EMOTIONAL INTELLIGENCE PROFILES AND INTERGENERATIONAL COLLABORATION IN BUSINESS

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Abstract. Emotional Intelligence (EI) fosters positive synergies for an intergenerational match in business. The main goal of this contribution is to investigate the components of EI for selected young people and seniors and to formulate recommendations for their successful intergenerational business cooperation in Slovakia. The 4-component instrumental model for EI in business and the "Emotional Intelligence in Business" questionnaire were used to construct an average EI profile for different generations. 157 young people (Generation Z) and 236 seniors (Baby Boomers generation) from Slovakia participated in the research. The statistical study of the components of EI was conducted using unadjusted and adjusted univariate tests for repeated measures and multiple comparisons. The results of both tests were identical and therefore considered robust. The research confirms that EI in business increases with the respondent's age: investigated seniors demonstrate a higher level of EI than selected young people in three components. At the same time, findings show that seniors are more focused on self-awareness, while the young are more empathic. The research considerably deepens the understanding of the potential contributions of different generations in business collaboration and benefits social unity and sustainable economic development.

Keywords: emotional intelligence, EI, intergenerational collaboration, EI model, emotional intelligence profile, intergenerational entrepreneurship, collaboration in business.

JEL Classification: M12, M14, M54.

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Introduction

Sustainable entrepreneurship with the participation of different generations is a promising direction for the development of any country, according to the agenda of the United Nations on the adoption of the Sustainable Development Goals for 2015–2030 (United Nations, 2015), which aims to promote programs to strengthen education, lifelong learning, mobilize knowledge for sustainable development, and address social issues. Entrepreneurship, with the participation of different generations, drives innovation, job creation, competitiveness and competition, social coherence, sustainable development, and economic growth.

As the life expectancy of seniors increases, they can remain in the labor force (Kautonen et al., 2017; Ekoh, 2021). Seniors accumulate precious experience and maturity that any changing society should consider putting into value. Their involvement in the business environment is a potential way to solve many economic and social problems (Starks, 2013). Undoubtedly, working together, young people and seniors can complement each other, sharing knowledge, professional experience, and contacts. Some favorable factors for one age group can represent blocking factors for the other, giving place to positive synergies for an intergenerational match (Perez-Encinas et al., 2021). Companies that learn to manage generational diversity will have a strategic advantage. However, it presents a daunting managerial challenge since three to five generations (Veterans, Baby Boomers, Generation X, Generation Y, and Generation Z) can coexist in today's labor market. At the same time, each generation has its values, expectations, needs, and peculiarities of professional activity, i.e., different educational, socioeconomic, and professional profiles.

Emotional Intelligence (EI) enhances mutual understanding and bridges the generation gap (Farelo & Gómez, 2021). EI increases engagement, loyalty, and openness and facilitates the exchange of ideas, knowledge, and experiences between people who work together. Individuals with high EI are better at establishing and developing social relationships and are more accepted into groups.

According to D. Goleman (1995), EI is the capacity for recognizing our feelings and those of others, motivating ourselves, and managing emotions effectively in ourselves and others. EI is essential in coping with problems and unexpected situations and building effective communication. Research on EI has extended from psychology to entrepreneurship, business, and leadership. A literature review in Scopus and Web of Science databases showed increasing publications on EI in management. Despite the undoubted relevance of scientific research on EI in intergenerational collaboration in business (hereinafter referred to as IC in business), a considerable gap was found in this area. Research works, which can offer a comprehensive solution to the problem of creating an appropriate information model for IC in business with the help of EI, are scarce and not detailed enough.

As a rule, the development of EI follows the most well-known EI models, proposed by J. Mayer, D. Caruso, and P. Salovey (2000), R. Bar-On (2000), or D. Goleman (1995). The model designed by Mayer et al. (2000) contains four branches of EI that describe how people recognize and manage their own emotions and how people may attempt to influence the emotions of others. The refined model of R. Bar-On has 16 skills grouped into self-perception, self-expression, interpersonal, decision-making, and stress management components

(Bar-On, 2000). D. Goleman originally identified 25 emotional competencies, sorted into five clusters: self-awareness, self-management, motivation, empathy, and social skills (Goleman, 1995). However, over time, he reduced his model to 18 competencies, sorted into four clusters: self-awareness, self-management, social awareness, and relationship management (Wolff, 2005). Psychometric tests accompanied the considered models ((MSCEIT) the Mayer-Salovey-Caruso Emotional Intelligence Test; EQ-i, based on Goleman's work and Bar-On's measurements; ECI 2.0; EQ 360 2.0)) (Ackley, 2016). However, using these models is complicated in management, as they do not consider the specifics of the business environment. From here arises a practical problem to adapt the model designed by D. Goleman to the business environment, visualize the assessment results, and develop recommendations for improving EI.

Therefore, in our research on EI in business, we use the original 4-component instrumental model for emotional intelligence development in business (4EI model), which is based on the latest Goleman model but differs in the composition of competencies. The proposed model contains 16 competencies related to the development of EI in business (Mikuš et al., 2022). Having studied creating and validating psychometric tools, we created a reliable "EI in business" questionnaire adapted to the 4EI model (Lutsenko et al., 2021). Given this, the value of using the 4EI model and "EI in business" questionnaire lies in the opportunity to build individual and group EI profiles of participants in business projects. The 4EI model makes it possible to construct average profiles for different generations' groups in different countries.

This study focuses on young people (Generation Z) and seniors (Baby Boomers generation) because, despite their undoubted potential, these population groups have their limitations on the labor market. The study's main purpose is to investigate the components of EI for selected young people and seniors of Slovakia by creating their average EI profiles in businesses and formulating recommendations for their intergenerational business cooperation.

This research is an original pioneering work aimed at developing recommendations for intergenerational collaboration based on using EI profiles.

