Gaps and Bridges between Future Managers and IT People

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Abstract: Today's HR tendencies face many challenges. One of them is the interaction between managers and IT people. Our evidence-based study describes the psychological background of that misunderstanding. The research shows that students of different faculties have the same attribution year by year (between 2018-2020, three academic years) but they differ significantly by faculty. The total sample was examined (n=2305) and we found differences in students' personalities, i.e. their level of extraversion which could be the basics of all interpersonal conflicts. We propose that they couldn't handle workplace situations appropriately because they are significantly different in their emotional intelligence measured with Bar-On's EQ-i and they adapt to stressful situations differently based on their diverse coping skills. HR solutions could be developed based on these findings in the form of training or organizational policies.

Keywords: HR; digital generation; personality; emotional intelligence; coping

1   Introduction

Basic characteristics of human nature and behavior are frequently in conflict with organizational and business requirements, even from the point of view of competitiveness. The same applies to the field of cooperation and knowledge-sharing. Success of corporate cooperation, teamwork and information flow between organizational units depends on the effectiveness of the communication. In the world of HR, there must be new and non-used solutions to apply [1].

The communication between IT People and managers become a new profession. In our research we are looking for the answer, which psychological factors could cause huge differences between these two groups. We suppose that young engineers and economists have the same generational features; if we find their differences, we can work on programs focusing on the difficulties of communication. For this research program, we examined first-year students of the Budapest University of Technology (BME in Hungarian), who learn on economy major (future manager), and electrical engineering major, also on information technology major (future IT-people). Even though the students, who were selected in the sample, learn at the same university, probably in the first semester their personality traits gain better. Our survey, beyond the description of differences between the two groups, can describe and introduce the future managers and IT People preparing for the labor market. All that contributes to understand those complex corporate relations, where differences between managers and IT-people are made even more difficult by age differences.

Nowadays, a rather live and unresolved issue is how to deal with the requirements and labor market needs of one of the youngest age groups, i.e., the digital (Y, Z, Alpha) Generations [2-3]. Meretei [4] assumed that on the market working generations are differently satisfied with their job, represent various work ethics, do not take same responsibility and think diversely about work-life balance. These generations also differ in a way how they get their job done and how confidently they use technology and move in the virtual world [5]. Therefore, current HR-tendencies should be changed 1) to enable a company to meet new requirements of the new generation, 2) to ensure that they fit in as active and productive members of the organization, 3) to develop quality communication and real collaboration between the representatives of different disciplines.

2   Literature Review

There are several approaches which define the term of generation describing it as a connected group sharing social and historical experiences [6], or sharing beliefs and behaviors due to their history [7], or as group of people who build a cohort and gain the same experiences [8]. Mannheim [6] was one of the early pioneers in generational research who described generations based on people's collective experiences. Based on these we can assume that the main characteristics of a generation are defined by age groups, common location of members and their experienced social and historical processes on these locations [6]. Not just birth and social, historical experiences are important by defining generations, but Howe and Strauss [7] emphasized also the thoughts and feelings of one person about how he views himself and his generational group. According to Howe and Strauss [7] the members of a generation share the feeling of belonging, the same beliefs and also some common behaviors above their collective historical experiences.

Törőcsik et al. [8] approached generations through the lenses of cohort theory. In this sense people born in the same year belong to the same cohort [8].

Beyond age and historical experiences mostly technical competencies describe the differences between generations. Thereof, Törőcsik et al. [8] emphasized innovational aspect in generational theories and in the same time digital innovation brought a new approach in everyday life and research, namely the digital generation. Increasing time spent on the internet and high use of technology characterize the digital youth, including Generation Y, Z and the Alpha generation. Prensky [9] shaped the terms of digital natives and digital immigrants. He described digital natives as people born into the digital word, being surrounded by technology from the first moments of their life. They are mostly young people who communicate, socialize and also learn on the internet [10]. According to Prensky's theory [9] digital natives are familiar with online world and the newest technologies. They are used to quick information sharing, downloading and searching. Furthermore, this young generation choose usually the instant way, looking to graphics rather than reading, expecting gratification and rewards right after a task is delivered or connecting to each other, i.e., networking all day from wherever they are. With Prensky's word they are "native speakers of the digital language of computers, video games and the internet" [9, p. 1]. The opposite of digital native is called digital immigrant. They are somehow old-fashioned from the perspective of the youth [9].

