Measuring the Emotional Intelligence of Entrepreneurs

Yuliia Fedorova,[1,2] Anna Pilková,[1] Juraj Mikuš,[1] Marian Holienka,[1] Dmitro Momot[2]

[1] Comenius University Bratislava, Faculty of Management, Bratislava, Slovakia
yuliia.fedorova@fm.uniba.sk, anna.pilkova@fm.uniba.sk, juraj.mikus@fm.uniba.sk,
marian.holienka@fm.uniba.sk
[2] Ukrainian engineering pedagogics academy, Kharkiv, Ukraine
yuliia.fedorova@fm.uniba.sk, vektort13@pm.me

This study aims to describe the existing tests for determining Emotional Intelligence (EI), identify problematic tasks, and determine ways to solve them. The article describes the most popular models of EI and their corresponding tools for measuring EI. Three main groups of questionnaires for measuring EI (ability-based model, trait-based model, mixed approach model) are described. Most of the tests for measuring EI are self-reported; therefore, the main disadvantage is their subjective evaluation. Also, the lack of EI assessment tools in the business environment is a promising area for EI application. Given the increasing interest in EI in business, management, and entrepreneurship, we suggested using the "EI in Business" questionnaire. According to the latest version of Goleman's mixed model, our test is based on four components, namely: Self-Awareness, Self-Management, Social-Awareness, and Relationship Management. The main disadvantage of subjective assessments of respondent's EI was proposed to be eliminated by interviewing colleagues on two components, which can be assessed from the outside (Self-Management and Relationship Management). Consequently, the final respondent's evaluation with the "EI in Business" questionnaire allowed to avoid the main problem of subjective assessment, and it became more reliable and accurate.

1   Introduction

Emotional intelligence (EI) is defined by D. Goleman (1995) as the ability to identify our feelings and those of others, to motivate oneself, and to manage emotions in both one and others effectively. High EI is necessary for both problem-solving and effective communication. The fields of entrepreneurship, leadership, psychology, and business have all profited from EI study. Using the databases of Scopus and Web of Science, an analysis of the literature showed an increase in articles on EI in management. Essential soft talents found in EI include resilience, stress tolerance, adaptability, leadership, and social influence. EI increases the volume of excellent conversations, giving one a competitive advantage at work. High EI leaders can bring out the best in their peers, creating a talent pool that boosts commitment from staff members (Haricharan, 2022). The EI of project managers promotes collaboration and expedites achieving the desired results (Uzunbacak & Akcakanat, 2022; Zhang & Shengyue, 2022).

Given the impact of EI on enterprises' financial performance and management level, measuring EI concerning the competencies required for success in today's business environment is increasingly important. Therefore, this study investigates the problematic points in the assessment of EI and the possibility of applying existing tests to assess managers, economists, and entrepreneurs.

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We believe that the development of the EI of students allows for increasing the social and economic effects and aligns with two Sustainable Development Goals: quality education; good health and well-being.

2   Theoretical Background

The three primary theories underlying the development of EI are the mixed theory of emotional competence developed by Goleman, the non-cognitive theory of EI developed by Bar-On, and the theory of emotional and intellectual skills developed by Meyer and Salovey. The four branches of EI in the Mayer et al. (2000) model

explain how individuals identify and control their own emotions and how they might try to affect the emotions of others. The 16 talents in R. Bar-On's improved model are divided into components related to stress management, interpersonal, self-expression, self-perception, and decision-making (Bar-On, 2000). In 1995, D. Goleman categorized 25 emotional abilities into five clusters: motivation, self-management, empathy, self-awareness, and social skills (this version of his model is most often cited in scientific studies of EI). Afterwards, he condensed his model to just 18 competencies, which he then divided into four clusters: relationship management, social awareness, self-management, and self-awareness (Wolff, 2005).