Our research makes several key contributions. First, it complements and extends the existing research on using EI to improve communication effectiveness (e.g., Zhang & Hao, 2022; Uzunbacak et al., 2022; Çetin & Karakaş, 2021) by offering a practical approach to the use of EI.

Second, our study makes a practical contribution to effective EI for young people and seniors as one of the promising and relevant topics (e.g., Dietz & Fasbender, 2022; Yadav & Lenka, 2020; Farelo & Gómez, 2021; Rožman et al., 2020). In the future, intergenerational collaboration in various forms can be nurtured in business incubators at universities. Collaborative learning can become a new powerful direction of research in entrepreneurial education. Training can be a powerful new research area using challenge-based learning in higher education (Leijon et al., 2022).

Third, our unique intergenerational comparison can be used in other business settings and countries. It significantly enriches knowledge about the characteristics of the EI of business people from different countries. However, it also promotes social cohesion and sustainable economic development at the international level.

The development of intergenerational collaboration can take place territorially within educational institutions. At universities, conducting long-term joint training of business representatives of different generations is a promising trend. This study provides valuable information for businesses, organizations, universities, local governments, and non-governmental organizations that can support vulnerable groups in their efforts to benefit society through self-employment in the business sector.

The rest of the article is structured as follows. First, a literature review that reflects current research on the role of EI in IC in business. Second, the methodological approach is described. Third, the steps for constructing average EI profiles in business for different generations of business representatives are proposed; the components of EI of selected young people and seniors in Slovakia are described. The paper ends with a discussion of the results and main conclusions.

1. Literature review

According to the Future of Jobs Report 2020 (World Economic Forum, 2020), EI was identified as one of the key soft skills in the business environment. EI also reinforces top 2025 skills, such as leadership and social influence, resilience, stress tolerance, and flexibility. EI has become a major area of interest not only in psychology but also in management, economics, and business. Over the last 10 years, the Management category has taken 2nd or 3rd place in the number of publications on EI among the 136 Web of Science databases categories (after Education, Educational Research, and Psychology Multidisciplinary categories). In 2019–2021, a growing interest in EI has been detected in Management, Economics, and Business WoS categories. The reason is that the business world requires people to work together and cooperate. EI, aimed at understanding and managing emotions, helps people to be more productive in close interactions.

EI remains one of the few resources that are difficult to copy or replace in an open market and rapid information exchange. Therefore, EI is classified as a sustainable competitive asset. EI increases the number of quality communications, which gives a competitive advantage in the business environment. People with a high level of EI are more likely to engage in innovative entrepreneurial activities. Their creative dispositions facilitate innovation and demonstrate more active knowledge-sharing behavior (Çetin & Karakaş, 2021).

In general, the vast majority of scientists agree that the EI of employees adds value to companies. Researchers have indicated that EI positively impacts productivity in professional activities and leads to increased sales, cash receipts, and customer loyalty in various business areas (Bayighomog & Arasli, 2022; Zhang & Adegbola, 2022). EI positively affects entrepreneurial self-efficacy and intensifies the intention to undertake an entrepreneurial path (Cropanzano & Wright, 2001; Lee et al., 2011; Fedorova et al., 2022).

EI fosters the development of leadership skills. Modern leadership models are based on EI. EI highly correlates with all components of transformational leadership (Gardner & Stough, 2002). A leader's EI is essential in building high-performing groups (Jin et al., 2012). Leaders with high EI can convert their colleagues' potential into collective talent, increasing the commitment of their employees. The EI of project managers increases team cohesion

and saves time in achieving the desired results (Zhang & Hao, 2022). The adaptability and optimism of managers with high EI positively affect financial, operational, and employee performance. In addition, EI creates a social effect. Employees with a high level of EI are satisfied with their job (Pekkan & Bicer, 2022) and have organizational commitment leading to reduced turnover intention (Uzunbacak et al., 2022). EI helps workers cope with stress and keeps them healthy at work.

Based on the analysis of scientific literature, we believe that the benefits of EI in business, management, and at work are undeniable. However, there exists a problem with quantifying the impact of EI. Further research requires moving to a new level of measuring the impact of EI on financial performance. This daunting task may have contributed to the decline in publications on EI in recent years. The fact is that EI is an intangible and hidden company resource; its direct impact is difficult to trace in the accounting reports (Fedorova, 2020). The bearer of EI is the individual who is not the company's property and is only temporarily obliged to work for the company. EI is also dynamic and only manifests itself in the joint activity of people.

A unique opportunity to track the impact of EI on financial success is the creation of project teams in the business. The maximum practical benefit of EI can be seen in the collaboration of individuals with different abilities, visions, experiences, talents, and diversity of thinking and working methods (Brečko, 2021; Farelo & Gómez, 2021). Collaboration across generations increases employees' satisfaction, motivation, and work engagement (Nurhas et al., 2022) and promotes innovation and creativity due to the diversity of thinking and working methods (Yadav & Lenka, 2020).

Many published studies describe the benefits of using generational diversity in joint activities (Dietz & Fasbender, 2022; Yadav & Lenka, 2020; Rožman et al., 2020). Much less research has been done on identifying key competencies in IC in business. Nevertheless, in all the works on intergenerational collaboration that we find, we trace the key role of the components of EI (Labanauskaitė et al., 2021; Lojda et al., 2020; Perez-Encinas et al., 2021; Starks, 2013). So, for example, Nurhas et al. (2022) argue that IC in business requires the development of competencies such as self-determination, conscientiousness, intergenerational reflection, and resilience. Many scientists emphasize the central role of empathy in collaborative activities as an ability to establish an emotional connection with another person (Ingram & Zou, 2008; Lee et al., 2018; Fasbender et al., 2020) or as the important competency for successful adaptation of intergenerational teams to digital transformation (Labanauskaitė et al., 2021). The findings of Spanish sociologists Rožman and Milfelner (2022) are particularly valuable for our study of the relationship between emotional intelligence and intergenerational collaboration. The scientists have suggested an Intergenerational Leadership Model, which comprises two transversal competencies, one of which is EI as a tool for getting the best out of intergenerational talent.