White and Le Cornu [11] revised the terms of Prensky and suggested a new typology. They made not a strict distinction between digital residents and digital visitors like Prensky made earlier between digital natives and immigrants. They considered these two clusters as two ends of a continuum which describes technology use depending on individual motivation and context, not just from age. Digital visitors are people who use internet and applications as tools for their goals, after they reached the goal, they leave the internet and live their life offline. While in contrast digital residents use these tools to create a place where they can approach each other and share information about life and work permanently. They prefer to live online and be a member of virtual communities. They enjoy being online and visible, forming their digital identities [11].

Buda [12] developed a more sophisticated characterization for the information society in our digital world. In his view people who do not use or not even possess digital devices are digital eremites. Digital explorers already have digital devices but are still learning how to use them and prefer simpler devices. Digital nomads use both the internet and computer but not so confidently yet. They consume digital written content and prefer familiar websites and platforms. Digital wanderers usually use the internet and digital devices, but still have challenges in some aspects. The modern citizens of information society are the digital settlers who consume and create content, use digital communication, social media and platforms for banking or booking too. Finally, the highest digitalization is reached by digital conquerors. They use the internet as exclusive source of information,

are always available and online. Digital world and technology are essential in their life [12, 13].

University students also can be characterized nowadays as digital natives, digital residents and digital settlers or digital conquerors. Because they are part of the digital generations, generation Y or Z, and are also experts in technology. They use different media platforms to gain more information, preferably in the form of pictures and videos. They are used to innovative technologies and devices and they operate with them in schools and work [14, 15]. Although they represent the digital generation, they differ in career aspirations, habits and personality. This conclusion can be drawn from analyzing the characteristics of university students from different faculties.

While examining educational orientations Morstain and Smart [16] found that between members of different faculties can be found some personality differences too. Social faculty members seemed to be more independent, valuing freedom and unstructured courses where they can set their goals. Besides this the faculty also enabled participation in decision making and teaching-learning arrangements and secured individual-centered functioning. In comparison Realistic and Investigative faculty seemed to prefer structure and pragmatical behavior and emphasize evaluation in the form of grades. They expected students to have clear, rational goals and gain practical experiences by using their scientific knowledge and technical skills. In both cases could be drawn a parallel between the personality of students and the previously mentioned characteristics of faculties [16].

Personality dimensions gave a great basis to comparison of university students. For this reason, Kline and Lapham [17] also examined personality differences among university students and searched for factors which can determine academic success and occupational choice. In the conscientiousness and conformity factors scientist and engineers scored significantly higher than other faculties, and engineers scored higher on the tough-mindedness factor too [17]. Rubinstein [18] also analyzed the differences between university students of different faculties and found that according to the Big Five theory law students are significantly more neurotic than other science groups. Whereas natural science students seemed to be the most agreeable in this comparison [18].

After the success of personality research of different faculties Sánchez-Ruiz, Pérez-González and Petrides [19] extended research to trait emotional intelligence assuming differences between the faculty members of social sciences, technical studies, natural sciences, art and humanities. Social science and art students proved higher emotionality than technical students. Additionally, art students also scored higher in well-being and global trait emotional intelligence, and lower than other faculties in self-control. This latter result might reflect just their perception of their ability of emotion regulation and stress-management [19]. In contrast, Kafetsios and his collegues [20] found supporting evidence that science students have higher trait emotional intelligence than social science students reported by

