number of clusters to be retained was determined using Ward's method for grouping. See Figure 2.

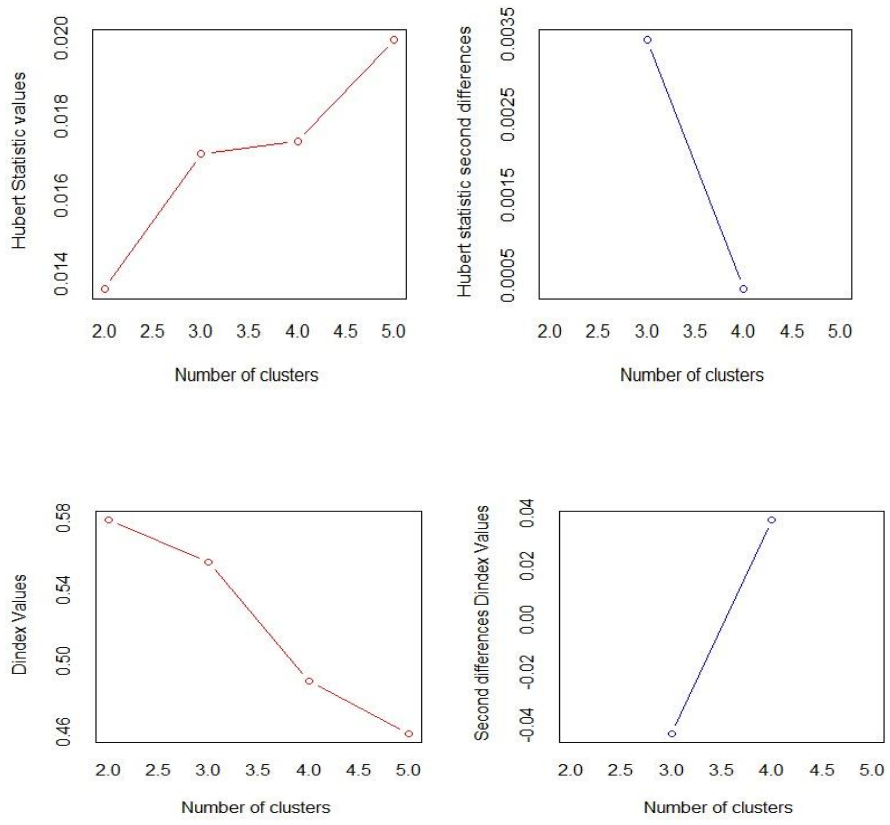

Figure 2. Number of clusters.

According to the majority rule, the optimal number of clusters is three; thus, the HCPC was set to group into three clusters.

The previous dendrogram (see Figure 3) shows that of the 192 individuals sampled, Group 1 in red includes 113, followed by Group 3 in blue, which includes 78, and finally the second group, which is a unitary grouping, as can be seen in Figure 4:

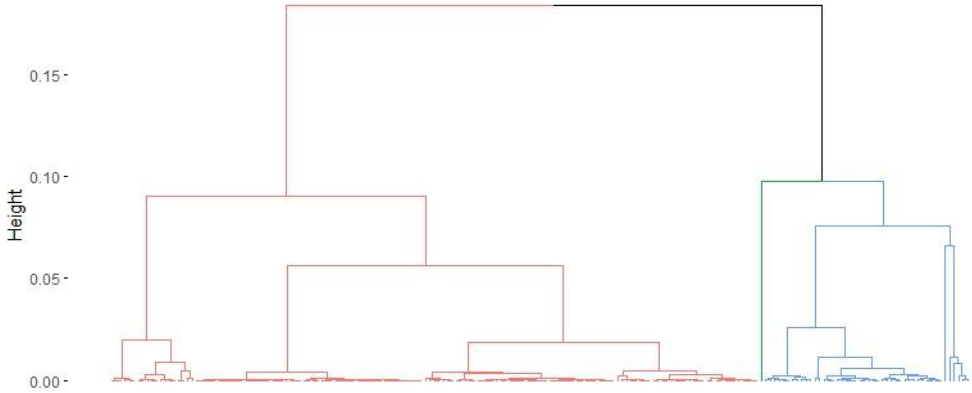

Figure 3. Number of clusters.