Thus, the leading studies on intergenerational collaboration emphasize the importance of EI. We believe involving young people and seniors in collaborative business projects is an extremely promising way in business. To create a productive and positive collaboration environment and increase employee engagement and business efficiency, it is advisable to pay attention to the needs and desires, differences in expectations, and work styles of young people and seniors (Table 1).

Table 1. Differences between young people and seniors in business (composed by the author based on Farelo & Gómez, 2021; Lojda et al., 2021; Brečko, 2021)

Characteristics	Young people (Generation Z)	Seniors (Baby-Boom Generation)
Strategy	Short-term, flexible and adaptable	Long-term, have a strategic vision and understanding of the political aspect of business
Experience	Experienced in digitalization and language skills	Experienced in business
Communication	Communicative in both real and virtual worlds, expect feedback on the results of their work	Less sociable, feedback is often used as a "fix" and less as a way of "sharing points of view")
Creativity, innovativeness	Creative, new technologies are a natural environment for them	Less creative, guided by an established procedure
Attitudes to risk	Low risk-sensitivity	Highly sensitive to risk and failure
Work orientation	Result-oriented	Process-oriented
Perceptions of leadership	Feel no unconditional respect for authorities, believe that respect should be earned	Take a hierarchical approach in leadership, believe that authority is based on experience
Commitment	Weakly committed (value changing jobs as a form of career advancement)	Strongly committed (gradual value advancement within the same company)
Performing duties	Adaptive, may not adhere to clear instructions	Hardworking, responsible and disciplined

In this study, we investigate two generations: Generation Z (other names are iGeneration, Gen Tech, Online Generation, Facebook Generation, and Generation C (Dolot, 2018)), born approximately from 1995 to 2010, and Baby Boomers generation (another name is Children of Prosperity), born approximately from 1946 to 1964. The choice can be explained by the fact that it is particularly difficult for these generations to find a place in the labor market. Their business collaborations would increase the level of self-employment among the population.

Generational differences reveal a high degree of interchangeability and the potential for IC in business. Seniors can be better performers, while young people are more creative. Seniors are good strategists, but young people are more adaptable in constantly changing contexts. Seniors have significant business experience, while young people have digital and language skills.

However, diversity in employee interactions cultivates interpersonal tensions (Dietz & Fasbender, 2022). Many generational stereotypes exist (Burnes et al., 2019; Brečko, 2021; Rožman & Milfelner, 2022). Among the most common negative beliefs is that Baby Boomers resist change and are reluctant to learn (Brečko, 2021). Generation Z representatives are ambitious and not loyal to the employer, focusing on personal success. However, more detailed studies have shown that seniors and young people do not agree with these conclusions about themselves (Brečko, 2021). Generally, seniors support young entrepreneurs and are prone to share experiences, contacts, and financial support (Perez-Encinas et al., 2021). Sometimes,

there can also be problems due to inconsistency between how people perceive themselves and how others perceive them. For example, Baby Boomers regard themselves as dedicated employees with much experience, while other employees see them as controlling and unable to give clear instructions (Farelo & Gómez, 2021). Often, people worry about what others think of them, which can also affect employee performance. Creating successful intergenerational business projects can dispel these stereotypes. Znidarsic and Dimovski (2009) found the solution in combining wisdom and innovativeness of employees in the development of new forms of solidarity, mutual support, learning, and transfer of knowledge and experience among generations at enterprises.

Overall, age diversity in collaborations can promote social progress and cohesion and benefit both the organization and the individual. The problem-solving experience of seniors allows young people to save effort and time. Young people's enthusiasm, energy, and skills enhance seniors' engagement and well-being (Bakker et al., 2014). The involvement of seniors in the collaboration prevents emotional burnout, which is associated with depression, anxiety, sadness, lack of concentration, avoidance of activities, reduced working capacity, and reluctance to work and socialize with coworkers (Uzunbacak et al., 2022). The engaged employees experience positive emotions such as happiness, enthusiasm, and joy. Happy people are more sensitive to opportunities at work, more outgoing and helpful to others, and more confident and optimistic (Cropanzano & Wright, 2001); they stay in good physical and mental health and feel more involved and motivated to continue working (Ekoh, 2021).

A prerequisite for the formation of successful intergenerational collaboration is collaborative learning in a university environment with subsequent adaptation to the market through business incubators. Business training in groups should be complemented by EI training. Conscious improvement of EI will prepare outstanding entrepreneurs, business people, and managers. Human resource management involves intensive knowledge sharing between employees of different ages throughout life (Cheung & Wu, 2013).

Thus, the literature analysis demonstrates an attractive prospect of collaboration between young people and seniors in business. At the same time, the research highlights the key role of EI in combining the potential of different generations. We believe that a unique opportunity to come close to quantifying the contribution of EI is IC in business. Our study enriches the existing literature with a new tool to measure EI in intergenerational collaboration and provides insights into the complementarity of young people and seniors in business projects. Analyzing collaborators' EI is a powerful starting point for national research on intergenerational collaboration. Studying the EI of selected young people and seniors will help to match their potential with the greatest synergies. Also, the resulting EI profiles will allow the refinement of the training itinerary for each generation.

2. Research methodology

The 4-component instrumental model for EI development in business (4EI model) is used for measuring EI and building the EI profile of respondents (Mikuš et al., 2023). In previous studies, we have used the 4EI model to build individual profiles. In this paper, for the

first time, we apply the 4EI model to generate an average group EI profile for the particular generations. The 4EI model is based on four essential components: self-awareness (SA), self-management (SM), social awareness (SocA), and relationship management (RM) (Mikuš et al., 2022). For the first time in this study, the 4EI model is used to build EI profiles for the different generations. The 4EI model is shown in Figure 1.