their self-assessment. They differed in factors of adaptability, positivity in mood, self and social awareness, self-management and social skills. Supporting the fact that science students have higher emotional stability due to their emotional self-efficacy. While measuring ability based emotional intelligence, social science students seemed to perform more emotional intelligence than science and business students [20]. Later, Pertegal-Felices, Castejón-Costa and Jimeno-Morenilla [21] conducted research to describe differences between teaching and computer engineering students and professionals and to determine the most important competencies for these professions. By the analysis of emotional intelligence, it was proven that teacher training students have higher emotional intelligence, extroversion and agreeableness than engineering students and they have also differences in their personality profiles. Interpersonal skills and mood were the most important factors for teachers, while conscientiousness, stress management, adaptability and interpersonal skills belonged to the engineers' professional profile. Although there were differences between the professional profiles, both professional groups confirmed the importance of personal, social and emotional skills [21]. Differing important personal competencies also occurred when Ballesteros-Sánchez, Ortiz-Marcos and Rodríguez-Rivero [22] investigated the competencies of engineering graduates and practicing project managers. Although engineers obtain professional knowledge at the university, they have to use specific skills when becoming a manager or a project manager on the labor market. The personal competency units were for both groups emotional management, self-belief, commitment, communication, problem-management, resources management, team leadership and professionalism. Project managers were better in all competency units, but just in conflict management, team leadership, communication, emotional management and professionalism differed significantly from engineering graduates. Besides the differences, these groups share some similarities too. Their lowest competencies were communication and resource management, meaning they face challenges when managing their own resources. Therefore, graduates have to develop these skills and focus on team competencies and social awareness when becoming a project manager [22].

Furthermore, the last few years of pandemic verified the importance of personality factors in the hybrid and mostly digital world. Especially, the factors which help to tackle with uncertainty and unexpected changes, like positive psychological resources. Bernabe-Valero, Melero-Fuentes, De Lima Argimon and Gerbino [23] found evidence that some personality factors influence our experiences negatively. Their results showed that emotionally unstable people suffered more under the period of lockdown because they are less satisfied with their relationships, might suffer from depression, fear or social rejection. While conscientiousness helped people to be cautious and aware of the steps which kept virus far from them. Gratitude, purpose in life and religiosity were also influencing the experiences during the pandemic. Gratitude secured a positive effect and ensured positive effective experience when facing adversity. Purpose in life also showed a positive association with positive effect through finding new meaning in life and so

lessening the negative effect of the pandemic [23]. Another research emphasized the role of resilience in navigation through stressful times. Ang, Shorey, Lopez, Chew and Lau [24] conducted interviews with university students and their results confirmed that resilience can help in uncertainty and changing times. Their primer source of resilience were social connections which could have been maintained through the internet and applications [24]. This means that digital generation survived this challenging time through utilization of technology and their advanced skills in the online world, respectively to their personal skills.

To summarize

3 Data and Methodology

3.1 Methodology

The present paper is a part of a longitudinal descriptive survey started in 2018 at the Budapest University of Technology and Economics. The study was conducted according to the guidelines of the Hungarian Committee of Psychological Research and approved by the Ethics Committee (approval code: 81). We gather data automatically from the Neptune system about the socioeconomic status and university entrance scores and within we asked first-semester students to fulfill a long online questionnaire about psychological characteristics with a special focus on their positive psychological attributes. The measurement tools were the Hungarian versions of the following inventories, shared via the Neptune system directly to the first-year students in the middle of their first semester (November of the given year). The questionnaires were presented to the respondents in the structure described below. After the 1-month data collection period (which ended before the first examination period), we downloaded the answers from Neptune.

To get a picture of students' personalities, we used the Eysenck Personality Questionnaire (EPI), a 58-item test where students have to decide whether an item is true or false in their case [25-27]. Based on Eysenck's theory personality differs in three main dimensions: extraversion (i.e. the tendency to seek peers, activity, and relationships – in the form of higher scores on the scale) vs. introversion (i.e. the tendency to stay alone – lower scores on the scale); neuroticism (i.e. emotional instability – in the form of lower cores on the scale) vs. emotional stability (i.e. the person is not influenced by emotional cues – higher scores on the scale); psychoticism (i.e. how much a person is aggressive, masculine and nonconform – higher scores means higher level of psychoticism). The test has internationally good psychometric properties [28].