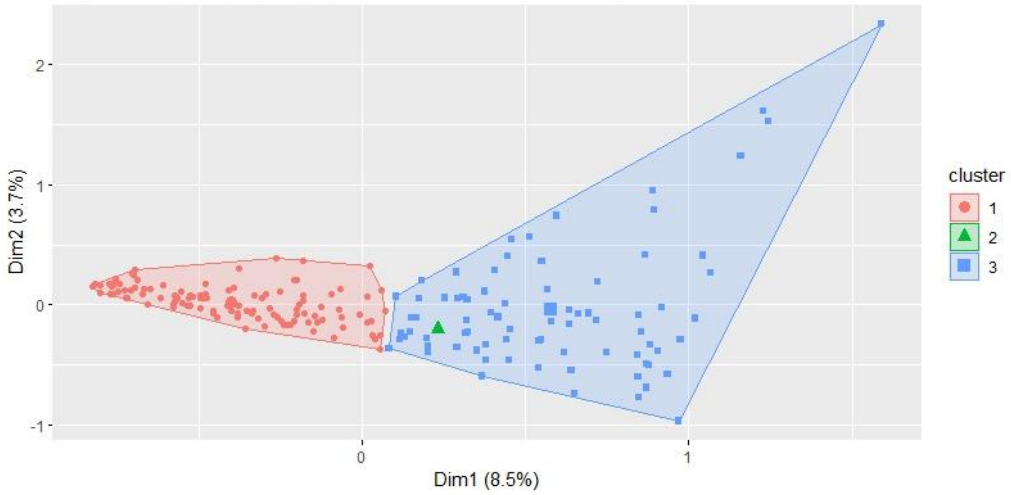

Figure 4. Biplot diagram.

The previous diagram is known as a biplot (Figure 4), which shows that only 12.2% of the total variance is captured, added between dimension one and dimension two. The three groups mentioned in Figure 3 can be distinguished. It is observed that Groups 1 and 3 are well defined, while Group 2—green triangle—overlaps with Group 3.

The aforementioned Figure 4 aims to visually illustrate the classification of the students into the different groups based on the cluster analysis. The narrative following the figure indeed focuses on describing the analytical technique used (multiple correspondence analysis and Ward's method) to provide a clear context for the methodological procedure and the validity of the clustering.

4.4. Characterization of the Clusters

With the chi-square test X_q^2, which evaluates the association between the cluster variable and the specified categorical variables, the null hypothesis states: H_o: there is no association between the variable and the cluster (see Table 4).

Table 4. Codification H_o.

Codification	*p* Value df	Df
I4	6.109994×10^{-56}	6
C1	8.090437×10^{-56}	8
RE3	6.799142×10^{-45}	8
I3	3.539869×10^{-29}	8
C2	1.093557×10^{-21}	8
I1	3.084466×10^{-19}	8
A2	4.486824×10^{-18}	4
I5	2.502999×10^{-17}	4
L4	3.617609×10^{-17}	6
I2	1.309980×10^{-16}	4
A4	1.908496×10^{-16}	6
L3	9.654197×10^{-16}	4
E4	1.217821×10^{-15}	4
E5	5.574846×10^{-15}	4
C3	8.638790×10^{-15}	6
T4	3.520501×10^{-14}	4
RE5A	3.549690×10^{-14}	4
E3	1.932687×10^{-13}	4
C4	5.497301×10^{-13}	4
A1	3.293529×10^{-12}	6
RE4	7.160699×10^{-12}	6
E2	2.934836×10^{-11}	4
E1	5.407635×10^{-11}	4
L5	7.397468×10^{-11}	4
T2	1.543442×10^{-10}	6
C5	1.619074×10^{-10}	8
L2	1.770758×10^{-10}	8
A5	1.807214×10^{-10}	4
T1	2.395859×10^{-10}	6
RE5I	8.476282×10^{-9}	4
A3	2.246374×10^{-8}	6
RE1	2.844637×10^{-7}	6
L1	1.043266×10^{-6}	8
RE5T	6.165680×10^{-5}	4
T3	2.429748×10^{-4}	6
RE5L	6.925417×10^{-4}	4
RE5C	1.058441×10^{-3}	4
RE5E	2.038651×10^{-3}	4

As can be seen, the *p*-values of the above variables are less than the significance value ($\alpha = 0.05$), which is 5%. this suggests that the categorical variable can be useful to differentiate between the clusters. In this case, 38 out of 47 variables chosen are significant, i.e., they are useful for clustering.