The horizontal axis of the 4EI model from left to right shows the direction of latitude of the EI cover: from the individual to the team level. The vertical axis from the bottom up shows the degree of control of the EI: from only understanding one's own emotions and the emotions of others to managing emotions (own and others). Each quadrant size in the model corresponds to the quantitative characteristics of the corresponding component of the 4EI model. This approach allows the learning process and demonstrates the dynamics of each component of the EI by increasing the area of the corresponding quadrant. The quadrant size can vary from 0 to 10, corresponding with the standard stan test scale. According to the stan scale, the results from 0–3 are a low level (LL), more than 3 to 7 is an average level (AL), and more than 7 to 10 is a high level (HL) of development of the components of the 4-component instrumental model of the EI. The 4EI model includes 19 competencies adapted to the business environment (Mikuš et al., 2023).
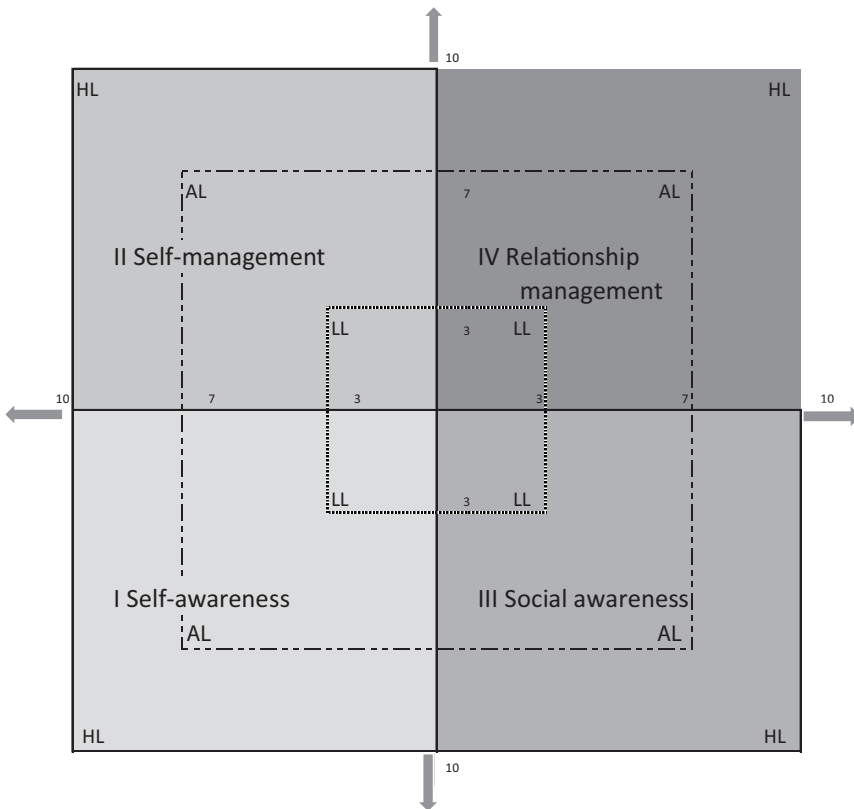

Figure 1. The 4-component instrumental model for the development of EI (4EI model)
(source: own elaboration)

The "Emotional Intelligence in Business" test, developed according to the 4EI model, is the main research tool in this paper. The effectiveness of the test has been empirically proven, allowing the diagnosis and recording of emotional intelligence dynamics. One hundred fifty-eight people took part in the psychometric verification of the test, and a demonstrator and confirmation analysis was carried out using the programs MS Excel, SPSS, STATISTICA, FACTOR, and R-Studio (Lutsenko et al., 2021). Over 500 youths from Ukraine, Poland, and Slovakia have already used this questionnaire.

The "Emotional Intelligence in Business" test contains statements on 4 clusters (self-awareness, self-management, social awareness, and relationship management). They are accompanied by a 5-point grading scale: 0 – never, 1 – very rarely, 2 – sometimes, 3 – often, and 4 – always. Analysis of the answers made it possible to reach the psychometric properties on a 10-point scale.

The "Emotional Intelligence in Business" test allows us to build a convenient graphical display of the results as an EI diagram of four quadrants – EI profiles. The proposed tool allows tracking the dynamics of development before and after training each component of the 4EI model. Using the EI profiles, it is possible to make recommendations for the further development of EI components.

The test can be taken in the Smart Sender program in Telegram messenger following the link to the chatbot https://t.me/SEID_balanceEI_bot?start=ZGw6MzM5Njk, using Google forms or using printed questionnaires. In this paper, we focused on a study of EI of selected young people and seniors in Slovakia. A non-randomized sampling strategy was employed comprising 157 young individuals from Generation Z (aged 19–21 years) and 236 seniors belonging to the Baby Boomers generation (aged 59 years and older). The young participants were exclusively drawn from students enrolled in a business university, ensuring that the entire population of fourth and fifth-grade business students was included in the sample. As these young individuals are future entrepreneurs, managers, and employees, their representation in the study provides valuable insights into this generation's perspectives within the business realm. Similarly, the senior cohort was recruited from students attending the University of the Third Age, encompassing individuals with diverse business backgrounds, including entrepreneurs, managers, employees, but also retirees (as they hold the potential to be active in the labour market). This purposive sampling approach was chosen to specifically target individuals with business-related experiences and knowledge, thus facilitating a deeper understanding of how measuring EI can be effectively applied within a particular business environment.

The statistical study used univariate tests for repeated measures and multiple comparisons. We analyzed the EI score in dependence on the within-group factor and the interaction of the within-group and between-group factors. The levels of the within-group factor- quadrant represent the particular examined components (self-awareness (SA), self-management (SM), social awareness (SocA), and relationship management (RM)), and the levels of between-groups factor- respondent characterize respondents in terms of age (young people, seniors).

The main objectives of this article are:
– To identify the key steps for building average EI profiles in businesses for a generation.
– To build average EI profiles in business for selected young people and seniors of Slovakia.

