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Generation Z: Fitting Project Management Soft Skills Competencies—A Mixed-Method Approach

José Magano [1,2], **Cláudia Silva [3]**, **Cláudia Figueiredo [3]**, **Andreia Vitória [3]**, **Teresa Nogueira [4],*** and **Maria Alzira Pimenta Dinis [5]**

1 Research Center in Business and Economics (CICEE), Universidade Autónoma de Lisboa, Rua Sta. Marta 47, 5.º Andar, 1150-293 Lisboa, Portugal; jmagano@iscet.pt

2 ISCET - High Institute of Business Sciences and Tourism, Rua de Cedofeita, 285, 4050-180 Porto, Portugal

3 Research Unit on Governance, Competitiveness and Public Policies (GOVCOPP), University of Aveiro, Campus Universitário de Santiago, 3810-193 Aveiro, Portugal; claudia.margarida@ua.pt (C.S.); claudiafigueiredo@ua.pt (C.F.); atvitoria@ua.pt (A.V.)

4 CIETI – Center for Innovation in Engineering and Industrial Technology, Polytechnic Institute of Porto, R. Dr. António Bernardino de Almeida 431, 4200-072 Porto, Portugal

5 UFP Energy, Environment and Health Research Unit (FP-ENAS), University Fernando Pessoa (UFP), Praça 9 de Abril 349, 4249-004 Porto, Portugal; madinis@ufp.edu.pt

* Correspondence: tan@isep.ipp.pt

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Abstract: Generation Z is arriving in the workforce. Do these youngsters have the skills and traits to fit project teams? This study reviews the literature concerning project management competencies and the traits that are associated with Generation Z. To deepen the understanding of its members (Gen Zers) traits, we explore the self-awareness of their profile, strengths and weaknesses with an empirical study. We used a mixed-method approach, implementing a survey on a sample of 211 college students about to enter the labor market. Comparing our survey results with the literature, we identified differences that reveal some of the lack of awareness of Gen Zers about their traits. Further analysis also revealed a significant correlation between the most highlighted Generation Z traits and essential project management soft skills, pointing to Generation Z as a promissory asset in the project management field. However, other essential project management (PM) soft skills were not grounded in personality traits. Our findings, namely the lack of awareness and association results, suggest the need for further research on educational approaches and re-thinking and targeting education and training policies that could strengthen Generation Z soft skills. Our results also suggest reflections about whether the Gen Zers traits fit the PM competencies sought by organizations.

Keywords: competencies; project management; education; soft skills; Generation Z

1. Introduction

Currently, organizations face a globalized, digitalized, and multicultural world, intensely competitive and evolving at a fast pace. Under such a context, we witness a project-oriented trend and the growing importance of projects and project management (PM). Project management is crucial for competitive advantage and success [1]. However, as organizations define more of their activities as projects, projects continue to fail [2]. The maturation of the project management discipline, together with limited project budgets, shorter project deadlines, and the increasing risk of costly project failure, has led to companies and academia investigating and identifying the sources of project success [3].

Among other factors, project success seems correlated with the project management competencies, which has been the object of a substantial volume of research found in the literature [4–7]. Project

management is an evolving discipline where its participants are more interested in the competencies of its project managers and teams [8]. Consequently, there has been a demand for standard individual competencies, such as the "Project management competency development framework" [9] and the "APM competence framework" [10]. Such standards, coupled with published research, suggest extensive lists of competencies [2], forming a fragmented body of knowledge [11] as concerns this topic. Not only have many competencies been described, but they are also not equally important in different industries and project types [3,5]. Project managers and project teams cannot hold such a wide range of competences [12], which makes it reasonable to try and understand which the most important in each circumstance are and to identify correlations among them.

Holding the traditional project management technical competences is not sufficient to achieve success on projects anymore. Organizations are showing a growing interest in the so-called transferable skills, which have deserved the focus of project management research in recent years, namely skills in leadership, strategic or business management [13,14], problem-solving [15], communication [16], negotiation [17] and teamwork [18]. That has been a driver not only to rethinking project management [19], but also the training of project practitioners [20], which is still primarily focused on traditional technical skills and techniques. Already a while ago, Jaafari [21] noticed that the literature had identified a gap between education and the real world of project management, with education perceived unable to portray the challenges of projects relevantly [4].

To narrow this gap between theory and practice, an update on project management education and training becomes critical, not only in higher education institutions (HEIs) and in companies. To be effective, however, not only should we identify the knowledge and skills to include in that update, but also the characteristics of the current students, which belong to Generation Z, who will soon arrive at the labor market. These young people are seen as creative, efficient users of technology, multitaskers, and individualistic. They prefer challenges, customized work, and can create global perspectives [22]. Despite some are already entering the workforce, in the years to come, they will be the new workforce to integrate multidisciplinary and multigenerational project teams. Education should provide key competences, especially as modern project management requires a wide range of competences and approaches [23]. Therefore, it is prudent to consider adopting educational and training resources, strategies, and methods to upgrade project management education. The intention would be to fill the referred gap and fit the Generation Z profile, namely mitigate its weaknesses and boost its strengths to be effective project team members.

This work intends to explore Generation Z students' traits. It considers the extent to which these individuals are aware of their characteristics and their strengths and weaknesses related to project management activities. Furthermore, since certain personality traits can foster the development of specific competencies [24,25], many of which are relevant for project management, it aims at exploring the association between their profile and project management soft skills. Specifically, we will address the following research topics:

- What is the level of awareness of Generation Z about their traits?
- What are the strengths and weaknesses perceived by Generation Z as potential members of a project team?
- What is the association between the Generation Z personality traits and project management soft skills competencies?

The answers to these questions should allow us to discuss any gaps and to point possible considerations for project management education and training. We also intend to enhance the practical implications of our results, presenting some reflections about whether Gen Zers traits fit the competencies sought by organizations.

In the following sections, we present a literature review on project management competencies and Generation Z characteristics. Then, we describe an empirical study based on a convenient sample of 211 Generation Z students, aimed at providing answers to the above-listed research questions.

2. Literature Review

2.1. Project Management Competencies

Hamel and Prahalad [26] defined competence as a bundle of skills and technologies that enables companies to provide benefits for customers, rather than a single skill or technology. Competence has also been understood as the ability of an individual, a team, or a company to mobilize and combine resources (i.e., knowledge, skills, and attitudes) in order to implement an activity in a situation [2]. Westera [27] suggested two perspectives on competence: the theoretical, meaning that competence is as a cognitive structure that facilitates a specified behavior and the operational, which refers to skills and behaviors that represent the ability to produce successful behaviors in non-standardized situations (including knowledge, skills, attitudes, metacognition and strategic thinking). Le Deist and Winterton [28] described three dimensions of competence: cognitive, functional, and social-knowledge and understanding are captured by cognitive competence, skills are captured by functional competence (manual or physical), and 'competencies' (behavioral and attitudinal) are captured by social competence. Crawford [4] defined competence as a combination of knowledge, skills, experience, demonstrable performance, and personal competence, including attitudes, motivation, behaviors, and personality characteristics. Several of the studies conducted on the competencies of project managers target specific areas, suggesting that competencies differ in importance according to the context and also to activities and industries [5]. In the literature, other insights and definitions of competence can be found (e.g., [29–31]), but the most generally accepted definition is the combination of knowledge, skill, and attitude, widely known as 'KSA' [1,3,4,32].