As a holistic tool to describe students' emotional profiles, we used the Bar-On Emotional Intelligence Inventory [29-30]. The test has acceptable psychometric properties based on international validity measures [27; 29]. The Hungarian version contains 121 items, each with a 5-point Likert scale. The higher score a person on the scale has the higher is the mentioned competence he or she owns. Based on Bar-On's theory of EI, the inventory measures 15 subscales in 5 factors [31; 32, p.21.]:

Table 1
Description of the EQ-i scales [32]

EQ-I SCALES	The EI Competencies and Skills Assessed by Each Scale
Intrapersonal	**Self-awareness and self-expression:**
Self-Regard	To accurately perceive, understand and accept oneself.
Emotional Self-Awareness	To be aware of and understand one's emotions.
Assertiveness	To express one's emotions and oneself.
Independence	To be free of emotional dependency on others.
Self-Actualization	To strive to achieve personal goal, actualize one's potential.
Interpersonal	**Social awareness and interpersonal relationship:**
Empathy	To be aware of and understand how others feel.
Social Responsibility	To identify with one's social group, cooperate with others.
Interpersonal Relationship	To establish mutually satisfying relationships.
Stress Management	**Emotional management and regulation:**
Stress Tolerance	To effectively and constructively manage emotions.
Impulse Control	To effectively and constructively control emotions.
Adaptability	**Change management:**
Reality-Testing	To objectively validate one's feelings and thinking.
Flexibility	To adapt and adjust one's feelings to new situations.
Problem-Solving	To effectively solve personal and interpersonal problems.
General Mood	**Self-motivation:**
Optimism	To be positive and look at the brighter side of life.
Happiness	To feel content with oneself, others and life in general.

With the focus on positive source competencies, we used the PERMA Profiler [33]. This is the first holistic measurement tool of well-being with acceptable psychometric attributes. The Hungarian version contains 23 items with 10-point Likert scales. The final structure has 7 scales, five from the original PERMA structure: positive emotion (P), engagement (E), positive relationship (R), meaning or purpose in life (M), accomplishment (A), and two new factors of the refined model: negative emotion, physical health where higher scores mean the higher level of the phenomena. With one 1 item the profiler gives a score of people's self report of happiness and loneliness [33].

To measure the behavioral aspect of dealing with stressful situations we used a questionnaire developed in Hungary by Oláh [34-35]. The coping preference test contains 80 items about behaviors in stressful situations with a 4-point Likert scale. The test gives a preference profile of 8 coping strategies as problem-focused ones (e.g. problem-focused reaction or support-seeking behaviors) and emotion-focused ones (e.g. impulse control, emotion-focused actions, acting out, self-punishment, acquiescence, and attention diversion). Even higher the score on a scale is, the often the person use the mentioned coping style.

To measure the mental and psychological aspects of coping we used a test of the same author [36-39]. The Psychological Immune System Inventory contains 80 items with a 4-point Likert scale. The higher score on the scale means the higher level of the competence. The profile shows 16 subscales in three systems:

Table 2

Oláh's [36-37] model of psychological immune system (PI) that corporates cognitive, behavioral and trait attributes

PI SCALES	The PI Competencies and Skills Assessed by Each Scale
Approach-belief subsystem	**Helps people to adjust to their environment.**
positive thinking	Optimistic beliefs that current events are proceeding towards ideal situations.
sense of control	One's capacity to control one's own emotions.
sense of coherence	One's ability to harmonize thoughts, emotions, behaviors, and lifestyle.
feeling of growth	One's feeling of continuous self-development and achievement.
challenge seeking	One's ability to stay open for novelty and development.
social source monitoring	One's ability to selectively observe and use socio-environmental cues and information.
goal orientation	The ability to stay focused on goals.
Monitoring-creating-executing subsystem	**Helps to explore physical, social, and interpersonal sources that can help during the coping for finding out new challenges.**
self-efficiency	One's degree of positive and realistic self-estimation, self-esteem, and ability to feel proud.
creativity	One's degree of inventiveness, ingenuity, or creativity in developing, managing, and restructuring plans.
mobilizing skills	One's ability to strengthen belief, achieving goals, and selecting appropriate behaviors.
social source founding skills	One's ability to make connections, gain social capital, and collaborate.
learned optimism	One's ability to generate new ideas and alternative possibilities.

Self-regulating subsystem	Helps to stabilize for the long-term persistency of the first two subsystems.
mindfulness or synchronization skill	One's capacity to perceive environmental changes while attending to personal activities.
control of emotions	One's ability to transform negative emotions constructively.
impulse control	One's capacity to control anger or constructively apply it.
irritability-control	One's ability to control personal notions, rationalize and choose the appropriate behavior.