- To investigate selected young peoples' and seniors' EI profiles and to formulate recommendations for IC in business in Slovakia.

Based on the statistical analysis of the data, we make two global null statistical hypotheses:
- H0: EI score is independent of quadrant within-group factor interaction, or there is no statistically significant difference in EI score between quadrant levels of the within-group factor;
- H0: EI score is independent of quadrant and respondent factor interactions, or there is no statistically significant difference in EI score between combinations of within-group quadrant and between-groups respondent factor levels.

In case of violation of the condition of the covariance matrix sphericity, we use unadjusted and adjusted univariate tests for repeated measures to test the set hypotheses. If the covariance matrix sphericity condition is not met, the size of the I-type error increases (Ahmad, 2017; Haverkamp & Beauducel, 2017). The declared significance level is achieved by adjusting the degrees of freedom for the used F-test using the Greenhouse-Geisser adjustment. The Newman-Keuls test was used for multiple comparisons, which has more power than the most commonly used post hoc tests (Lee & Lee, 2018).

The proposed methodology could also be applied in other countries and business setups to develop IC in business. Thus, in the future, statistical research conducted according to the 4EI model will allow us to develop methodological recommendations for IC in business.

3. Results

3.1. Identifying the key steps for building average EI profiles in businesses for a generation

The key steps for building EI profiles in business are based on the 4EI model. The 4EI model can be described in this way (1):

$$F(EI) = f(xSA, xSM, xSocA, xRM) \rightarrow max \tag{1}$$

where x€ {AL, HL}; AL – average level (3–7); HL – high level (≥7); SA is Self-awareness; SM is Self- management; SocA is Social awareness; RM is Relationship management.

The key steps to obtaining average EI profiles in businesses for different generations consist of 4 stages and are shown in Figure 2.

Thus, according to the 4EI model and using the "Emotional Intelligence in Business" test, we can construct an average EI profile of any generation in any country or business setup. This will help to increase the scientific knowledge of the characteristics of intergenerational collaboration.

3.2. Building average EI profiles in business for Slovak young people and seniors

157 young people and 236 seniors (393 respondents) participated in the Slovakia survey. A survey was conducted with the help of a chatbot in the program Smart Sender and Google Forms. Participation in the empirical study was voluntary. Following the key steps presented in Figure 2, we obtain Descriptive Statistics EI for selected young people and seniors in Slovakia (Table 2, Figure 3).

Steps

Description

Steps	Description

Selection of the target group

Baby-boom generation (1946–1964)	Generation X (1965–1980)	Generation Y (millennials) (1981–1995)	Generation Z (iGeneration) (1996–2010)

Questionnaire procedure

Google Forms	Smart Sender, chatbot https://t.me/SEID_balanceEI_bot?start=ZGw6MzM5Njk	Printed material

Calculation of the average values of the 4EI model's components

Average value of the component	Baby-boom generation	Generation X	Generation Y	Generation Z
Self-awareness	$SA = \sum_{n=0}^{N}(SA)/N$			
Self-management	$SM = \sum_{n=0}^{N}(SM)/N$			
Social awareness	$SocA = \sum_{n=0}^{N}(SocA)/N$			
Relationship management	$SM = \sum_{n=0}^{N}(SM)/N$			

Building an average EI profile and providing recommendations

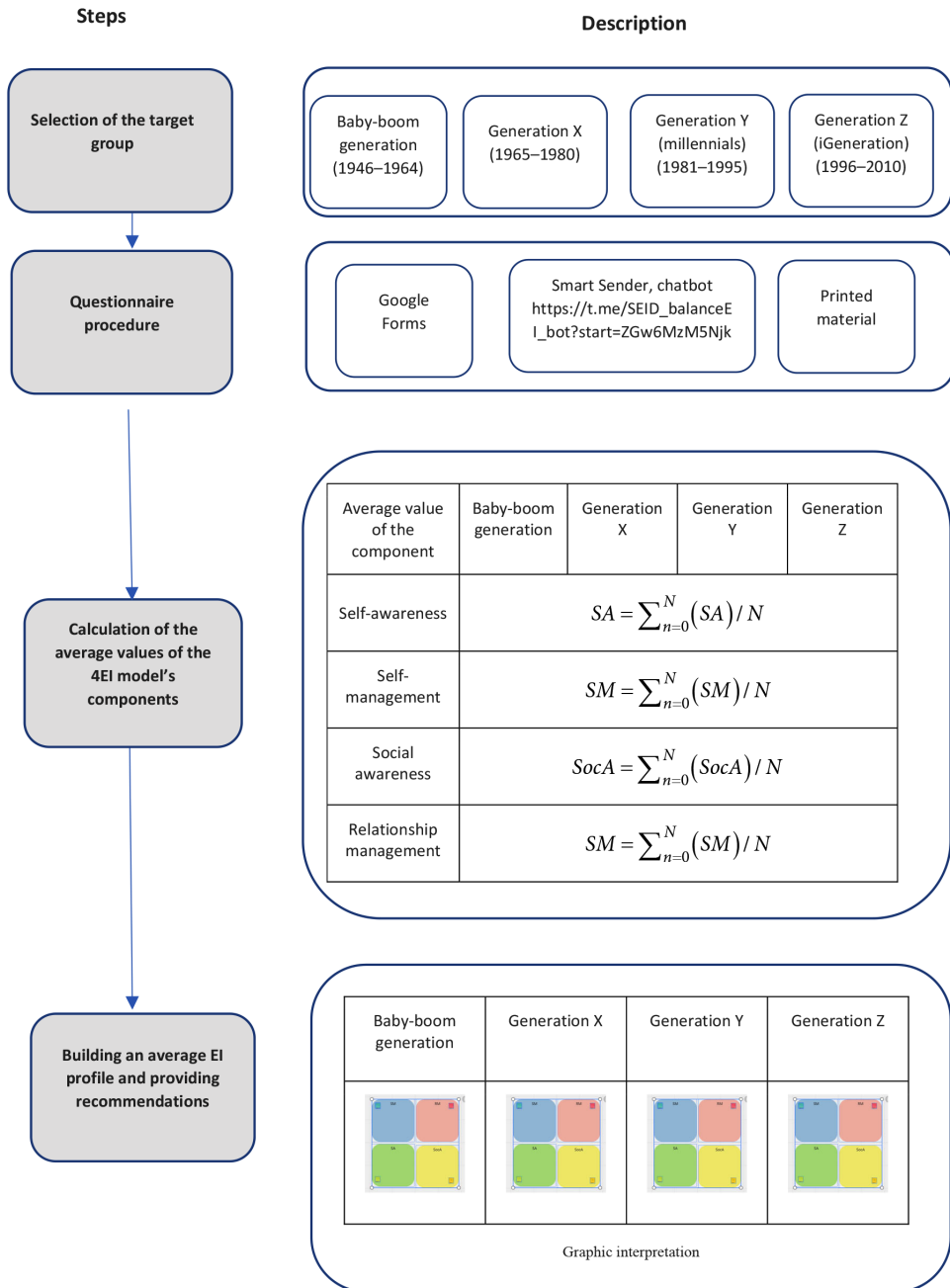| Baby-boom generation	Generation X	Generation Y	Generation Z