4.5. Cluster One: Self-Regulation, Effective Communication, Leadership, and Innovation

This group consists of students who show high levels of self-management, effective communication, leadership, and innovation. The description includes demographic details to highlight that these students, for the most part, belong to the Masters in Finance with a focus on Financial Management, and have an average age of between 39 and 47 years. This suggests that more experienced students, probably already involved in the financial sector, tend to value and develop these soft skills

4.6. Cluster Two: Demotivation, Outlier

Although this group only includes one student, it stood out due to its particular characteristics of demotivation and low interaction in online environments. This student does not

perceive advantages in the job search derived from his master's program and shows a low application of soft skills in his current work context. This case was described to illustrate the variability in soft skills development and its impact on perceived employability.

4.7. Cluster Three: Self-Regulation, Effective Communication, Leadership, and Innovation

The third group is composed of students with moderate levels of self-management, effective communication, leadership, and innovation. The brief description was due to the fact that, although they share similar characteristics with Group 1, their levels of soft skills are not as high. This group includes students from a variety of master's programs, with no clear predominance in terms of specific demographic characteristics. However, they are mostly students from education and technology-related programs, which may influence the assessment of certain soft skills.

4.8. Demographic Characteristics and Valuation of Soft Skills

In response to the request about which types of students value which types of soft skills, we note the following:

- Students in finance programs (mainly in Cluster One) tend to highly value self-management, effective communication, leadership, and innovation. This may be related to the competitive and dynamic nature of the financial sector, which requires strong leadership and management skills.
- Students in education and technology programs (predominantly in Group 3) moderately value these same skills, possibly due to the need to apply them in teaching and technology development contexts, where innovation and effective communication are essential but not as strongly required as in the financial sector.

The groups described were selected for their representativeness and distinctive characteristics in soft skills development. Group 1 and Group 3 were the most representative in terms of size and soft skills variability, while Group 2, although in the minority, provided a significant contrast by showing a profile of demotivation and low interaction. The selection was made to provide a comprehensive and diverse view of how different demographic and academic factors influence the valuation and development of soft skills

The cluster analysis showed that soft skills significantly influence students' academic and professional development. The identification of these clusters provides a more detailed understanding of how these competencies are distributed and related among students in online master's programs, highlighting the need to integrate soft skills development into educational curricula to improve graduates' preparation for the labor market.

5. Discussion

According to the results of this research, students perceive that the most important soft skills for employability are results orientation, followed by teamwork. However, there is greater evidence of development in self-regulation, effective communication, leadership, and innovation. This is not contradictory, as achieving effective results and working well in a team necessitate having these developed skills.

These findings are similar to those of other studies conducted by various authors and multilateral organizations, which emphasize that hard skills alone are insufficient for professional success in dynamic workplaces. Ummatqul Qizi [5] pointed out that self-awareness skills are paramount, while stress tolerance and adaptation to change are less significant. These results are consistent with the findings of this study.

Employers' perception of the importance of soft skills is reflected in the increasing inclusion of these competencies in training and professional development programs [45]. A comparative study between students and employers highlights that while students may underestimate the importance of certain soft skills, employers consider them critical for employability and effective job performance [46]. Employers expect graduates to not only achieve good academic qualifications but also to be equipped with the soft skills necessary

for the current workplace environment. Globalization and the growing integration of diverse sectors increase the demand for advanced soft skills in graduates [46].

The OECD, EU, Tuning Project, and World Economic Forum have given value to the development of soft skills as a mainstay for employability, and especially to achieve job stability and internal promotion, and, at the same time, improve the productivity of organizations. The skills highlighted for employability are leadership, teamwork, focus on results, innovation, and self-regulation, which are also called emotional intelligence [25,26,30,51]. In the paper entitled "The role of soft skills in business students towards graduate employability", the soft skills highlighted for employability are communication, leadership, and teamwork [57], which corroborates the information of the present research.

The multivariate description of the 192 respondents shows that 191 of them perceive that they have developed soft skills after completing the master's programs at the Universidad Técnica del Norte. The skills they perceive they have are effective communication, self-regulation, leadership, and innovation. Volkova [58] identified that skills such as communication, self-regulation, cognitive, strategic, and management skills are essential to stand out professionally, highlighting the potential of leadership, innovation (openness), proactivity, and self-control, among others. These findings are consistent with the contributions by Hagen and Bouchard [59] and Laguna-Sánchez [39], who also underline the relevance of these capabilities.