3.2   Data and Sample

The data included students from three years, who completed the questionnaire in the fall semesters of 2018/19/1, 2019/20/1, 2020/21/1. The participants came from two faculties of Budapest University of Technology and Economics: Faculty of Economics and Social Sciences (later referred as the faculty of future managers) and Faculty of Electrical Engineering and Informatics (later referred as the faculty of future IT people).

In case of Sample 1, 416 students completed the survey in 2018/19/1, of which 177 were manager students and 239 were IT students. Their average age, regarding that most of them attended their first semester, was 19.4 years. Altogether, 264 men and 152 women filled out our survey. After grouping by faculty, 114 women and 63 men (64.4% women) at manager faculty and 38 women and 201 men (15.9% women) at IT faculty answered.

Participants os Sample 2, who completed the survey in the fall of 2019/20/1, have similar descriptive statistical characteristics, although the sample has a much larger number of items. 772 students completed the psychological questionnaires, of which 341 were students of manager faculty and 431 of IT faculty. Their average age was also 19.4 years. The proportion of the sexes showed a similar distribution, approximately twice as many men as women completed the questionnaires. The entire data set included data from 259 women and 513 men. 197 (57.8%) of the manager respondents were girls and only 62 (14.4%) of the IT-people respondents were female.

Data of Sample 3 comes from the 2020/21 academic year, the number of respondents increased again compared to previous years. This year 1 117 students completed the questionnaire, 475 students of manager faculty and 642 students of IT faculty. We gender data are missing.

The inventories were administrated as their protocols assess [25-27, 29-30, 33, 34, 36]. In the following parts, we only show the calculated points, subscales, and scales of the psychological attributes of the students. For data calculation and analysis, we used the SPSS statistical program to get the 58 final psychological variables from the 362 items pro person.

4   Results

The main aim of the research was to investigate the psychological factors that differ between the two faculties. In all three years, we examined the normality of the data sets by faculty, from which at least one faculty showed not normal distribution. Therefore, the independent sample nonparametric analysis was performed, using the Mann-Whitney test, and then the results were analyzed at a significance level of 0.05. An analysis of the 58 factors was performed for every year, and then a conclusion was drawn comparing the results of the three years. These are the 4 factors of Eysenck's Personality Inventory (EPI), the 20 factors of Bar-On's emotional intelligence inventory (EQ-i), the 7 factors of PERMA Profiler, the 19 factors of the Psychological Immune System Inventory, and the 8 other factors describing coping preferences.

The factors in which we rejected the null hypothesis in all three years, i.e., we found a significant difference between the mean values of the psychological results of the two faculties, are listed below. Managers' and IT people's characteristics showed significant differences on 18 such factors. From them nearly half of the factors represent the psychological immune system, 30% the EQ-i questionnaire, 22% the PERMA Profiles, and just one the coping strategies and one the personality measured by EPI. In Table 3 we can see the averages of factors where we found significant differences in every year from 2018 to 2020.

Table 3
Cumulated differences between managers and IT people, scores given in percentages (n=2305)

Psychological factor	Average for managers (n = 993)	Average for IT-people (n = 1312)
EPI extraversion	60.95	56.86
EQ-i independence	55.79	59.32
EQ-i interpersonal scale	72.60	66.33
EQ-i empathy	72.70	69.25
EQ-i social responsibility	72.27	67.48
EQ-i interpersonal relationship	72.47	69.40
EQ-i general mood scale	72.83	67.48
PERMA positive emotions	71.12	66.66
PERMA happiness	74.25	61.81
PI approach – belief subsystem	65.07	58.97
PI positive thinking	76.23	71.29
PI social source monitoring	76.47	71.29
PI monitoring – creating – executing subsystem	74.03	70.38
PI self-efficiency	74.56	70.55
PI creativity	73.27	69.82

PI social source founding skills	70.11	66.92
PI self-regard	77.05	71.70
support seeking coping strategy	70.38	68.03

We gathered our data in a period, where not just ordinary stressors appeared but in 2019 we had to face a pandemic situation. So, the question arises to what extent the pandemic situation may have affected students' psychological health. Is there a factor that became significantly different between faculties only during this period? The important question is mainly, if so, what could be the reason for it?