Substantial research has addressed the theme of project management competencies, driven by the belief that project success is strongly correlated with the competencies of project managers and teams. Project management competencies have been discussed in terms of topics such as leadership, emotional intelligence, general and project management competencies, among a few others.

Lampel [15] proposed four distinct types of core competencies: entrepreneurial competencies, technical competencies, evaluative competencies, and relational competencies. Chipulu et al. [33] broke down project management competencies into six dimensions: industry-specific and generic skills, project management knowledge and expertise, (senior) managerial skills, (positive) personal traits, project management methodology experience, and professional qualifications and risk management over a project life cycle. The features of the project and its complexity require specific competencies from the project manager, while aspects of the project, such as technology, direct managerial support, and the structure of the project, influence the right project manager competencies for successful project completion [34].

While project and organizational variables are essential, individual factors are still critical for project success. The literature of project management competence distinguishes three main areas: the context, the project management tools, and techniques and the human aspect [13]. The latter reflects a growing concern regarding the human factor contributions to project management [11,16,35,36]. Competencies can embody an array of characteristics, behaviors, and traits necessary for effective job performance [5]. Effective project management is about demonstrating appropriate behaviors as it is about applying project management skills [37]. Müller and Turner [14] identified correlations between project manager leadership competencies (emotional, managerial, and intellectual) with project success. Dvir, Sadeh, and Malach-Pines [38] tested the hypothesis that a project with a particular profile needed a manager with fitting personality traits to achieve optimal performance and success. They examined the project manager's personality traits relevant to project dimensions (novelty, complexity, technology, and pace) and project success [34]. The project manager's personal competencies include elements of the manager's attitude and personality characteristics, often described as 'soft skills' [34]. The development and improvement of these skills are seen as important parts of enhancing professional development and adaptability [39]. The primary soft competencies for project managers referred to in the literature include personal attributes, communication, leadership, negotiations, professionalism, social skills,

and project management competencies [8]. Thal and Bedingfield [40], found conscientiousness and openness (from the Five-Factor Personality model) to be positively correlated with the project manager's success. Clarke [41] found that emotional intelligence (EI) ability measures and empathy explained project manager competencies of teamwork, attentiveness, and conflict management. One area of personal competencies that has received the most attention is leadership [6,8,18,42]. There seems to be no clear evidence of the impact that project managers leadership skills have on project success. Geoghegan and Dulewicz [6] examined ten leadership dimensions (five management related, four social and emotional competencies, and one intellectual competence). They stated their correlation with project success, whereas Turner and Müller [43], in contrast, found surprisingly little or no such evidence.

While several researchers have focused on different types of competencies and their nature [4,5,44,45], others [46,47] have developed project management's competency framework tools (PMCF). Those frameworks aimed at assisting in establishing project management development plans, tailoring project management training and educational programs, and providing guidelines for project managers [32]. The "Guide to the project management body of knowledge" (PMBOK® Guide) [48], structures project management competencies into ten basic project management knowledge areas: integration, scope, time, cost, quality, human resources, communications, risk, procurement, and stakeholders. The PMI's Project Manager Competency Development (PMCD) Framework is aligned with PMI standards. It intends to provide a framework for the definition, assessment, and development of project manager competence based on the premise that competencies have a direct effect on performance. The PMCD components are knowledge, performance, and personal. Another prime project management professional organization, the International Project Management Association (IPMA), developed the competence baseline, which classifies 46 competency elements into three groups: contextual, behavioral and technical. Each element is composed of a knowledge and experience component that can be evaluated to yield a competency assessment. IPMA provides its standards in versions for individuals, excellent projects, and organizations. On an international level, the APMG's "Project management for development professionals" provides a specific framework for the achievement of international development projects, namely in NGOs [44]. Such frameworks set standards for certifying project managers, suggesting the competencies that most probably impact the project manager's performance. While the competencies identified by PMCFs have a broad application, the potential differences in the importance of particular competencies, given specific organizational contexts or project types or characteristics and the organizational maturity, still need to be considered when applied. The current project management competence frameworks have been influenced by professional institutions that train, assess and certify member practitioners [33], setting standards that impact academic and other thinking and accredited academic programs [49]. However, it seems that these PMCFs are more focused on functional and cognitive competencies than social ones.

Other authors published works that tried to provide a comprehensive listing of known competencies. A literature review by Takey and Carvalho [29] identified 58 project management competencies divided into four clusters competencies: processes, personal, technical, and context and business. In particular, the personal cluster is populated with 28 characteristics. Another review by Rezende and Blackwell [11] gathered 81 competencies in the literature, divided across 11 dimensions: influencing, communication, emotional, contextual, management, cognitive skills, professionalism, knowledge and experience, project management knowledge, and personal skills and attributes. Among the identified competencies, 48 were correlated with project success, most of them connected with leadership, emotional competencies, team working, and project management knowledge. Certain works also distinguish which project manager competencies are the most relevant in specific contexts and project types [3,5,44]. A project manager or a project team member will hardly have all the competencies found in the project management literature. Nevertheless, likely only a set of core competencies is crucial to project success [5].

To downsize the range of project management competencies to the most important ones, Alvarenga et al. [1] conducted a study that involved 257 project managers with over ten years of experience in project management and identified 28 core competencies. This study revealed that respondents pointed to communication, commitment, and leadership as the most important skills. Some of the traditional hard skills (technical skills) appeared in the middle of the table (time management, management, troubleshooting, delegation, organization). In contrast, the least important competencies were experience, authority, training, use of technology, and technical expertise. These findings seem consistent with other works found in the literature [16,50–52]. Table 1 identifies the most important project management competencies, merging the contributions of Takey and Carvalho [29] and Alvarenga et al. [1].

Table 1. Most important project management competencies [1].

Project Management Competencies			
Assertiveness	Delegation	Negotiation	Self-control/work under Pressure
Attention to detail	Development of others	Opening	Teamwork
Authority	Emotional intelligence	Negotiation	Time management
Cognition	Emotional resilience	Organization-solving	Training
Commitment	Experience	Perseverance	Use of technology
Communication	Flexibility	Political and cultural awareness	Uncertainty
Conflict management	Initiative	Problem-solving	Vision
Conceptual thinking	Interpersonal relationships	Relaxation	
Creativity	Leadership	Self-awareness	
Customer relationship	Management	Search for information	

[1] Adapted from Alvarenga et al. [1], Takey & Carvalho [29].

There seems to be a shifting of concern from hard skills, which are discipline-specific and technically oriented, to soft skills, which are interpersonally related [53]. Because project management is an evolving discipline, traditional project manager skills are entry-level skills and do not often lead to successful project outcomes as do soft (interpersonal) skills [14]. It is increasingly important for project teams to develop soft skills, given the complexity and degree of novelty and flexibility associated with current projects [34,44,54,55]. It is also important to realize that projects are currently being developed in a context of change. The people involved have also been changing as a result of the educational context itself and the generation they belong to. Currently, project teams are multigenerational, as they integrate people of different generations, with different levels of skills, knowledge, attitudes, and expectations [56].