Graphic interpretation

Figure 2. Key steps for building EI profiles in businesses for different generations (source: own elaboration)

Table 2. Descriptive statistics

quadrant	respondent	N	Mean	Std.Dev.	Std.Err	-95.00%	95.00%
SA	total	393	7.55	1.31	0.07	7.42	7.68
SA	young people	157	7.47	1.27	0.10	7.27	7.67
SA	seniors	236	7.61	1.34	0.09	7.43	7.78
SM	total	393	6.63	1.48	0.07	6.48	6.77
SM	young people	157	6.44	1.39	0.11	6.22	6.66
SM	seniors	236	6.75	1.53	0.10	6.56	6.95
SocA	total	393	7.38	1.36	0.07	7.24	7.51
SocA	young people	157	7.50	1.31	0.10	7.29	7.70
SocA	seniors	236	7.29	1.39	0.09	7.12	7.47
RM	total	393	6.32	1.45	0.07	6.18	6.46
RM	young people	157	6.28	1.42	0.11	6.06	6.51
RM	seniors	236	6.35	1.47	0.10	6.16	6.54

From the descriptive statistics and the graphs showing the point and interval estimates of the mean, we can see that the highest scores were obtained for the SA and SocA quadrants. On average, selected seniors achieved higher scores in all quadrants except the SocA quadrant. Larger differences between young people and seniors were identified for the SM and SocA quadrants. The variability of the results is stable in terms of the within-group quadrant factor and the between-group respondent factor, as well as their combination.

Based on the exploration of the data, we set two global null statistical hypotheses:

(a) H0: Score EI does not depend on the within-group factor quadrant, respectively there is no statistically significant difference in EI score between the levels of the within-group factor quadrant;
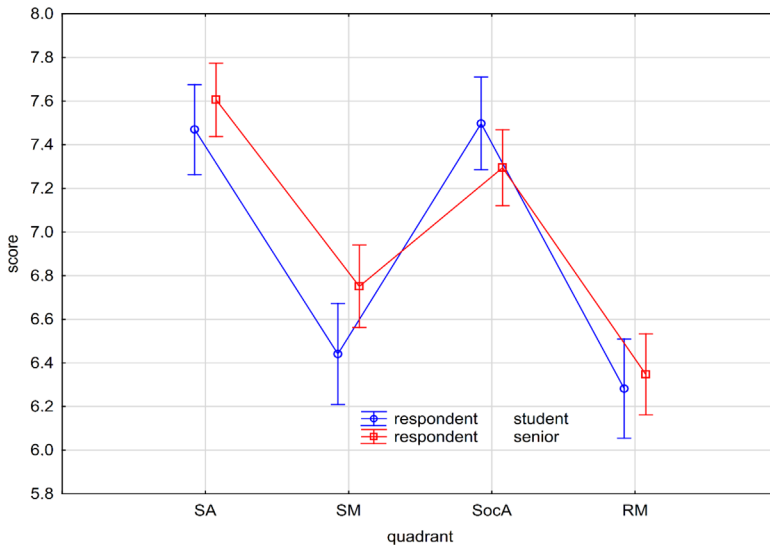

Figure 3. Average EI components of young people and seniors in Slovakia (source: own elaboration)

(b) H0: EI score does not depend on the interaction of the quadrant and respondent factors, respectively, no statistically significant difference in EI score between the combinations of the levels of the within-group factor quadrant and the between-group factor respondent was found.

We used unadjusted and adjusted univariate tests for repeated measures to test the hypotheses. Based on both tests, we reject global null hypotheses at the 0.001 significance level. Therefore, the EI score depends on the within-group factor quadrant and the interaction of the within-group factor quadrant and the between-group factor respondent. An Epsilon value close to one indicates a minimal violation of the sphericity assumption of the variance-covariance matrix. The results of both tests (unadjusted and adjusted) are identical and can be considered robust (Table 3).

Table 3. Tests for repeated measure

	df	F	p
R1	3	188.624	0.00000
R1*respondents	3	5.990	0.00047
	G-G Epsilon	G-G Adj. df1	G-G Adj. df2	G-G Adj. p
R1	0.995	2.984	1166.921	0.00000
R1*respondents	0.995	2.984	1166.921	0.00049

After rejecting the global null hypotheses, we are interested in which levels of the within-group factor quadrant as well as combinations of the factors quadrant and respondent, have statistically significant differences ($p < 0.05$), respectively homogeneous groups ((****), $p > 0.05$) have been identified (Table 4).