There are 8 psychological factors that showed no significant difference in 2018 but showed in 2019 and 2020. In Table 4 the averages for the two years where there was difference (marked with S in the headline) (total number of participants = 1889) are listed, and for examining the change in psychological factors we added the averages of the year when there was no difference yet (marked with NS in the headline).

Table 4

Changing tendencies of psychological factors between 2018 and 2020 with a significant difference between faculties in the last two years, scores given in percentages

Psychological factor	Avg. managers 2018 (NS) (n = 177)	Avg. IT-people 2018 (NS) (n = 239)	Avg. managers 2019 (S) (n = 341)	Avg. IT-people 2019 (S) (n = 431)	Avg. managers 2020 (S) (n = 475)	Avg. IT-people 2020 (S) (n = 642)
EQ-I intrapersonal scale	68.12	65.86	54.79	56.52	69.89	71.32
EQ-i stress management scale	63.31	62.79	60.58	59.58	64.30	74.43
EQ-I reality-testing	63.49	63.34	56.63	57.76	65.97	70.31
EQ-I happiness	74.66	72.61	66.55	65.05	80.45	70.05
PERMA engagement	75.81	73.28	75.40	72.63	74.37	71.03
PERMA health	72.62	69.32	70.49	66.20	73.43	70.37
PI social mobilizing skill	75.57	72.71	73.86	70.69	75.66	65.47
acting out coping strategy	56.41	55.79	60.23	57.33	61.44	57.46

As the coronavirus caused serious restrictions in Hungary in the second half of 2019/20, the psychological factors that became significantly different by 2020 may also be of interest. There are 9 such factors, which differed significantly only in 2020. Beside the results of 2020 we also listed the ones from the previous years to take a look at the changes on the factors. In Table 5 are shown the averages for the non-significant and significant years (marked by S and NS) as above.

Table 5

Changing tendencies of psychological factors between 2018 and 2020 with a significant difference between faculties in the last year, scores given in percentages

Psychological factor	Avg. managers 2018 (NS) (n = 177)	Avg. IT-people 2018 (NS) (n = 239)	Avg. managers 2019 (NS) (n = 341)	Avg. IT-people 2019 (NS) (n = 431)	Avg. managers 2020 (S) (n = 475)	Avg. IT-people 2020 (S) (n = 642)
EQ-I self-regard	79.93	77.35	51.68	53.29	79.26	54.68
EQ-I problem-solving	75.30	74.84	66.24	67.45	76.26	64.84
EQ-I adaptability scale	66.93	66.99	59.31	60.30	69.74	72.38
PERMA negativity	57.33	56.89	57.18	55.72	53.16	70.34
PI challenge seeking	72.04	70.17	67.60	66.64	72.58	72.59
PI persistence	72.99	70.81	63.74	62.76	75.36	67.90
PI sense of coherence	74.71	72.63	61.18	60.13	76.23	71.09
self-punishment coping strategy	65.62	65.65	61.57	63.46	58.71	58.50
acquiescence coping strategy	59.25	60.84	60.41	60.13	56.09	62.12

Of the remaining 25 factors, 11 were those that showed a significant difference only in 2018 and 2020, while another 3 only in 2019. 3 psychological factors differed significantly in 2018 but were non-significant in 2019 and 2020.

5   Discussion

Our study aimed to examine the differences and similarities between students of economic major (considered future managers) and students of electrical engineering major (considered future IT people) in some psychological characteristics, mainly from the field of positive psychology. We measured Eysenck's personality dimensions, emotional intelligence competencies and skills, positive source competencies and coping skills, the latter from behavioral, mental and psychological aspect too. In every aspect we found some results worth mentioning, which let us anticipate gaps and bridges between managers and IT people later in workplaces. First, we discuss the personality and competency differences of the two majors' representatives.