The most popular and fundamental psychometric tests are the Trait Meta-Mood Scale (TMMS), Wong and Law's Emotional Intelligence Scale (WLEIS), Schutte Self Report-Inventory (SSRI), 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), and Trait Emotional Intelligence Questionnaire (TEIQue) (Ackley, 2016).

Bru-Luna et al. (2021) have divided the existing methods into three main groups of questionnaires for measuring EI: *Ability-Based Measures Instruments, Trait-Based Measures Instruments, and Mixed Model Measures Instruments.*

1. *Ability-Based Measures Instruments.* They are based on the ability-based model, primarily on Mayer and Salovey's. The most widely used tests are the Mayer-Salovey-Caruso Emotional Intelligence Test (MSCEIT), the Wong and Law's Emotional Intelligence Scale (WLEIS), the Trait Meta-Mood Scale (TMMS), the Schutte Self-Report Inventory (SSRI), the Multidimensional Emotional Intelligence Assessment (MEIA), the Three Branch Emotional Intelligence Forced Choice Assessment (TEIFA), the Self-Rated Emotional Intelligence Scale (SREIS), the Emotional Intelligence Self Description Inventory (EISDI), the Multifactor Emotional Intelligence Scale (MEIS), and the Emotional Intelligence Scale (WLEIS). The advantage of these tests is that they include chores, riddles, and pictures, making them very attractive to respondents. The disadvantage of these tests is that it is possible to falsify results for social desirability purposes.

2. *Trait-Based Measures Instruments.* The Trait Emotional Intelligence Questionnaire (TEIQue) is the main instrument using this idea. This model's tools have severe limitations because they rely on self-evaluation. These

devices have several disadvantages, the two most commonly mentioned being their social acceptability and susceptibility to counterfeiting. Responding strategically and socially desirably can help the participant achieve a high EI profile, particularly when they are evaluated by supervisors or during job interviews. People often tend to overestimate or underestimate their EI, sometimes without realizing it.

3. *Mixed Model Measures Instruments.* The popular Bar-On and Goleman models are the foundation for the third category. The two most often used validated assessments are the Emotional Intelligence Questionnaire (EIQ) and the Emotional Competence Inventory 2.0 (ECI 2.0).

The majority of the tests were developed in the USA. The assessments most frequently include statements on a four- to five-point Likert scale.

Most of the tests for measuring EI are self-reported; therefore, the main disadvantage is their subjective evaluation. We also discovered *that the business environment lacked EI evaluation tools despite the abundance of instruments available.*

3   Methodology

In this study, we demonstrate the implementation of the "EI in Business" questionnaire to assess students' EI. According to the latest version of D. Goleman's mixed model (Wolff, 2005), the "EI in Business" questionnaire is based on four components, namely: Self-Awareness, Self-Management, Social Awareness, and Relationship Management. However, these components are based on competencies that are important for success in the business environment. The four key components of the instrumental model for developing EI (4EI Model), which forms the basis of this study, are Self-Awareness (SA), Self-Management (SM), Social Awareness (SocA), and Relationship Management (RM). The 4EI Model, which comprises 19 skills, is tailored to the business environment (Mikuš et al., 2022).

The "EI in Business" questionnaire shows the results graphically as an EI profile, an EI diagram with four quadrants. The demonstration and confirmation analysis of the questionnaire have been empirically validated, and MS Excel, SPSS, FACTOR, and R-Studio were utilized in the process. The hypothesis about the dependence of the EI value on the selected factors was confirmed using Confirmatory factor

analysis (CFA). CFA was performed using Cronbach's alpha coefficient; exploratory factor analysis was conducted using the principal components approach, polychoric correlation coefficients, rotation of the Oblimin Direct, and the hierarchical factor solution (Schmid-Leiman solution). The Kruskal-Wallis and Mann-Whitney U tests were used. A total of 158 respondents from Ukraine were surveyed. The "EI in Business" questionnaire has been validated and is reliable (Lutsenko et al., 2021).