However, it is important to note that research regarding the assessment of soft skills and their impact on the employability of graduate students in online modalities is still limited [60]. One of the limitations of this study is that respondents may have provided answers that they consider socially desirable or that reflect their personal perceptions, rather than an objective assessment of their abilities. In addition, the survey was administered to a specific sample of online graduate students at a university in northern Ecuador, which limits the generalizability of the findings to other populations or educational contexts.

This gap in the literature suggests the need for future research that delves deeper into how these skills are developed and assessed in virtual education contexts and how they influence graduates' transition to the labor market. Such an approach would not only enrich the existing body of knowledge on the subject, but would also offer practical guidelines for the implementation of educational and professional training strategies adapted to the demands of the 21st century.

6. Conclusions

Based on this literature review, it can be concluded that soft skills play a fundamental role in the formation of competent and capable professionals for the labor market. Various applied studies in companies and reports from international organizations have highlighted the importance of these competencies in employability, emphasizing that their development in higher education is crucial for preparing students for the challenges of the current professional world. Thus, the implementation of educational programs that integrate the development of soft skills is essential to enhance the job placement of graduates.

Students' perceptions of the link between their soft skills and their employability opportunities correlate closely with previous research findings, underscoring the critical importance of these skills not only for individual success, but also for their contribution to the broader socioeconomic fabric. The results of this assessment emphasize the relevance of soft skills within the educational process, highlighting the need for their deliberate incorporation into higher education curricula to meet the changing demands of the work environment.

Employers' perception of the need to develop soft skills is clear and strong. These competencies complement technical skills and enhance individuals' ability to contribute effectively in their professional roles. Continuous collaboration between the educational sector and the labor market is necessary to align the skills taught with the real demands of work, thus promoting a more competent, ethical, and collaborative work environment.

The most notable traits of candidates who have developed their soft skills are evident in the emotional intelligence they demonstrate, as well as in their performance, maturity, and speed in facing challenges.

Author Contributions: Conceptualization, A.B.-G. and A.B.-A.; methodology, A.B.-G., M.N.-T., R.L.-C. and A.B.-A.; software, F.O.R. and R.L.-C.; validation, A.B.-G., F.O.R. and R.L.-C.; formal analysis, A.B.-A. and F.O.R.; investigation, A.B.-G., M.N.-T. and R.L.-C.; resources, A.B.-A.; data curation, A.B.-G., F.O.R. and M.N.-T.; writing—original draft preparation, A.B.-G. and R.L.-C.; writing—review and editing, A.B.-G., A.B.-A. and M.N.-T.; visualization, A.B.-G. and A.B.-A.; supervision, A.B.-G. and A.B.-A.; project administration, A.B.-G.; funding acquisition, M.N.-T. All authors have read and agreed to the published version of the manuscript.

Funding: This research received no external funding.

Institutional Review Board Statement: Not applicable.

Informed Consent Statement: Not applicable.

Data Availability Statement: The research instrument for this study is available at https://doi.org/10.17605/OSF.IO/3VMU4, accessed 26 March 2024.

Acknowledgments: The authors express their gratitude for the support received from Universidad Técnica del Norte.

Conflicts of Interest: The authors state that they have no conflicts of interest. The funders did not participate in designing the study, collecting, analyzing, or interpreting the data, writing the manuscript, or deciding to publish the results.