The following section aims at helping understand the generational concept, emphasizing the generation currently found in HEIs: Generation Z.

2.2. Generation Z

The era in which each we were born and grew matters. It has an impact on life perspective and behavior. This era represents a socioeconomic development time horizon designated by generation. Their elements share actions, beliefs, politics, values, thoughts and experiences [57]. Campbell defined a generation as "groups of individuals born during the same time who experience a similar cultural context and, in turn, create the culture. The time in which we are born, and the events that we experience shape us and our culture, and they appear to make a strong bond between members of a generation" [58].

Different generations are found in the literature, namely Baby Boomers (1946–1964), Generation X (1965–1979), Generation Y, also referred to as Millennials or 'Me Generation' (1980–1994) and Generation Z (1995–2012) [59]. There is a lack of consensus about the Generation Z time span, but different definitions usually agree it should be the people born in the middle of to the late 1990s and who grew up in the 2000s. More important than the specific dates is to understand the context which explains each generation's characteristics.

Generational differences and their consequences are rarely considered or discussed in projects and project teams [60]. Today's reality is four generations working side-by-side for the first time in the history of the modern workforce. We should pay attention to their work-related differences. As Baby Boomers are retiring, the workforce is essentially made of members of generations X and Y, with Generation Y being assigned greater responsibilities on project teams. Generation Z is now arriving in the labor market. Organizations will benefit from recognizing the new perspectives, technologies, competencies, and styles that Generation Z brings into projects and use them to develop effective project management strategies. Misunderstanding generational differences can create intergenerational conflicts in the workplace [61].

Generation Z members are also called 'children of internet', 'digital generation', 'digital natives', 'Media Generation', 'post-Millennials', 'iGen', 'Gen Zers' or even 'com Generation' [59,62]. The 'digital natives' term reflects the fact that Generation Z was born into the technology instead of being accustomed to it (unlike Millennials, who were not born into the technology but were accustomed to using it later, though they utilized it actively). Generation Z was mostly raised during a global recession and witnessed the slow recovery that followed, whereas Millennials were already in the workforce, fighting against precariousness [63]. Generation Z has never experienced a booming economy, consequently becoming more conservative regarding money [64].

The advancement of technology is the most distinctive trait of this generation. Indeed, Gen Zers tend to be seen as technology addicts. They have a command of Internet technology, play Internet-based games, socialize in the Internet environment, like to be online 7/24, get information from the Internet, and share something continuously. Besides, because of technology and like Generation Y, Generation Z is impatient, having a short attention span [62]. They socialize through the Internet; they consume rapidly, are addicted to technology and speed, are interactive, efficient, innovative, creative, result-oriented, multitasker, individualistic (do not like teamwork), and tend to be dissatisfied. They suppose anything possible in the world and can do everything thanks to their equipment. Generation Z is self-confident, happy, likes social service activities, and is more interested in activities than the prior generations [65]. It has grown a global point of view and preference for non-standard and personalized works.

Gen Zers shape their identities over time and do not like stereotypes [66]. They are inclusive (they do not distinguish between friends met online and friends in the physical world). They believe in the importance of dialog and accept differences of opinion with the institutions in which they participate (they can interact with institutions that reject their values without abandoning those values). In addition, Gen Zers, with vast amounts of information at their disposal, are more pragmatic and analytical about their decisions than previous generations.

Gen Z members value employers that provide equal opportunity for pay, promotion and opportunities to learn and advance professionally [67]. They expect their future employers to treat people with respect, ethical behavior, fair compensation, and promotion across all employees, open and transparent communication, and wise business decision-making, so the company's reputation matters. Gen Zers are pragmatic and tenacious, realizing that they may fail before achieving success, but seeing that as an opportunity to try again. They are independent, resilient, and realize they must work hard to achieve success. They seek a balance between work and family, hoping for a better quality of life than previous generations [22].

While Millennials believed in the collective effort's success, Generation Z members do not appreciate teamwork, accepting it if forced [68]. The ability to work in a team is often the most sought

skill by employers [67], and of course, any organization requires to have people who reach their goals by cooperating and sharing their knowledge. For that purpose, different generations must cooperate (teamwork and knowledge sharing), have common goals, be devoted to doing their job, be willing to provide and ask for help and trust each other to share their knowledge [69].

When Gen Z members enter the workforce, they expect to have flexible career paths, and will want to explore different jobs and expect competitive salaries [63]. They value hard work and want to be rewarded for it, are ambitious and self-starting, and are motivated to plan for their future [67]. In a techno-global world, they have a different attitude towards career, being more realistic, optimistic, and conscious of opportunities and moving seamlessly between companies motivated by new experiences and opportunities [22]. Table 2 summarizes the characteristics of Generation Z that can be found in the literature.

Table 2. Summary of the characteristics of Generation Z [1].

	Generation Z
Major events	Global terrorism
	Economic crisis 2008
	Covid-19 pandemic
	Social networks
	Mobility and multiple realities
	Digital natives
	Same-sex marriage
	Emergence of China
Family life	Connected as children
Traits	Value more soft skills
	Adaptable to the global world
	Realistic
	Even greater multitaskers
	Responsible
	Self-reliable
	Entrepreneurial
	Flexible
	We-centric
	Ethical
	Not spontaneous
	Compassionate and thoughtful
	Less interpersonal and social skills
	Addicted to technology and speed
Conflict management	Provokes conflicts
Motivation	Find their dream job
	Entrepreneurial initiative
	Creativity and innovation
	Opportunities to expand skills
	Career-minded
	Build a fun, entrepreneurial career
Learning style/ education	Individualized
	Technology-driven; online
	Teacher seen as a facilitator
	Use of images and visual tools
	A desire for practical skills
	Groups and many tests
	Gamification
	Concerned about the cost
	Based on interest, informal learning
Knowledge-sharing	On a virtual level, easily and rapidly, no stake, publicly
Technology	Smartphones
	Intuitive
Consumption	Uniqueness
	Unlimited
	Ethical

[1] Adapted from Anantatmula et al. [60], Moore et al. [64], Francis & Hoefel [66], Andrea et al. [68], Iorgulescu [70], Loveland [71], Cilliers [72], Mohr & Mohr [73] and Alter [74].

Smola and Sutton [75] concluded a generation influences work values more than age and maturation. Accordingly, changes in educational and training programs should be considered, namely by including pedagogical aspects such as minors and concentrations, experiential learning opportunities, blended courses, competitive events, and professional certification programs. Generation Z students prefer to engage in hands-on learning opportunities to apply what they learn to real-life immediately [76]. Like Millennials, Gen Zers develop and learn the fastest using different computer-based training methods, such as various interactive multimedia content, software, programs, web-based training, videos, simulations, and games [77]. They prefer to engage in individual learning because they can focus better, set their own pace, and make meaning of their learning before sharing that meaning with others [76].

Belonging to a particular generation determines attitudes, different levels of knowledge, and preferences. In the teaching process, the historical and temporal context should not be neglected, to make the teaching process more appropriate and efficient. As such, Moore et al. [64] set recommendations to teach students of Generation Z.