The test contains 40 questions, ten questions for each competency. The test allows entrepreneurs to get an assessment of 4 components of EI: Self-Awareness (SA), Self-Management (SM), Social Awareness (SocA), and Relationship Management (RM) and build a graphical representation of the respondent's EI profile in business. The EI profile matches the 4EI Model; it consists of quadrants equal to the component's value obtained during the test (from 0 to 10). According to the stan scale, the results from 0 to 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 particular components of the 4-component instrumental model of EI.

Figure 1 presents the interface of the chatbot created in the Smart Sender application and a fragment of the algorithm of the "EI in Business" questionnaire.
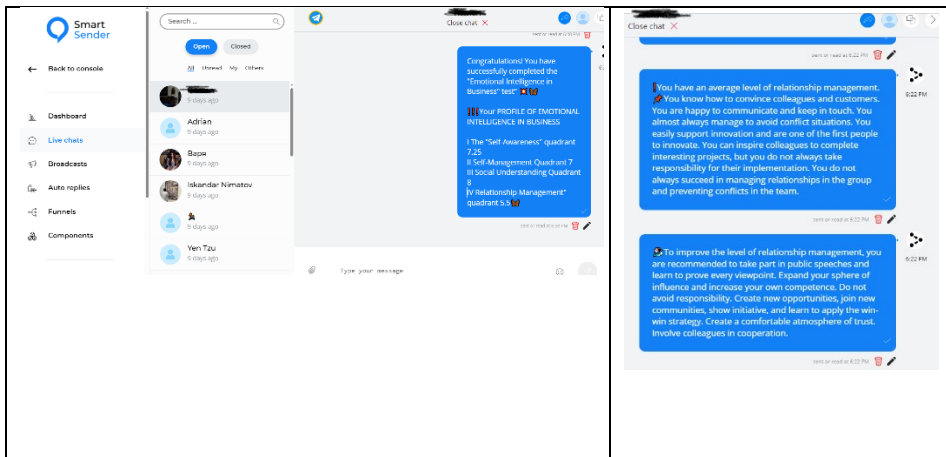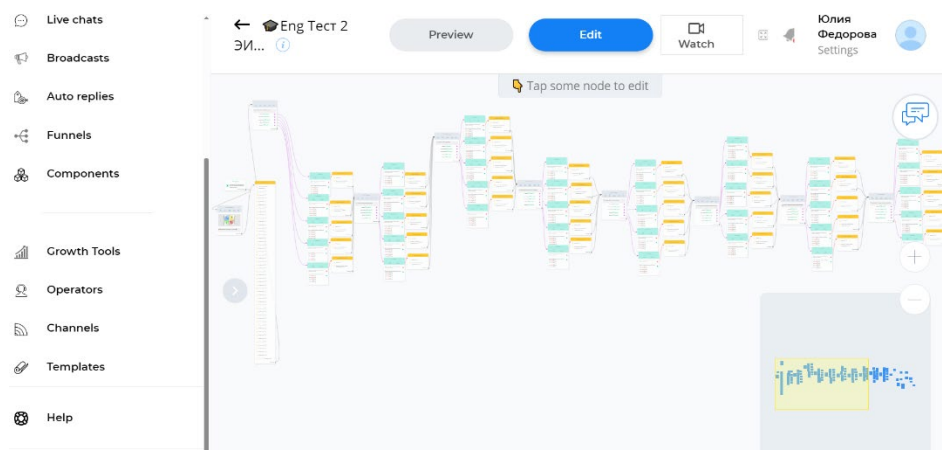
**Figure 1: The interface of the chatbot created in the Smart Sender application and
a Fragment of the algorithm of the "EI in Business" questionnaire**
Source: own elaboration

The "EI in Business" questionnaire has become a basic tool and has been used to construct individual EI profiles (Mikuš et al., 2023) and group EI profiles (Fedorova et al., 2023), to track the dynamics of students' EI development (Fedorova et al., 2023) in European countries.