References

1. Fajaryati, N.; Budiyono, B.; Akhyar, M.; Wiranto, W. The Employability Skills Needed to Face the Demands of Work in the Future: Systematic Literature Reviews. *Open Eng.* **2020**, *10*, 595–603. [CrossRef]
2. Ricchiardi, P.; Emanuel, F. Soft Skill Assessment in Higher Education. *J. Educ. Cult. Psychol. Stud.* **2018**, *18*, 21–53. [CrossRef]
3. Kraja, Y.B.; Bejleri, E.; Saraçi, P. Soft Skills and Hard Skills Their Impact on Employment in Urban and Rural Areas. *J. Law Sustain. Dev.* **2023**, *11*, 1–14. [CrossRef]
4. Klepikova, A.G.; Kormakova, V.N.; Eroshenkova, E.I.; Musaelian, E.N. Development of Online Master's Degree Course in Education Digitalization Conditions: On BSU Experience. *KnE Soc. Sci.* **2021**, *2020*, 146–158. [CrossRef]
5. Ummatqul Qizi, K.N. Soft Skills Development in Higher Education. *Univ. J. Educ. Res.* **2020**, *8*, 1916–1925. [CrossRef]
6. Carter, M.A.; Lundberg, A.; Geerlings, L.R.C.; Bhati, A. Shifting Landscapes in Higher Education: A Case Study of Transferable Skills and a Networked Classroom in South-East Asia. *Asia Pacific J. Educ.* **2019**, *39*, 436–450. [CrossRef]
7. Ludwig, S.C. Higher Learning: Lessons from an Online Advocate. *Vopr. Obraz. Educ. Stud. Moscow* **2018**, *4*, 167–187. [CrossRef]
8. Barnard, L.; Paton, V.; Lan, W. Online Self-Regulatory Learning Behaviors as a Mediator in the Relationship between Online Course Perceptions with Achievement. *Int. Rev. Res. Open Distance Learn.* **2008**, *9*, 1–11. [CrossRef]
9. Bennett, R. Employers' Demands for Personal Transferable Skills in Graduates: A Content Analysis of 1000 Job Advertisements and an Associated Empirical Study. *J. Vocat. Educ. Train.* **2002**, *54*, 457–476. [CrossRef]
10. Velasco, M.S. More than Just Good Grades: Candidates' Perceptions about the Skills and Attributes Employers Seek in New Graduates. *J. Bus. Econ. Manag.* **2012**, *13*, 499–517. [CrossRef]
11. Kuregyan, A.L.; Khusainova, M.A. Soft Skills as Key Competences for Successful Employability of Graduate Students. *Vestn. Samara State Tech. Univ. Psychol. Pedagog. Sci.* **2022**, *19*, 113–120. [CrossRef]
12. Cinque, M.; Kippels, S. *Soft Skills in Education: The Role of the Curriculum, Teachers, and Assessments Regional Center for Educational Planning*, 1st ed.; UNESCO: Abu Dhabi, United Arab Emirates, 2023; pp. 1–37.
13. Tang, K.N. Beyond Employability: Embedding Soft Skills in Higher Education. *Turk. Online J. Educ. Technol.* **2019**, *18*, 1–9.
14. Capogna, S. Empowerment Organizzativo e Competenze Trasversali Tra Retorica e Virtù. *Svilupp. Organ.* **2019**, *1*, 82–91.
15. Chandhok, S. Roles of Soft Skills in Employability and Professional Advancement: An Analytical Study. *Int. Trans. J. Eng.* **2021**, *12*, 1–10. [CrossRef]
16. Labzina, P.G.; Menshenina, S.G. The Hermeneutic Approach as a Methodological Basis for the Development of Soft Skills in Technical University Students. *Vestn. Samara State Tech. Univ. Psychol. Pedag. Sci.* **2019**, *4*, 117–136. [CrossRef]
17. Cristobal, A.; Quispe, F. Impact of Postgraduate Studies on the Professional Skills of Graduates Impacto de Los Estudios de Profesionales de Los Titulados Habilidades Profissionais Dos Graduados. *Mendive Rev. Educ.* **2022**, *20*, 93–104.
18. Saavedra, M.G. Posgrados y Demandas Laborales: La Evaluación de Los Profesionales. *Rev. Iberoam. Educ.* **2006**, *38*, 1–15. [CrossRef]