The main difference is given by the personality factors. We found significant differences in extroversion over the years. Future managers showed higher rate of extroversion, which means they prefer being among peers, seeking social support and actively forming new relationships. Although Kline and Lapham [17] and Rubinstein [18] could have delivered supporting evidence for distinct personalities of different faculties' members, they could have not shown significant difference in extroversion. We disconfirmed their outcomes and proved that there are differences between engineers and economists in their level of extroversion. These differences are strengthening the evidence of Vedel, Thomsen and Larsen [40] who found that science students have the lowest level of extroversion in comparison to medicine, political science, arts and humanities academic majors. These findings are also consonant with the preconceptions that engineering students are more introverted than other students.

We also found that emotional stability is higher in case of future managers and future IT people scored higher on rigidity scale. Although these outputs were not significant, they show us there should be some differences in how the members of these faculties process and manage their feelings. For this reason, we also compared the emotional characteristics of students.

Using Bar-On's EQ-i questionnaire, the main difference appeared to be on the factors of interpersonal characteristics and general mood. These findings are consonant with the previously described differences in extroversion according to that engineering and economist students differ in their eagerness to socialize. In their emotional competencies this difference means that economist students are socially more aware, open to other people and to the feelings of others and relate well with others. In term of general mood, economist students can motivate themselves better than engineering students. The level of some emotional facets of economist students also diverges form the results of engineering students. Future managers reached higher level on empathy, social responsibility and interpersonal relationship too. This means they understand easily others and their emotions, they also sometimes identify themselves with emotions of others and with social

groups while cooperating or approaching new people. In contrast, engineering students had a higher level on independence facet, which indicates they are self-reliant and do not depend on others emotionally. However, according to the lower means in most of the facets, future IT people still have to work on these competencies to be emotionally more accepting and conscious, not just in their social relations, but in their relation to themselves too.

Even though emotional intelligence seemed to be higher for science students on independence facet and their higher emotional intelligence is supported by some studies [20; 41], we found that future managers assessed higher their emotional intelligence in most of the cases. Kafetsios with his colleagues [20] suggested an answer why emotional intelligence measured by different type of questionnaires can result in contradictory outcomes. They found that science students score higher on trait emotional intelligence measurements, whereas social science students reached higher level of emotional intelligence when it was measured with an ability-based instrument.

Beside emotional aspect, we examined psychological aspects too. Positive source competencies of the PERMA-Profiler gave a holistic picture about the well-being of our participants. Over the years we found in positive emotions and happiness significant differences between the two groups. Economist students already showed a higher general mood in EQ-i and due to this ability, they can report higher level of happiness and positivity too. To the best of our knowledge, no one examined the well-being of university faculties separately and so made no such a distinction between groups of students.

Another type of positive source competencies describes the behavior in stressful situations and shows the preferred coping style and consider our mental and psychological reactions under stress. Therefore, we used Psychological Immune System Inventory [37-38] to understand the stress reactions of students from both faculties. Economist students prefer significantly more the coping assets of the approach-belief and the monitoring-creating-executing subsystem. They try to adjust more to the environment and manage their emotions, behaviors and thoughts than engineering students. Moreover, they look for external and internal sources when coping with stress. As already mentioned, they are optimistic about their life, and our results confirmed that they are characterized by positive thinking, are open to their milieu and ready to monitor available social sources. In addition, they are more self-efficient, search for great ideas and new opportunities to solve challenges and collaborate. Meanwhile, they respect their own thoughts, feelings and emotions. In their behavior we can see that they actively search for support and so they rather use a problem-focused coping style in comparison to future IT people. Supporting our results, Austin, Saklofske and Mastoras [42] found a strong correlation between emotional intelligence components and task-focused coping. So, the higher emotional intelligence level reported by future managers implied also a higher preference for task-focused coping style among students compared to the characteristics of future IT people. The characteristics of

faculties might bring with the differences of their admitted students because of faculties' special culture [16], but these assumptions should not be generalized until further research strengthens the variation of the level of well-being, psychological immune competencies and coping preferences among faculties.

Above all, the pandemic should be mentioned, since it was a huge stressor in the last two years and affected physiological, emotional, psychological and mental health of the population. University students had to face lockdown, switch from personal to digital education, get familiar with more teaching techniques and the distance from their peers from one day to another in March 2019 [43]. The impact of the lockdown with digital and later the hybrid education can be the reason that some differences occurred in our results comparing psychological factors in 2018, 2019 and 2020. Generally speaking, the immediate changes in educational setting and everyday life strongly affected university students as represented in the general lower levels of positive psychological factors in autumn 2019.

