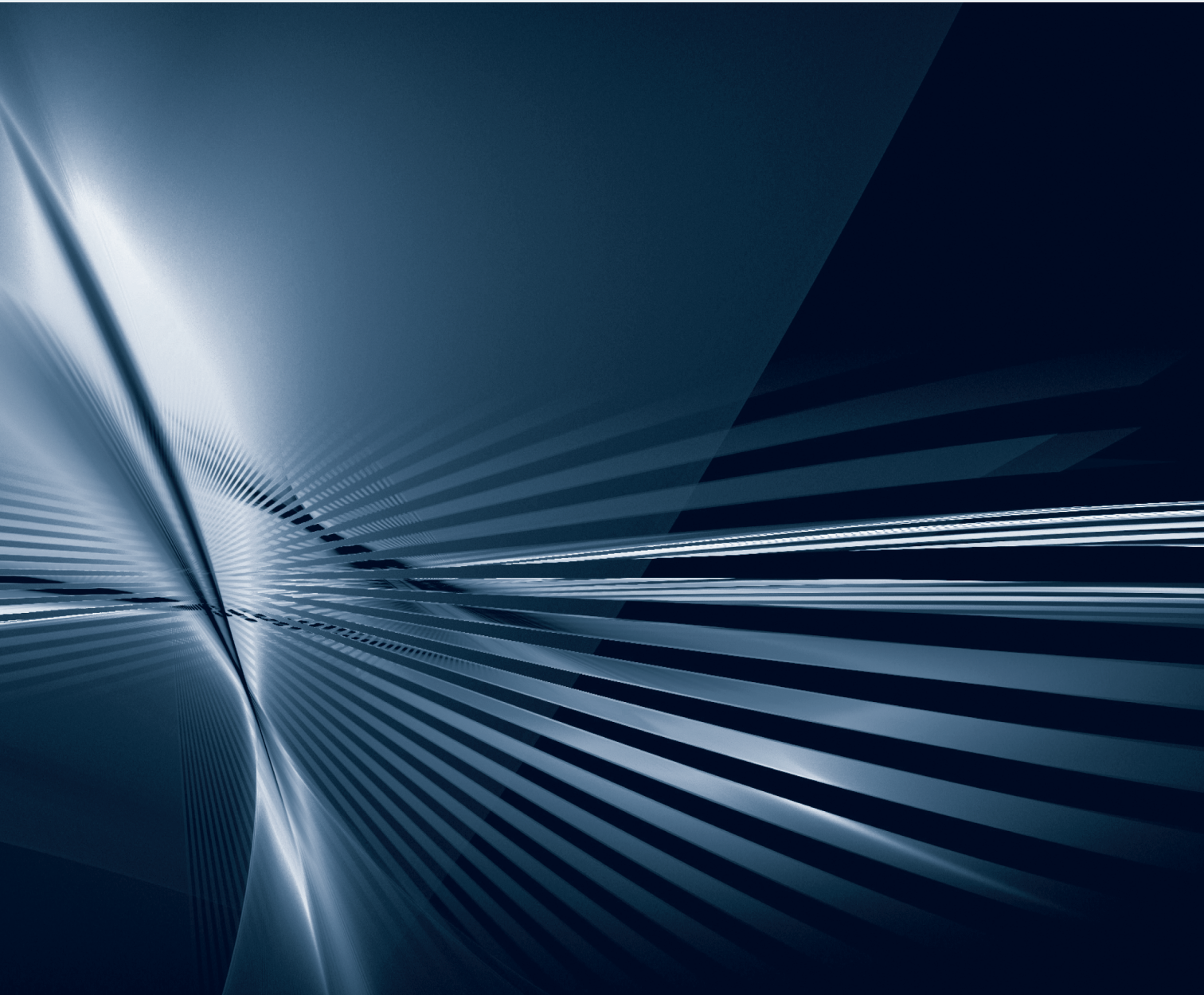


ORGANIZACIJA

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ORGANIZACIJA

Organizacija (Journal of Management, Informatics and Human Resources) is an interdisciplinary peer-reviewed journal which is open to contributions of high quality, from any perspective relevant to the organizational phenomena.

The journal is designed to encourage interest in all matters relating to organizational sciences and is intended to appeal to both the academic and professional community. In particular, journal publishes original articles that advance the empirical, theoretical, and methodological understanding of the theories and concepts of management and organization. The journal welcomes contributions from other scientific disciplines that encourage new conceptualizations in organizational theory and management practice.

We welcome different perspectives of analysis, including the organizations of various sizes and from various branches, units that constitute organizations, and the networks in which organizations are embedded.

Topics are drawn, but not limited to the following areas:

- organizational theory, management, development, and organizational behaviour;
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- managerial and entrepreneurial aspects of education;
- business information systems (such as digital business, decision support systems, business analytics etc.);
- enterprise engineering (e.g., organizational design, business process management, enterprise transformation paradigms etc.);
- papers that analyse and seek to improve organizational performance.

Organizacija (Revija za management, informatiko in človeške vire) je interdisciplinarna recenzirana revija, ki objavlja visoko kakovostne prispevke z vseh vidikov, ki so pomembni za organizacijske procese in strukture.