Table 4. Multiple comparisons

quadrant	Mean	1	2	3	4
RM	6.32	****			
SM	6.63		****		
SocA	7.38			****	
SA	7.55				****

respondents	quadrant	Mean	1	2	3	4
young people	RM	6.28	****			
seniors	RM	6.35	****			
young people	SM	6.44	****			
seniors	SM	6.75				****
seniors	SocA	7.29		****		
young people	SA	7.47		****	****	
young people	SocA	7.50		****	****	
seniors	SA	7.61			****	

The highest scores were obtained for quadrants SA and SocA and the lowest for RM and SM. Statistically significant differences were demonstrated between quadrants ($p < 0.05$).

The results did not change significantly after including the within-group respondent factor, with the highest scores for the SA and SocA quadrants and the lowest for the RM and SM quadrants. Three homogeneous groups were identified (young people-RM, young people-RM, young people-SM), (seniors – SocA, young people-SA, young people-SocA) and (young people-SA, young people – SocA, seniors – SA), where no statistically significant differences were demonstrated ((****), $p > 0.05$). On the contrary, a statistically significant difference was shown between the (senior-SM) combination and the other combinations ($p < 0.05$). If we look at the results of the multiple comparisons by quadrant, a statistically significant difference between young people and seniors was shown for the SM quadrant ($p < 0.05$). Conversely, no statistically significant differences between selected young people and seniors were shown for the other quadrants ((****), $p > 0.05$).

The research respondents carried out with the help of the "Emotional Intelligence in Business" test allows us to build a statistical average EI profile of selected young people and seniors in Slovakia (Figure 4).

3.3. Investigating selected young people's and seniors' EI profiles and formulating recommendations for IC in business in Slovakia

EI profiles confirm that EI in business increases with the respondent's age. Respondents develop leadership skills, gain problem-solving experience and build effective relationships as they mature. Nevertheless, the investigated young people can also significantly contribute to IC in business, not just because of their diversity of perspective and knowledge of digital technologies but also because of their greater empathy. Research findings allow us to unambiguously recommend investigated young people for the role of team worker for col-

Young people {7.47^{SA} 6.44^{SM} 7.50^{SocA} 6.28^{RM}}
{HL^{SA} AL^{SM} HL^{SocA} AL^{RM}}

Seniors {7.61^{SA} 6.75^{SM} 7.29^{SocA} 6.35^{RM}}
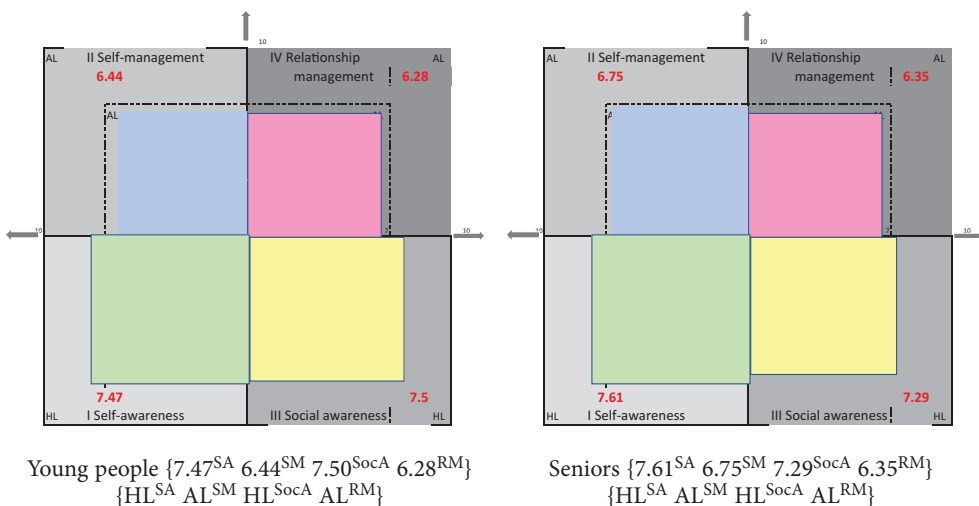{HL^{SA} AL^{SM} HL^{SocA} AL^{RM}}

Figure 4. Average EI profile of young people and seniors in Slovakia (source: own elaboration)

laboration in Slovakia. Due to a high level of empathy (social awareness), young people will improve their understanding of IC in business.

The frequency of high levels of each component is shown in Table 5. Self-awareness and social awareness are the most frequently developed, indicating that understanding oneself and others is easier than managing oneself and relationships for both generations. This makes it relevant to provide practical training for studied young people and seniors together.

Table 5. Frequency of EI components among young people and seniors

HL Component EI frequency

respondents	SA	SM	SocA	RM
young people	0.70	0.47	0.76	0.45
seniors	0.87	0.59	0.74	0.47

Maximum Component EI frequency

respondents	SA	SM	SocA	RM
young people	0.45	0.05	0.46	0.08
seniors	0.63	0.11	0.30	0.05

Table 5 also shows the frequency of the maximum score by components. SA and SocA are the most frequently developed. Studied seniors are more focused on self-awareness, while young people are more empathic. This shapes the assumption that young people can provide support and ensure that they work together effectively. Studied young people can fill the role of negotiators in collaboration; they are flexible, diplomatic, and perceptive.

Collaborative learning promotes involvement and builds effective communication. Working on joint business projects in this particular setting will increase seniors' social awareness (empathy) due to the open communication that young people are used to. Investigated seniors are better at managing their emotions and can teach young people about self-management by personal example. Seniors are more reflective before starting a project, which can keep the team from acting unnecessarily. The collaboration between young people and seniors will lead to synergies. IC in business would be mutually beneficial. We believe using challenge-based learning (Leijon et al., 2022) will help develop EI in collaboration learning.