Many university degrees are offering project management as mandatory or elective courses. The regular curricula have a focus on project management technical skills. The characteristics of Generation Z suggest the opportunity to broaden their emphasis on project management education to include both technical and soft skills [36].

Intending to overcome gaps between traditional education and industry needs, several universities are using different educational approaches focusing on experiential learning or active learning. They also include other new teaching methods based on information and communication technologies. These methods may prove suited to Generation Z [78].

For example, project-based learning (PBL) is closely related to group work, planning, communication strategies, and stimulation of creativity of team members [79]; experiments with undergraduate students show improvements in project management and presentation skills [80]. Agile models, such as Scrum, allow for activities and simulations held in classes, which seem to increase student satisfaction and to create collaborative team skills [81]. This teaching method emphasizes action and feedback over project planning and is increasingly adopted for effective project management teaching [82]. Another method, role-playing, creates a better social interaction, communication abilities, self-motivation, and the ability to adapt to changing environments, conflict resolution, and negotiation [83].

Acknowledging Generation Z characteristics and that project management education tends to neglect soft skills suggests the need to adjust teaching methods and further research concerning the most appropriate and effective educational and training methods.

3. Methodology

To outline the Generation Z student personality profile and their competencies, we conducted an empirical study, applying a mixed-method methodology, which combined both quantitative and qualitative data collection at the same moment. Supported in this approach, we combined the two strains of data, triangulating the knowledge produced in each type with the conceptual framework. The mixed-method approach has the advantages of expanding the possibility of phenomenon comprehension by combining the strengths of quantitative and qualitative data [84]. Initially, to understand more detailly who is Generation Z, we measured the self-perceived personality profile using the Big Five Personality model and resilience. The questionnaire had two open questions about the Gen Zers' strengths and weaknesses concerning the project team environment to support the Likert scale answers and link the Generation Z traits to the project management field. With this approach, we also intend to assess the level of awareness of the Generation Z traits comparing against the literature foundations and highlighting the strengths and weaknesses of Generation Z related to project teams.

Then, to assess the student competencies, we used emotional intelligence. Although emotional intelligence may have an intrinsic structural component, several authors (e.g., [85]) argue that it can be developed with training and experience. Therefore, it is relevant to understand how the personality traits of Generation Z students may (or may not) be associated with the development of their emotional intelligence. To link the Generation Z profile to PM soft skills competencies, we selected the emotional intelligence scale since it is considered as a PM soft skill. Its dimensions are related to a set of project management competencies broke down in Table 1: development of others, interpersonal relationships, self-control, work under pressure, and self-awareness [1,29].

3.1. Instruments

To measure Generation Z students' profile, regarding their personality traits and skills, we used: (a) the big five personality model short version of 60 items in Portuguese by Lima et al., of the NEO-Five Factor Inventory [86,87]. Responses were given on a 5-point Likert scale, ranging from strongly disagree (0) to strongly agree (4); (b) Resilience, using the resilience scale proposed by Wagnild and Young [88] in its short version of 13 items adapted to Portuguese adults by Pinheiro et al. [89]. Responses were given on a 7-point Likert response scale, varying from strongly disagree (1) to strongly agree (7); and (c) emotional intelligence, using an instrument composed an eight-dimensional instrument (attention to one's emotions, sensitivity to others' emotions, emotional maturity, empathy and emotional contagion, understanding of the causes of one's emotions, self-encouragement, understanding of one's emotions and emotional self-control), suggested by Rego and collaborators [90–92]. Answers were assessed on a 7-point Likert scale (1— 'the statement does not apply to me', up to 7— 'the statement applies to me completely').

The Big Five model describes the individual's personality through five dimensions: neuroticism, extroversion, openness to experience, agreeableness, and conscientiousness [86,93]. Neuroticism expresses the individual's propensity to experience negative emotional states and stress and see himself or herself and the world from a more negative perspective. Extroversion manifests the individual's predisposition to experience positive emotional states, enjoy social activity and feel good about himself or herself and the world. Openness to experience describes the individual's tendency to hold a full field of interests, being more oriented towards experience, and tend to be more creative and take more risks. Agreeableness corresponds to the individual's propensity to establish good relationships with others and to care for them. conscientiousness reveals the degree to which the individual proposes result-oriented activities, revealing precision and perseverance.

Resilience expresses the individual's ability to adapt, deal with the adverse effects of stress, encompass inner strength, optimism, flexibility, and the ability to effectively deal with adverse and challenging situations and recover from them [88,94,95].

Emotional intelligence can be defined as the individual's ability to use reason to understand and deal with emotions (own and others) and to use emotions to understand the context and make more rational decisions [96,97].

The reliability of the measurement scales was analyzed through an internal consistency coefficient, namely, Cronbach's alpha (Table 3). This study variables were above, or at least at the cut-point, to accept internal consistency for all dimensions ($\alpha \geq 0.60$), meaning the items in each dimension were consistently contributing to the overall measure [98]. Internal consistency indices range from 0.859 (Understanding of the causes of one's emotions) to 0.600 (neuroticism).

Table 3. Cronbach's alpha for each instrument scale and subscale.

		No. of Items	Cronbach's Alpha	
Emotional Intelligence	Attention to one's emotions	3	0.647	
	Sensitivity to other's emotions	3	0.656	
	Emotional maturity	3	0.668	
	Empathy and emotional contagion	3	0.785	0.825
	Understanding the causes of one's emotions	3	0.859	
	Self-encouragement	3	0.799	
	Understanding of one's emotions	2	0.786	
	Emotional self-control	3	0.771	
Resilience		13	0.795	
Personality	Neuroticism	12	0.600	
	Extroversion	12	0.779	
	Openness to experience	12	0.650	
	Agreeableness	12	0.734	
	Conscientiousness	12	0.851	

To complement the quantitative measures - and to measure the level of awareness of Generation Z about the suitability of their traits to work in project teams - we added two open-answer questions: "What are your strengths that you think can facilitate project teamwork?", and "What are your weaknesses that you think can hinder project teamwork?" These two questions were completely open since no restrictions were given on the number of strengths and weaknesses that each student could answer, not even exemplifying the research scope.

3.2. Participants

A total of 211 students from two major Portuguese public HEIs, University of Aveiro (n = 172; 81.5%) and the School of Engineering of Polytechnic of Porto (ISEP-IPP; n = 39; 18.5%), were asked to answer a self-report questionnaire voluntarily.

The data were collected for three weeks in December 2019, using an online survey (cross-sectional data collect). Most of the participants were or had been enrolled in project management courses, thus, already having had to contact with project management learning methods, techniques, and software (hard skills). Participants were born between 1995 and 2000, with the majority being 20 years old (born in 1999; n = 112; 53.1%). One hundred and nine (109) were men (51.9%), and 101 were women (48.1%). Most of them were enrolled in the first cycle of higher education studies (n = 154; 77.0%).

3.3. Analytical Procedures

The statistical analysis was performed using IBM SPSS version 25 and unfolded in two sets of analysis: descriptive and inferential statistics. First, we computed the means and standard deviations for the quantitative measures, followed by correlations and Cronbach's alpha for reliability analysis [98,99].