19. Crispín, M.L.; Doria, M.; Rivera, A.; Garza, M.; Carrillo, S.; Guerrero, G.; Patiño, H. *Aprendizaje Autónomo: Orientaciones Para La Docencia*, 1st ed.; Clacso, Universidad Iberoaméricana: Mexico City, Mexico, 2011; pp. 1–247.
20. Guerra-Reyes, F.; Naranjo-Toro, M. *Modelo Educativo*, 2nd ed.; UTN: Ibarra, Ecuador, 2020; pp. 1–126.
21. Román, M. Virtual Education in Graduate Programs. In Proceedings of the Digital World Learning Conference CIEV, Guatemala, 20 November 2018.
22. World Health Organization. *Life Skills Education in Schools (WHO/MNH/PSF/93. A Rev. 1) WHO*; WHO: Geneva, Switzerland, 1993.
23. Di Francesco, G. Unità Capitalizzabili e Crediti Formativi. Metodologie e Strumenti Di Lavoro. *Milano Fr. Angeli* **1998**, *73*, 1–140.
24. Proyect Tuning. *Tuning America Latina*, 1st ed.; Beneiton, P., Ed.; Alfa Europeaid: Bilbao, Spain, 2007; ISBN 9788578110796.
25. UE Recomendación Del Parlamento Europeo y Del Consejo. Available online: https://bit.ly/3WsQ6Jl (accessed on 15 April 2024).
26. European Commissionr Employment, S.A. *Inclusion Transferability of Skills across Economic Sectors—Role and Importance for Employment at European Level*; Publications Office: Luxembourg, 2011.
27. European Commission. *Transferability of Skills across Economic Sectors—Role and Importance for Employment at European Level*, 1st ed.; European Union: Luxembourg, 2011; pp. 1–96.
28. Ananiadou, K.; Claro, M. *21st Century Skills and Competences for New Millennium Learners in OECD Countries*, 1st ed.; Education Working Papers; OECD: Paris, France, 2009; pp. 1–34.
29. Davies, A.; Fidler, D.; Gorbis, M. *Future Work Skills 2020*, 1st ed.; Research Institute, University of Phoenix: Phoenix, AZ, USA, 2011; pp. 1–14.
30. OCDE. *Estrategia de Competencias de La OCDE 2019*, 21st ed.; Santillana, F., Ed.; OCDE: Madrid, Spain, 2019; ISBN 9788468057552.
31. Manpower Group ¿Por Qué Son Necesarias Las Habilidades Blandas? Available online: https://workforce-resources.manpowergroup.com/skills/why-soft-skills-are-hot-skills (accessed on 11 March 2024).
32. Raciti, P. *La Medición de Las Competencias Transversales En Colombia: Una Propuesta Metodológica*, 9th ed.; Eurosocial, Ed.; Programa EurosociAL: Medellin, Colombia, 2015; ISBN 9788899592011.
33. Silva, S.; Ulloa-Cazarez, R. Soft Skills in Education: Montessori Education for Life and Online Higher Education. In *Soft Skills for Human Centered Management and Global Sustainability*; Lepeley, M.-T., Ed.; Taylor & Francis group: New York, NY, USA, 2021; ISBN 9780367556402.
34. Chaudhari, T. Soft Skills: Types, Characteristics and Importance. *J. Commer. Trade* **2021**, *16*, 9–12. [CrossRef]
35. Cimatti, B. Definition, Development, Assessment of Soft Skills and Their Role for the Quality of Organizations and Enterprises. *Int. J. Qual. Res.* **2016**, *10*, 97–130. [CrossRef]
36. Cesare Grisi Soft Skills: A Close Link between Business and Ethics | WiLL©-WORKING THE LIFE–LAB. Available online: https://www.willaboratory.com/soft-skills-a-close-link-between-business-and-ethics-2/ (accessed on 1 March 2024).
37. Bernstein, B.L.; Evans, B.; Fyffe, J.; Halai, N.; Hall, F.L.; Jensen, H.S.; Marsh, H.; Ortega, S. *The Continuing Evolution of the Research Doctorate*; Brill: Leiden, The Netherlands, 2014; pp. 5–30. ISBN 9789462095694.
38. Snape, P. Enduring Learning: Integrating C21st Soft Skills through Technology Education. *Des. Technol. Educ. Int. J.* **2017**, *22*, 1–13.
39. Laguna-Sánchez, P.; Abad, P.; de la Fuente-Cabrero, C.; Calero, R. A University Training Programme for Acquiring Entrepreneurial and Transversal Employability Skills, a Students' Assessment. *Sustainability* **2020**, *12*, 796. [CrossRef]
40. USAID. *Soft Skills Development to Advance Student-Centered Higher Education*, 1st ed.; From the American People, EEUU; USAID: Washington, DC, USA, 2022; pp. 1–21.
41. García, M.G.; López, C.B.; Molina, E.C.; Casas, E.E.; Morales, Y.A.R. Development and Evaluation of the Team Work Skill in University Contexts. Are Virtual Environments Effective? *Int. J. Educ. Technol. High. Educ.* **2016**, *13*, 5. [CrossRef]
42. Petrie, C.; García-Millán, C.; Mateo-Berganza, M. *Escuelas Del Siglo XXI En América Latina y El Caribe*, 1st ed.; BID, Banco Interamericano de Desarrollo: Washington, DC, USA, 2021; pp. 1–82.
43. Sá, M.J.; Serpa, S. Higher Education as a Promoter of Soft Skills in a Sustainable Society 5.0. *J. Curric. Teach.* **2022**, *11*, 1–12. [CrossRef]
44. Caggiano, V.; Schleutker, K.; Petrone, L.; González-Bernal, J. Towards Identifying the Soft Skills Needed in Curricula: Finnish and Italian Students' Self-Evaluations Indicate Differences between Groups. *Sustainability* **2020**, *12*, 4031. [CrossRef]
45. Richie, K.; Pragman, C.; Bowyer, S. Comparison of Perceived Needed Soft Skills of Undergraduate, Non-Traditional, Online Business Students to Employers' Desired Soft Skills of Employees. *J. High. Educ. Theory Pract.* **2022**, *22*, 174–189. [CrossRef]
46. Stewart, C.; Wall, A.; Marciniec, S. Mixed Signals: Do College Graduates Have the Soft Skills That Employers Want? *Compet. Forum* **2016**, *14*, 276–281.
47. Pazil, A.H.M.; Razak, R.C. Perspectives of Asian Employers on Graduates' Soft Skills: A Systematic Review. *Univ. J. Educ. Res.* **2019**, *7*, 2397–2405. [CrossRef]
48. del Pilar García-Chitiva, M.; Correa, J.C. Soft Skills Centrality in Graduate Studies Offerings. *Stud. High. Educ.* **2023**, *49*, 956–980. [CrossRef]
49. *Naciones Unidas La Agenda 2030 y Los Objetivos de Desarrollo Sostenible Una Oportunidad Para América Latina y El Caribe*, 6th ed; Alicia, B., Ed.; Naciones Unidas: Santiago, Chile, 2018; ISBN 978-92-1-058643-6.
50. OIT. *Manual de Orientiaciones Metodológicas Para Desarrollo de Competencias de Empleabilidad*, 1st ed.; OIT, Organización Internacional del Trabajo: Montevideo, Uruguay, 2020; pp. 1–225.