The emotional reactions to the uncertainty are reflected in emotional intelligence factors. Change management was challenging for both future managers and future IT people in 2019, but they acclimated to the new situation and used their reality testing to accept the "new normal". After they got through this situation future IT people reached a significantly higher level of adaptability and stress management, according to that they tolerated better the hybrid education and social distance from their peers. Both groups had to adapt to the new circumstances and after a lower level of happiness reported in 2019, they scored higher on this scale, future manager even higher than future IT people. This might be caused by the happiness of reuniting with peers thanks to the hybrid education and lowering restrictions. While IT people relied on themselves utilizing this period for developing higher self-awareness and emotional self-consciousness and this possibility for inward oriented attention probably made them happier.

In positive psychological source competencies, we also found that engagement of our students lowered with the time and they lost on their enthusiasm year by year. Their perception about health also showed a slight decline in 2019, but got back to a higher level by 2020, after recovering from illness or collecting good experiences in their environment. The surprising result was that negativity of IT people has risen this year after a moderate decrease in 2019, while reported happiness also has risen to 2020 in their case. The reason might be that they have learned how to be aware of their emotions and be able to express them, so they reported more intensive emotions in 2020 after thy experienced them in the uncertain period.

What helped students through the digital education and the hybrid period, can be described by taking a look at the psychological immune competencies and coping strategies. Social source founding skills and sense of coherence helped future managers through the tough times, when they were able to use again their social relations to recharge and so find again harmony in their lifestyle and emotions.

Although future IT people also reached a higher score on sense of coherence in 2020, their level of social mobilizing lowered year by year. It makes sense because they were rather monitoring themselves and as more introverted students leaning on their own competencies, staying open to challenges and being persistent. They also used emotion-focused coping strategies, like acquiescence to lower their distress and this helped them lower their tendency to self-punishment. Future managers also preferred emotion-focused coping strategies, such as emotional emptying with a rising tendency for acting out. Thus, their coping strategies directed not toward themselves, but rather aimed to catch the eye of others and so manage stress.

Our results show that this younger, in digital world more experienced generation also suffered from the forced digital education and social distance. Later, there might be also difficulties when future managers and IT people will work together but raising awareness in previously described characteristics might help building bridges between the representatives of the two distinct field and fostering concentration on their similarities when working together in challenging times.

Conclusion

The current trends in human resources management do not question the power and value of employers. The goal of most companies is to select the best fitting members, even managers or employees who are qualified and experienced. To reach a competitive advantage with human resource, the HR elements as organizational culture and high-quality interpersonal relationships should be important part of organizational strategic planning [44].

Based on our results, many significant differences are between management and informatics students, however, they have to work together in their future workplaces. Our study showed a basic difference among personality traits, like extraversion and introversion. In a context of a workplace, personality can't be developed but the recognition of the differences and using the strength of these characteristics is a good way of acceptance. Introverted people like to work alone, independently and can concentrate or focus for a long time. Communication might be a bit difficult between extroverted managers and introverted IT people but if managers notice this evidence and can use more appropriate communication then IT people can work hard on their tasks. To find the best way of cooperation, emotional intelligence can play a key role. Differences in self-knowledge may foster interpersonal conflict or feelings of workplace stress or dissatisfaction from both sides which can lead to fluctuation. To prevent these harmful situations and progresses, development of social and emotional skills are needed. Elements ofsuch a training program could be competencies from EQ-i or PERMA elements, and adaptive coping mechanisms. Building of a positive emotional climate at the workplace affects positively not only on interpersonal satisfaction but on the other hand it has a positive effect on performance and business or organizational success [45]. Human resource staff faces these challenges in form of everyday

small conflicts but with this evidence-based conclusion, they can renew human resource processes like talent management, assessment, development, or feedback systems. As Hitka et al. [46] found the management has to take employers needs into account which can vary across cultures or any other agents. The higher level of emotional competencies of managers are important because they can be aware of motivational needs and can build the unique way to motivate IT people, which is a key of job satisfaction.

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