Discussion

This section focuses on similarities and differences between our study results from other studies. First, it is important to mention that our 4 EI Model, which underpins the construction of average EI profiles, is similar to D. Goleman's updated model (Wolff, 2005). However, there is some confusion in the scientific literature about Goleman's model. It is unclear which clusters are relevant according to Goleman's model. Initially, D. Goleman identified 5 clusters with 25 emotional competencies: I) Self-awareness (knowledge of one's states, preferences, abilities, and opportunities); II) Self-management (ability to use one's mental resources and to cope with internal states); III) Motivation (emotional inclinations that lead to achieving

goals and facilitate this process); IV) Empathy (awareness of other people's feelings, needs and concerns); V) Social skills (the art of evoking the desired reaction in others) (Goleman, 1995). Later, D. Goleman excluded Motivation and reduced his model to 18 competencies divided into 4 clusters (Ackley, 2016). Similarly, the 4 EI Model is divided into 4 clusters: self-awareness, self-management, social awareness, and relationship management. It includes 19 competencies, which have been adapted to the business environment. In line with good practices (Wolff, 2005), we developed the "Emotional Intelligence in Business" questionnaire for the proposed model. The construction of EI profiles is an area of research that has been introduced previously (Rodríguez-Rodríguez, 2021). However, for the first time, we proposed a butterfly-shaped EI profile, where the length of the side of the square is equal to the value of the component of the 4 EI Model. The proposed tool allows tracking the dynamics of the development of each component of the 4EI model before and after training. These adjustments make our approach visual and original. In addition, we use a chatbot, which allows a respondent to receive results and recommendations in an interactive mode. Thus our methodology is based on Goleman's model but adapted to the business environment using the latest software.

Secondly, we describe the importance of EI for the collaboration of young people and seniors, supplementing the research Dietz and Fasbender (2022), Yadav and Lenka (2020), Farelo and Gómez (2021), Rožman et al. (2020). Furthermore, we have responded to the problem of quantifying EI by proposing the quantitative measurement and recording of the EI profile, which greatly increases the practical value of our research. It allows the construction of average profiles of young people and seniors in different settings.

Average EI profiles in business for investigated young people and seniors of Slovakia were constructed with the help of statistical analysis. The set global null hypotheses were rejected, i.e., the EI score depends on the quadrant factor and the combination of quadrant and respondent factors. Multiple comparisons identified statistically significant differences between the individual components, with the highest score being achieved for self-awareness, social awareness, and self-management and the lowest score for the relationship management component. After including the respondent factor, the order did not change, and a statistically significant difference between studied young people and seniors was shown only for the self-management component. To the best of our knowledge, a similar study has not been conducted; hence, our study has a unique value.

The proposed steps for constructing average EI profiles are easily applied to other generations,countries and business setups, which opens up new possibilities for studying the features of effective intergenerational collaboration (Rožman & Milfelner, 2022) based on quantitative measurements. In contrast to existing ones, our model and questionnaire easily apply to individual and group EI profiles. They are particularly suitable for entrepreneurs, managers, business students, and students of management and economics. In our opinion, this is a good start and a perspective direction for further research.

Conclusions

Collaboration between young people and seniors in business is described as a promising direction to solve economic and social problems. EI is the key competency for IC in busi-

ness and is regarded as a connecting tool that can remove barriers and help build effective communication in intergenerational collaboration. EI helps to apply various knowledge, experience, and competencies of young people and seniors and promotes a synergistic effect in intergenerational joint activities. Our research enriches the study of the differences between young people and seniors.

Despite the critical role of EI in building intergenerational collaboration, a literature review revealed a lack of tools for applying EI in IC in business. The application of the 4EI model made it possible to construct average group profiles for young people (Generation Z in particular) and seniors (Baby Boomers generation in particular) in Slovakia. Using the 4EI model may contribute to quantitatively measuring the EI effects.

The results have both practical and theoretical implications. This study can encourage researchers concerned about contributing to EI in business to analyze more deeply the role of EI for different generations and the prerequisites for successful collaborative learning. Building EI profiles can be the impulse necessary for practitioners to revise the composition of project teams in the business to obtain greater synergy.

The study identified the key methodological steps that can be replicated to create average EI profiles in businesses for various generations in different contexts, which are simple to apply, easy to implement, and scalable. They can be used to study the characteristics of EI in different generations for different countries (or internationally) and business setups for an effective IC in business.

EI components of studied young people and seniors were investigated, and recommendations for IC in business in Slovakia were made. EI profiles of selected participants confirm that EI in business increases with the respondents' age. Investigated seniors (Baby Boomers generation) were leading in three of the four components, which are self-awareness, self-management, and relationship management. However, the investigated youth scored higher on the social awareness component, which emphasizes the high role of empathy among young people in IC in business. At the same time, the scores for the self-management and relationship management components were lower than the components of self-awareness and social awareness for both young people and seniors. This indicates the relevance of training programs in collaborative learning.

Also, our research benefits social cohesion and sustainable economic development internationally. The study is promising in the area of collaborative learning (challenge-based learning can become a new powerful direction of research into pedagogical activity) and in the field of EI in team building (EI profiles can be used in identifying roles to optimize the composition of the team). However, the limitations of our study are the creation of EI profiles based on a relatively small number of respondents from each generation and the way different generations perceived the questionnaire. Nevertheless, we continue to tackle these issues.

Thus, our research is based on the most popular EI model, using current theoretical developments in collaboration. At the same time, the research opens up the possibility of constructing an average EI profile of different generations in particular setups for the first time, which is essential for intergenerational entrepreneurship. Thus, our approach to constructing an average cross-generational emotional intelligence profile is an original and promising study in emotional intelligence.

Author contributions

Conceptualisation, AP and YF; methodology, AP, YF, JM, MM formal analysis, YF, JM, MM; investigation, AP, JM, JR; data curation, AP, YF, JM, MM; writing—original draft preparation, AP, JM, JR; writing—review and editing, JM JR; All authors have read and agreed to the published version of the manuscript. All authors have contributed significantly throughout this research in all its phases.

Disclosure statement

The authors declare no conflict of interest. The funders had no role in the design of the study; in the collection, analyses, or interpretation of data; in the writing of the manuscript, or in the decision to publish the results.

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