4   Results

Table 1: This three-step approach of the EI evaluation (source: own elaboration)

Stage of testing	Stage Description	Example EI profile
Stage 1 Respondent self-assessment	The respondent 1 answers 40 questions on the test (evaluation of SA, SM, SocA, RM)	$\{7,8^{SA}; 7,3^{SM}; 7,9^{SocA}; 6,1^{RM}\}$ [1]
Stage 2. Respondent's external evaluation	The respondents evaluated several others by answering only 20 questions (evaluation of SM and RM)	$\{\_\_; 7,5SM; \_\_; 6,5RM\}$ [2], $\{\_\_; 7,1SM; \_\_; 6,7RM\}$ [3]
Stage 3. Calculation of the EI profile	EI profile of respondent 1 calculation is carried out, taking into account the assessments of other respondents	$\{7,8^{SA}; 7,3^{SM}; 7,9^{SocA}; \mathbf{6,4^{RM}}\}$[1*]

The testing was voluntary and was conducted as part of an educational course "Emotional intelligence in youth and senior entrepreneurship" at Comenius University in Bratislava (Slovakia) and an educational course "Emotional intelligence

and leadership" at Ukrainian engineering pedagogics academy (Ukraine). Students were tested using a chatbot created in Smart Sender software. The testing was carried out in three stages, Table 1.

So, we conducted testing among the students as follows.

Stage 1. Student self-assessment

Student 1 assessed themselves by answering 40 questions. The test contained ten questions for each EI component: Self-Awareness (SA), Self-Management (SM), Social Awareness (SocA), and Relationship Management (RM).

For example, for Student 1, the EI profile can be described as follows:

EI profile 1 {7,8^{SA}; 7,3^{SM}; 7,9^{SocA}; 6,1^{RM}}, {HL^{SA}; HL^{SM}; HL^{SocA}; AL^{RM}}.

This respondent has an average level (3-7 points) of Relationship Management (RM) and a high level (more than 7 points) of Self-Awareness (SA), Self-Management (SM), and Social Awareness (SocA).

Stage 2. Student's external evaluation

Students evaluated several of their fellow students by answering only 20 questions (10 questions for each component of EI: Self-Management (SM) and Relationship Management (RM). We believe that only these two components can be evaluated from the outside.

For example, for respondent 1, classmates' grades looked like this:

Student 2 {__; 7,5^{SM}; __; 6,5^{RM}},
Student 3 {__; 7,1^{SM}; __; 6,7^{RM}}

Stage 3. Calculation of the EI profile

EI profile of Student 1 calculation is carried out, taking into account the responses of his/her classmates. Then, the EI profile of respondent 1, taking into account the arithmetic mean of three respondents' answers by components Self-Management (SM) and Relationship Management (RM), will look as follows:

$\{7,8^{SA}; 7,3^{SM}; 7,9^{SocA}; \mathbf{6,4^{RM}}\}$,
$\{HL^{SA}; HL^{SM}; HL^{SocA}; AL^{RM}\}$.

Finally, the result for the component changed slightly, and we got more accurate data. In this example, Student 1's Relationship Management level has become higher. This three-step approach improves the objectivity of the EI evaluation.

5   Discussion and conclusion

Thus, the analyses of existing EI assessment methodologies have shown two weaknesses:

firstly, most tests are self-reported assessments and, therefore, are often subjective; secondly, there is a gap in the assessment of EI in the business environment (which is gaining relevance as the importance of EI applications in management increases and the field of EI research expands beyond psychology).

Therefore, this study briefly describes our "EI in Business" questionnaire and demonstrates an example of applying the questionnaire to obtain a more accurate assessment of students' EI through an external supplementary EI assessment. The article shows the possibility of building an EI profile of a respondent considering his assessment of all EI components and taking into account an external assessment of his behaviour on the components of Self-Management and Relationship Management.

The study is not without limitations. In the future, we plan to expand the scope of the research and increase the number of respondents in European countries.

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