51. Gray, A. The 10 Skills You Need to Thrive in the Fourth Industrial Revolution | World Economic Forum. Available online: https://www.weforum.org/agenda/2016/01/the-10-skills-you-need-to-thrive-in-the-fourth-industrial-revolution/ (accessed on 29 February 2024).
52. Bera Guía Ética Para La Investigación Educativa, Cuarta Edición (2018) | BERA. Available online: https://www.bera.ac.uk/publication/guia-etica-para-la-investigacion-educativa-cuarta-edicion-2018 (accessed on 26 March 2024).
53. Everitt, B.S.; Dunn, G. Multivariate Data and Multivariate Statistics. *Appl. Multivar. Data Anal.* **2001**, *1*, 1–8. [CrossRef]
54. Rencher, A.C.; William, F.C. *Methods of Multivariate Analysis*, 3rd ed.; UTAH, Department of Statistics: Salt Lake City, UT, USA, 2012; pp. 1–758.
55. Johnson, R.A.; Wichern, D.W. *Applied Multivariate Statistical Analysis*, 6th ed.; Pearson: Prentice Hall, NJ, USA, 2007; pp. 1–395.
56. Pérez, C. *Técnicas de Análisis Multivariante de Datos*, 1st ed.; Perason: Madrid, Spain, 2004; pp. 1–672.
57. Abdullah, A.R.; Muhammad, M.Z.; Md Nasir, N.A. The Role of Soft Skills within Business Students towards Graduate Employability. *J. Entrep. Bus.* **2019**, *7*, 83–94. [CrossRef]
58. Volkova, N.; Zinukova, N.; Vlasenko, K.; Korobeinikova, T. Development and Mastery of Soft Skills among Graduate Students. *Ukr. J. Educ. Stud. Inf. Technol.* **2022**, *10*, 1–14. [CrossRef]
59. Hagen, M.; Bouchard, D. Developing and Improving Student Non-Technical Skills in IT Education: A Literature Review and Model. *Informatics* **2016**, *3*, 7. [CrossRef]
60. Succi, C.; Canovi, M. Soft Skills to Enhance Graduate Employability: Comparing Students and Employers' Perceptions. *Stud. High. Educ.* **2020**, *45*, 1834–1847. [CrossRef]