The inferential analysis was supported in a significant level of at least 0.05. We performed an independent sample *t*-test to compare means between two groups (gender differences). We computed a Pearson product-correlation for a bivariate association between constructs of interest using for interpretation the effect size (large effect r ≥ 0.50, medium effect 0.30 ≤ r < 0.50 and small effect; 0.10 ≤ r < 0.30) [99].

The open-answers analysis followed the qualitative approach with the organization, categorization, and coding of the data. This process was supported in the NVivo 12 Plus® software, by uploading the answers organized in two independent files designated "strengths" and "weaknesses". The data analysis was supported by the content analysis methodology, which advocates the use of categories, often derived from theoretical foundations [100]. The categories are applied to the empirical data; they are not necessarily extracted from it. According to Bogdan and Biklen [101], the analysis involves working with the data, its organization (categories), division into simple units of text (references), synthesis, looking for patterns, discovering essential aspects that should be learned, and the decision of what will be transmitted to others.

For this purpose, we built a categorization structure with four nodes on the main level (Figure 1).
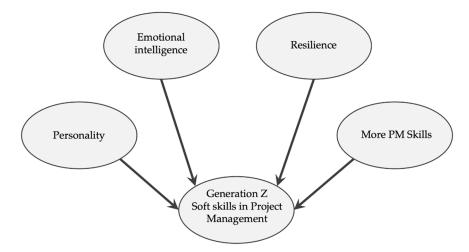

Figure 1. Soft skills in project management: categorization structure.

One goal of using qualitative data was to confirm the previous quantitative results and ensure that the student responses are reflective. Three categories overlap amidst measuring instruments: personality, resilience, and emotional intelligence of Generation Z students. Thus, the subcategories of emotional intelligence and resilience match each instrument's dimension, as shown in Table 3.

Moreover, the qualitative results also attempt to identify new aspects referred by students. The Personality node added four dimensions to the big five: perfectionism, selfishness, frontal, and concentration. A "more skills" node was added to enhance the linkage between the Generation Z traits and project management skills. This node encompasses several competencies exhibited in Table 1 that were not measured with the Likert scale instruments. Those competencies include communication, time management, teamwork, leadership, troubleshooting, conflict management, autonomy, authority, decision-making, customer relationship, analytical thinking, use of technologies, delegation, and creativity.

The coding process was made in three iterations. Initially, a first researcher coded all strengths and weaknesses reported by students, not being allowed the duplication of any reference. In the second iteration, another research reviewed this codification proposal. In the last iteration, a review meeting was held with the first two researchers and another researcher to reach a final coding.

4. Results

We used descriptive statistics (means—M, standard deviation—SD) for personality, resilience and emotional intelligence to characterize these Generation Z students. Considering the emotional intelligence dimensions, empathy and emotional contagion (M = 6.00; SD = 0.86), sensitivity to others' emotions (M = 5.73; SD = 1.05) and self-encouragement (M = 5.49; SD = 1.01) were the variables participants reported the highest means. However, on average, they revealed less attention to one's emotions (M = 4.94; SD = 1.19), understanding of the causes of one's emotions (M = 4.76; SD = 1.23) and, with the lowest score, less emotional self-control (M = 4.34; SD = 1.29) (Table 4).

Table 4. Descriptives for personality, resilience profile, and emotional intelligence (n = 211).

Measure (Scale Range)	Min	Max	Mean	SD
Emotional Intelligence (0–7)	**3.78**	**6.74**	**5.17**	**0.58**
Attention to one's emotions	1.00	7.00	4.94	1.19
Sensitivity to other's emotions	1.67	7.00	5.73	1.05
Emotional maturity	1.33	7.00	5.05	1.11
Empathy and emotional contagion	3.33	7.00	6.00	0.86
Understanding the causes of one's emotions	1.67	7.00	4.76	1.23
Self-encouragement	2.33	7.00	5.49	1.01
Understanding of one's emotions	2.00	7.00	5.08	1.04
Emotional self-control	1.00	6.67	4.34	1.29
Resilience (0–7)	**2.85**	**6.62**	**5.18**	**0.68**
Personality (0–4)				
Neuroticism	0.83	3.25	2.11	0.50
Extroversion	0.25	3.92	2.57	0.54
Openness to experience	1.17	3.58	2.36	0.49
Agreeableness	0.75	3.75	2.63	0.51
Conscientiousness	1.08	4.00	2.73	0.59

The students self-reported a medium to high levels of resilience (M = 5.18; SD = 0.68). Having into account the big five dimensions to draw the Generation Z personality traits, the sample reveals low to medium levels of neuroticism (M = 2.11; SD = 0.50) and medium levels of conscientiousness (M = 2.73; SD = 0.59) and agreeableness (M = 2.63; SD = 0.51; Table 4).

The association between these dimensions was further explored (Table 5). resilience presents a high positive correlation with the global measure of emotional intelligence (r = 0.562). With this large positive effect, the more resilient students reported having higher emotional intelligence. Particularly, the most resilient students seem to be the most capable of developing their self-encouragement (r = 0.545--large effect-r ≥ 0.50), i.e., their ability to self-motivate and encourage themselves and to be goal-oriented. However, based on the sample, resilience presented a moderate positive effect associated with the understanding of the causes of one's emotions (r = 0.490), understanding of one's emotions (r = 0.351), emotional self-control (r = 0.324), as well as a small positive effect with emotional maturity (r = 0.282) and empathy and emotional contagion (r = 0.261).

Table 5. Correlation between emotional intelligence and resilience and personality (n = 211).

	RS	N	E	O	A	C
Emotional Intelligence	0.562 **	−0.318 **	0.541 **	0.373 **	0.507 **	0.533 **
Attention to one's emotions	0.033	0.143 *	0.203 **	0.328 **	0.286 **	0.217 **
Sensitivity to other's emotions	0.109	0.118	0.263 **	0.218 **	0.452 **	0.243 **
Emotional maturity	0.282 **	−0.286 **	0.127	0.185 *	0.320 **	0.193 **
Empathy and emotional contagion	0.261 **	0.048	0.359 **	0.239 **	0.425 **	0.314 **
Understanding of the causes of one's emotions	0.490 **	−0.450 **	0.403 **	0.109	0.246 **	0.281 **
Self-encouragement	0.545 **	−0.146 *	0.465 **	0.159 *	0.236 **	0.741 **
Understanding of one's emotions	0.351 **	−0.063	0.383 **	0.272 **	0.266 **	0.326 **
Emotional self-control	0.324 **	−0.529 **	0.165 *	0.121	0.005	0.048

* $p < 0.050$, ** $p < 0.010$; Note: RS—resilience; N—neuroticism; E—extroversion; O—open to experience; A—agreeableness; C—conscientiousness.

Three of the five personality dimensions presented a positive association with a large positive effect on the global measure of emotional intelligence (agreeableness: r = 0.507; conscientiousness: r = 0.533; extroversion: r = 0.541). Therefore, students who show greater extroversion, agreeableness, and consciousness tend to achieve higher emotional and intelligence levels. Openness to experience showed a medium effect size association (r = 0.373) with emotional intelligence.

Neuroticism significantly correlates negatively with several emotional intelligence dimensions, being associated with a large effect with emotional self-control (r = −0.529) and moderate effect with

the understanding of the causes of one's emotions (r = −0.450). Hence, students with a negative life perspective have more probability of losing control and block in strong pressure situations.

Extroversion shows a moderate positive level of association with self-encouragement (r = 0.465), understanding of the causes of one's emotions (r = 0.403), empathy and emotional contagion (r = 0.359) and understanding of one's emotions (r = 0.383).

Open to experience correlates significantly and positively with almost all emotional intelligence dimensions, except with understanding the causes of one's emotions and emotional self-control. The more experience-oriented students are, the more attention they give to one's emotions (r = 0.328).

Agreeableness presents a positive global correlation with all dimensions of emotional intelligence, except with emotional self-control. This adjective qualifies someone as an affable and affectionate person. More agreeable students are more sensitive to others' emotions (r = 0.452) and more able to change to feel empathy and emotional contagious (r = 0.425).

Conscientiousness correlates positively with all emotional intelligence dimensions, except with emotional self-control. Note that most conscientious students are also the ones who can better encourage themselves (r = 0.741; large effect association).

Moreover, self-encouragement is the emotional intelligence dimension with the greatest number of significant correlations. It presents the highest positive r values, with conscientiousness and resilience, with a large effect on seeking courage and strengthening themselves to overcome obstacles.

Additionally, we tested gender differences to better understand the distribution of these dimensions in Generation Z. On the one hand, regarding emotional intelligence, females reported significantly higher means in attention to one's emotions, sensitivity to others' emotions and empathy, and emotional contagion. On the other hand, men reported significantly higher means of understanding the causes of one's emotions and emotional self-control. Concerning personality, women reported significantly higher levels of neuroticism and agreeableness (Table 6).

Table 6. Gender differences in personality and emotional profile.

Measure (Scale Range)	Male (n = 109)		Female (n = 101)		t (*df* = 208)
	M	SD	M	SD	
Emotional intelligence (0–7)	5.14	0.58	5.19	0.60	0.579
Attention to one's emotions	4.68	1.13	5.22	1.20	3.424 ***
Sensitivity to other's emotions	5.30	1.08	6.20	0.78	6.887 ***
Emotional maturity	5.18	0.99	4.89	1.22	1.873
Empathy and emotional contagion	5.77	0.86	6.24	0.81	4.030 ***
Understanding of the causes of one's emotions	4.85	1.25	4.44	1.22	2.568 *
Self-encouragement	5.36	1.07	5.62	0.93	1.821
Understanding of one's emotions	4.97	1.13	5.20	0.93	1.572
Emotional self-control	4.93	1.13	3.70	1.15	7.834 ***
Resilience (0–7)	5.22	0.67	5.13	0.68	0.912
Personality (0–4)					
Neuroticism	1.91	0.44	2.33	0.47	6.616 ***
Extroversion	2.52	0.57	2.64	0.50	1.659
Openness to experience	2.36	0.49	2.36	0.49	0.007
Agreeableness	2.53	0.52	2.73	0.60	2.883 **
Conscientiousness	2.66	0.60	2.80	0.57	1.840

* $p < 0.050$, ** $p < 0.010$, *** $p < 0.001$.

There were 207 valid open answers on strengths (4 blanks or do not know answers) and 177 valid answers on weaknesses (34 blanks or do not know answers) and 515 strengths versus 248 in weaknesses references.

Approximately 40% of the strengths' references are related to the personality category. Within this category, the conscientiousness node stood out (34.7% in the personality category). The responsibility, dedication, commitment, persistence, and a continuous focus on fulfilling the objectives were strengths that these students perceived as advantageous in project teamwork. Twenty-eight percent of personality

references were associated with agreeableness. Students were self-reported as oriented towards others, sociable, helpful, companions, with a good ability to relate to each other, knowing to respect others' opinions. About 10% of the personality coding was grouped in openness to experience. Students considered openness to new ideas, creativity, open mind to discuss ideas and interest in new challenges as an important personality trait for project development ("I am open to thinking about new ideas").

11.5% of the total strengths references were coded in the emotional intelligence category. The surveyed sample highlights (45.7% references of the emotional intelligence category) the understanding of the others' attitudes and sensitivity to others' emotions as an important quality in the teamwork project environment ("understanding the feelings of others"; "impact that my attitudes have on others"; "patience"). Even within this category, the participants featured the emotional self-control and empathy as strengths in the project team.

Despite its low frequency (approximately 5% of the strengths references), some strengths related to resilience and flexibility were identified, such as "if there is a problem, I won't give up", "I am flexible, and I adapt easily", "ability to adapt well to different environments". These characteristics are certainly reinforced by their self-report as optimistic "positive thinking".

Most of the strengths identified by these students (42.7% of the total strengths references) were linked to skills perceived by students as their positive points in the project team. Communication was the most referred skill (30% references in the skills category), being frequently referred in a generic way, namely identifying themselves as communicative, able to promote and to facilitate the dialog.

Some students considered themselves organized, methodical, with good strengths related to management and planning (16.8% of the references in the skills category). Other outstanding strengths were grouped in teamwork skills (16.8%), namely team spirit and the pleasure of working in teams, cooperation, and mutual help.

Concerning the participants' weaknesses that can hinder the project teamwork, about 33% of the weaknesses' references were grouped in the personality category. Here, the most prominent weaknesses are related to the neuroticism trait, namely stress, anxiety, fear, nervousness, and some pessimism. Students showed (14.6% in the personality category) lack of confidence and low self-esteem ("I do not always have confidence in myself") as an intrinsic feature that could compromise teamwork. These students also admitted arrogance, superiority, and stubbornness (15.8% in the personality references).

10% of the weaknesses' references were related to a low level of emotional intelligence, namely the difficulty in dealing with criticism ("I cannot tolerate criticism very well"), considering their impulsiveness and panic as negative points for teamwork.

Just as with the strengths' results, weaknesses related to PM skills are also significant (46.3% of the weaknesses references). Failures in the communication process were a concern, being highlighted difficulties about expressing the message, sharing problems, and little practice in speaking in public. These students reported problems with time management, the pace of individual work and the coordination of the team's pace, revealing difficulty in managing deadlines, and experiencing some resistance to starting the work plan.

Leadership was perceived as an issue for some students, showing difficulties in setting their position ("I let my opinions and my voice be swallowed"). In addition, the lack of delegation capacity is assumed as a difficulty that does not benefit teamwork.

A synthesis of qualitative results is shown in Table 7.

Table 7. Strengths and weaknesses highlighted by Generation Z in the project team context.

Strengths (515 References)	%	Weakness (248 References)	%
PM Skills Node	42.7	**PM Skills Node**	46.3
Ability to promote and to facilitate the dialog Organized and methodical Teamwork		Difficulties in expressing the message and sharing problems Little practice in speaking in public Difficulties in time management and achieving deadlines Resistance to starting the work Lack of Leadership	
Personality Node	40.0	**Personality Node**	33.0
Responsibility, dedication, commitment, persistence and a continuous focus on fulfilling the objectives Oriented towards others, sociable, helpful, companions, with a good ability to relate each other's, respect the others		Stress and nervousness Arrogance and superiority Lack of confidence and low self-esteem	
Emotional Intelligence Node	11.5	**Emotional Intelligence Node**	10.0
Understanding of the others' attitudes and sensitivity to others' emotions		Difficulty in dealing with criticism Impulsiveness and panic	

The qualitative approach was used to reinforce the previous quantitative results. The intention was to to check if the students' choices using the Likert scale reflected what they felt and identify new aspects not anticipated by the research. By comparing quantitative and qualitative results, we can see there is a significant alignment regarding the self-report of the Generation Z profile, indicating that the students' closed answers seem to represent their personality effectively. The high level of conscientiousness stood out, both in qualitative and quantitative results. Concerning emotional intelligence, the qualitative results also emphasized empathy, understanding other´s attitudes, and sensitivity to others as major strengths of Generation Z students. Weaknesses were also in line with the quantitative results, as students revealed more difficulties in emotional self-control, namely in the face of criticism and control of impulsiveness.

The lack of self-esteem and self-confidence raised concerns among the students (14.6% of weaknesses within the personality category). These topics are related to the psychological capital, which was not measured in the Likert scales we used. However, this could be a topic for future research regarding Generation Z.

5. Discussion

5.1. Level of Awareness of Generation Z

The first objective of this study was to report the self-perception of Gen Zers profile and skills and to analyze their awareness level supported on the coherence of the results presented regarding the theoretical foundations. Considering the results obtained by the Big Five model, as shown in the Results section, our sample self-reported low levels of neuroticism. They are tendentially humorous persons, able to overcome feelings like anxiety, worry, fear, and guilt. Regarding gender, males self-assessed less neurotic than females, confirming the results of Pedroso-Lima et al. [87], who performed a study of the kind in a Portuguese adult sample. The literature portrays this generation as optimistic, more realistic, and more conscious of job opportunities that promote well-being and psychological satisfaction [22,65].

The sample self-reported medium to high levels of resilience, with the ability to adapt well to different environments, without giving up in the face of problems. The literature review supports the results on resilience, which attributes Generation Z a high level in this trait [67].

The quantitative results point to medium levels of agreeableness and conscientiousness. As shown above, these two traits were highlighted by participants in open questions about strengths and weaknesses, asserting themselves as responsible and oriented towards others. Conscientiousness had the highest average in the Big five scale. It was, also, self-cited as a major strength among students, which is also in line with the literature stating that Generation Z is result-oriented [22].

The results also show that these students are oriented to others. The quantitative results presented high means of empathy and emotional contagion and sensitivity to other´s emotion and medium levels of agreeableness. On the level of strengths, these students were self-reported as sociable, with a good relationship and respect for others' opinions. There are also some gender differences, as women look more sensitive to other´s emotions, and men have a higher level of agreeableness. The medium level of the agreeableness trait reveals that Generation Z tends to be friendly and pleasant or affectionate towards others, including attitudes such as sympathy and generosity. In contrast, state of the art defends that Generation Z members have an individual driver, not enjoying teamwork, and even preferring Internet communication to face-to-face relationships [65].

Previous publications concluded that Generation Z is known to prefer innovative and creative activities and customized work over repetitive and routine tasks [65]. Openness to experience (medium score) was the dimension with the lowest average compared with extroversion, agreeableness, and conscientiousness. Hence, it was not a distinguishing feature of this sample.

In summary, through the self-assessment results, Generation Z students are partially aware of their profiles, compared with theoretical considerations. In particular, students are well aware of their levels of resilience, optimism, and conscientiousness. Considering the theoretical foundations, we identified a lack of awareness of their individualism. The results displayed high agreeableness and empathy, and state of the art sees Generation Z members as individualistic [68]. There was also a lack of awareness of their potential creativity, as the self-report did not underline openness to experience and interest in new challenges.

The discrepancy in the number of strengths and weaknesses references (with strengths more than doubling weaknesses), and the higher number of no valid answers in weaknesses, indicate that the way the students self-report their strengths and weaknesses (as project team elements) proved to be quite different. Likely, this reveals less awareness of the students' weaknesses—or it may indicate more restraint in reporting their fragilities.

5.2. Association between the Generation Z Personality Traits and Skills with Project Management Competencies

Now we can focus on the correlation of the Generation Z student profile with the project management soft skills. A correlational analysis between emotional intelligence and resilience and personality (Big Five) was performed. Its eight dimensions could be related to project management competencies, as explained in the Methodology section. As seen in Section 2, project management competencies frameworks and practices are dominantly focused on hard skills and soft skills must be reinforced. There are significant correlations between personality traits and specific important project management soft skills. The main association's results are described in Table 8.

Table 8. Association of the personality profile with project management (PM) soft skills.

Personality Profile	Most Significant Correlations	Emotional Intelligence	Related with Other PM Soft Skills
Resilience	Positive	Self-encouragement	Uncertainty
Extraversion	Positive	Understanding of the causes of one's emotions	Perseverance Commitment
Agreeableness	Positive	Sensitivity to other's emotions Empathy and emotional contagion	Interpersonal relationship Development of others Teamwork
Conscientiousness	Positive (highest r value)	Self-encouragement	Uncertainty Commitment
Neuroticism	Negative	Self-control Understanding of the causes of one's emotions	Work under pressure Interpersonal relationship

Our sample self-reported a medium to high levels of resilience and medium levels of conscientiousness, considering them as strengths. These traits presented a significant positive correlation with a major of the emotional intelligence dimensions. These results are important to the project management research field, once these personality traits (highlighted in this Generation Z sample) were correlated with project manager's success, boosting competencies like commitment and perseverance [40,102]. The effect of resilience and conscientiousness is more substantial as regards self-encouragement. As such, in the face of uncertainty and risk, which are very common in projects, this generation could develop self-motivation and encouragement strategies towards progress. As results reported, self-encouragement is the dimension of emotional intelligence with the greatest number of significant correlations, having the highest positive "r value" with conscientiousness.

Working on a project means being involved in teams. Teamwork was identified by Alvarenga et al. [1] as one of the 28 most important project management skills found in the literature (Table 1). Our results point to average levels of 'agreeableness', revealing that the participants are oriented to others. A positive correlation between agreeableness and emotional intelligence was also shown. Hence, the more agreeable students are, the more sensitive they are to others' emotions - and the more empathetically they respond to stimuli. This association could foster soft skills such as interpersonal relationships and the development of the others. Although several authors consider the Gen Zers to be individualistic in the literature, this predisposition towards others will undoubtedly facilitate their integration in project teams.

However, there is no relevant effect of the big five dimensions on emotional self-control; only neuroticism correlates negatively, and resilience has an average effect. Personality traits cannot be assured by emotional self-control, i.e., the strategy to control emotions without stress, but they are essential for teamwork and conflict management. Some students considered the lack of emotional self-control as a weakness in project teamwork ("panic in tension moments"; "difficulty dealing with stress".) The participants confessed that stress, anxiety, fear, nervousness, and some pessimism could hinder the project teamwork.

Furthermore, the relation of the big five dimensions and emotional maturity (responsiveness to criticism) is relatively low for all dimensions. Although not very expressive, 3% of the weaknesses' references assumed by the participants are related to reduced emotional maturity, showing difficulty in accepting criticism. Knowing how to deal with criticism and different opinions also seem relevant to project management, and these students have some awareness of it.

To date, results have shown that some Generation Z personality traits are associated with important soft skills in project management. Will these elements recognize that their personality traits have any impact on teamwork? A significant percentage of strengths (40%) and weaknesses references (33%) were grouped in personality traits, which means that students are aware of and give importance to their personality regarding the project teamwork environment.

5.3. Strengths and Weaknesses Highlighted by Generation Z in the Project Team Context

Because we intended to link the Generation Z student's profile with project management, the open-answer questions were directly related to project teamwork. For such a purpose, we will next discuss some results about strengths and weaknesses perceived by Generation Z as project team elements. We found that most of the students' strengths (42.7%) and weaknesses (46.3%) relate to PM skills with an impact on teamwork. Regarding strengths, students consider themselves to be good communicators, organized, methodical, and team spirit. The identification of communication as a Generation Z student's strength reveals a promising aspect in project management since project management professionals consider communication one of the three most important project management competencies [1]. It is also interesting to analyze the number of times that the ability to listen to others was mentioned ("ability to listen to others"; "wanting to listen to all the elements"). Only one participant mentioned concern about feedback in the communication process. However, other concerns were revealed, namely difficulties in expressing the message, inability to share problems, and little practice in speaking in public.

Some students admitted that their openness to new ideas, creativity, open mind for discussing ideas, and interest in new challenges are important strengths to project development ("I am open to thinking about new ideas"). Nevertheless, it was not a distinguishing feature in our sample.

Leadership is considered one of the most important competencies in the literature (e.g., [1]), although there is no consensus regarding its correlation with project success [6,43]. The qualitative analysis presents leadership as a weakness, the students showing difficulties in setting their role in the team, and problems in delegating tasks and responsibilities.

This sample also revealed weaknesses regarding time management, reflecting on the pace of individual and collective work and, therefore, more difficulties meeting deadlines. This problem may be related to their low ability to concentrate, and the need to get support and guidance to continue their activities, features assigned to Generation Z in the literature [2,76].

5.4. The Generation Z Profile and Current Challenges of Project Management

Generation Z is arriving in the labor market, and it will soon be an important part of it. Hence, it is even more relevant to know which of the Generation Z´s skills and personality traits converge more with the current challenges of project management and identify the most significant gaps in this issue.

Considering the global market and fast-paced technological development, companies need to develop projects frequently, facing increasing complexity, risk, and uncertainty. Agility, flexibility, change management, and decision-making are necessary assets for effective project management. Some strengths related to decision-making and flexibility were identified in our study, such as "I am determined" and "I adapt myself quickly to the different types of environments surrounding me". Currently, one expects project teams to solve problems quickly, overcome obstacles, and make decisions throughout the project life cycle. The conscientiousness and resilience traits of Generation Z will undoubtedly be an important added value to project success.

Given the project complexity, project members need to work as a team, not lonely. The project team should be efficient and performant. Soft skills like communication, a good interrelationship, empathy, respect, and sensitivity to others are mandatory. This sample results suggest good agreeableness and orientation to others, However, the literature partially portrays Generation Z as individualistic. Therefore, educational programs should promote discussion, engagement, and collaborative relationships.

The market competitiveness imposes differentiated and innovative products and processes, so creativity and openness to new ideas are welcome to projects. The students recognized these skills as strengths in teamwork, but in contrast with theoretical considerations, this trait was not evident in our sample. Such gaps should be further investigated in future studies.

6. Conclusions

This research contributed to the debate of the Generation Z features linked to soft skills in project management. We presented a detailed characterization of Generation Z, focusing on personality traits and highlighting strengths and weaknesses. As discussed in the literature review, there is a theoretical consensus about the Generation Z characteristics. That is partly due to the context of specific sociodemographic events, which conditioned the Gen Zers lifestyles, consumption habits, traits, work expectations, motivations, and education styles. However, to what extent are Gen Zers aware of their portray found in the literature? The participants self-reported a good level of awareness regarding their optimism, resilience, responsibility, and are result-oriented. However, they revealed a low level of recognition regarding individualism, less personal relationships, and less social skills. Among these, we can mention resilience and conscientiousness traits, with a significant association with self-encouragement, important to help project managers before uncertainty and risk. Furthermore, the agreeableness trait also had a significant effect on sensitivity to other's emotions and empathy, which are linked to skills such as interpersonal relationships, teamwork, and teambuilding. However, there is no significant positive effect of the assessed Generation Z traits on emotional self-control. There is only a low effect on emotional maturity, which could unfold some difficulties of this generation regarding work under pressure.

The results presented have practical implications, both at the education and company level, since the self-reported Generation Z profile was linked with project management competencies, specifically with soft skills. The most highlighted traits and strengths are related to soft skills, such as emotional intelligence, development of the others, perseverance, commitment, communication, teamwork, and uncertainty. All of these are very important for project success, pointing to Generation Z as a promissory asset in the project management field. However, some important gaps are also identified. For one, the lack of awareness of some itself traits (such as individualism and less personal relationship), as well as concern about their weaknesses in the project team environment (such as the lack of leadership and confidence, low self-esteem, difficulty in dealing with criticism, impulsiveness, and panic, among others). In addition, some soft skills are not grounded in personality profiles, namely emotional self-control and emotional maturity.

These gaps should be an important input to upgrading the teaching and training of project management to prepare Generation Z students for a smoother transition from college to the workforce and, at the same time, increase the awareness of their motivations. HEIs may now have a unique opportunity to adapt their pedagogical strategies and provide students with teaching methods more suited to Gen Zers traits. These methods include hands-on projects, problem-based learning approaches, computer simulations, role-playing, and agile models. All these methods could be valid options to engage the youngsters better and encourage them to acquire and improve soft skills that fit project needs, such as communication and teamwork abilities. Adapting educational and training methods, both at college and companies, is necessary to meet not only the expectations of Gen Zers and to create a better connection with them, but also to provide them with competencies to match the needs of projects and their employers. Nevertheless, the extent to which these project management educational approaches are suited to provide potential project managers with the necessary soft skills needs further research.

The practical implications of this research suggest some reflections about whether the Gen Zers traits fit the currents project management field, regarding the increasing complexity, risk, uncertainty, innovation, and flexibility of projects.

Throughout school education, the groups are more homogeneous, and the interactions are mainly between elements from the same generation, with intergenerational contact restricted to the family and teachers. However, this scenario changes with the transition to the workplace, where the necessity to work with elements from different generations is real. In future research, we intended to debate the generational differences with an impact on project management and teamwork.

As many projects are now global, cultural diversity may be an important topic when considering approaches to project management education. Future research should address the influence the cultural context has on the effectiveness of alternative education and training methods to improve project management soft skills.

The originality of this research is justified by its contribution to linking Generation Z and PM soft skills. We took an original perspective, measuring self-perceived student traits with tools such as the Big Five personality model and resilience. The results' originality is reinforced by the association of their personality traits to a set of project management soft skills.

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