Revija je zasnovana tako, da spodbuja zanimanje za različne vidike v zvezi z organizacijskimi vedami in je namenjena tako akademski kot strokovni skupnosti. Revija objavlja izvirne članke, ki spodbujajo empirično, teoretično in metodološko razumevanje teorij in konceptov managementa in organizacije. Pozdravljamo tudi prispevke iz drugih znanstvenih disciplin, ki spodbujajo nove koncepte v organizacijski teoriji in praksi. Objavljamo članke, ki analizirajo organiziranost z različnih vidikov, so usmerjeni na organizacije različnih velikosti in iz različnih sektorjev, na enote, ki sestavljajo organizacije, in na mreže, v katere so organizacije vpete.

Teme so pokrivajo predvsem naslednja področja:

- organizacijska teorija, upravljanje, razvoj in organizacijsko vedenje;
- management človeških virov (kot so organizacija in razvoj zaposlenih, vodenje, ustvarjanje vrednosti s pomočjo človeških virov, organizacijski pojavi na delovnem mestu itd.);
- vodstveni in podjetniški vidiki izobraževanja;
- poslovni informacijski sistemi (kot so digitalno poslovanje, sistemi za podporo odločanju, poslovna analitika itd.);
- podjetniški inženiring (npr. organizacijsko oblikovanje, upravljanje poslovnih procesov, paradigme preoblikovanja podjetij itd.);
- članki, ki analizirajo organizacijsko uspešnost in prizadevanja za izboljšanje le-te.

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In Memoriam of Prof. Dr. Anton Zupan

It was on that gloomy, rainy Tuesday morning when a colleague delivered the infinitely sad news to me. At first, you hope it's a mistake, but the seriousness of the morning gradually presses you into a day that confronts you with the truth.

That day, a great Man, whom we friends called "Dr. Tone," departed.

Prof. Dr. Anton Zupan was a distinguished expert in a specialized field of medicine. He was a physiatrist - a physician specializing in physical and rehabilitation medicine. His profound knowledge of his field was intertwined with his personal battle with illness. Every day, he faced a rare progressive genetic disease that persistently deteriorated muscle function. He was always acutely aware of his path, which is why he constantly intertwined his life experiences with science. In this way, he continually sought a path forward, towards development. He always managed to create a scientific whirlwind that drew in and eventually pulled in the rest of us. At the centre of this whirlwind was always a very special atmosphere. When we gathered around the table and discussed various ideas, it was always extremely creative, clear, precise, and realistic. Despite the whirlwind of possibilities constantly striking our thoughts, Prof. Dr. Zupan knew how to find the right way out.

The esteemed professor was employed at the University Rehabilitation Institute of the Republic of Slovenia - Soča, where he honed his knowledge and directly shared it with his colleagues and his patients. He was a specialist physician, and his scientific hobby was engineering technology. His eyes lit up when we discovered even the smallest idea that could ease the lives of those with dystrophy, his spirit entered a magical world when he personally tested the idea, and his pride soared as high as Triglav when the idea came to life among his protégés. Prof. Dr. Zupan was extremely precise, possessed a refined sense of the melodiousness of language, had an impeccable memory, and always respected inventions and innovations intertwined with modern technology, whose power he was very much aware of. He was technically curious and medically complex, carefully storing every detail in his "central memory."

Prof. Dr. Tone Zupan collaborated with many research institutions at home and abroad. Among these institutions was the University of Maribor, with the Centre for Interdisciplinary and Multidisciplinary Research and Studies (CIMRŠ), within which the Institute for the Development of Technologies for the Disabled (IRTIUM) operated from 2002 to 2005. Many Slovenian experts from various fields, including from University of Maribor, Faculty of Organizational Sciences (UM FOV), joined this institute. Prof. Zupan immensely enjoyed his interactions within IRTIUM, where ideas about dynamic seating in wheelchairs, a bed for turning the disabled during sleep, self-service automatic refuelling at gas stations, driving aids, special requirements for "winter crutches," smart homes, and the employment of people with disabilities were nurtured. Through collaboration with the Cybernetics and Decision Support Systems Laboratory at UM FOV, one of these ideas materialized into a voice-controlled wheelchair. The list of ideas, conceived and realized projects, is long, so long that life becomes too short. Therefore, dear colleagues, acquaintances, and other readers who have captured your precious time within these lines created by the life of a great friend and scientist, we invite you to follow some idea or scientific thought. In this way, colleague Tone will continue to create.

In his lifetime, Dr. Anton Zupan did much good for patients, students, the community, and science. He has etched himself into our hearts. He proved that we could move the world for the better. We colleagues will now often sigh and say: "Tone, forgive us, but once again, we ask you for an answer to this question..."

And Tone, thank you for your wise thoughts.

Zvone Balantič, Andrej Koložvari, Lado Lenart, Andrej Škraba



Exploring the Role of Cultural Intelligence in Mitigating Expatriate Stress: Strategies for Enhancing Well-being in Cross-Cultural Contexts

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Background/purpose: As global business and education environments become increasingly cross-cultural, prolonged stress faced by individuals navigating unfamiliar territories can lead to symptoms of burnout. This study explores the relationship between expatriate stress and Cultural Intelligence, considering moderating factors such as age, motivation, length of experience, and age group.

Methods: A comprehensive survey was administered to over 300 expatriates —individuals who engaged in international experiences of at least three months for work- or study-related reasons— of 40 different countries worldwide, encompassing diverse age groups, motivations, and duration of stay. Validated scales assessed expatriate stress levels and Cultural Intelligence scores. Correlation and regression analyses were conducted on the collected data.

Results: Findings reveal a significant negative correlation between Cultural Intelligence and expatriate stress, suggesting that individuals with higher Cultural Intelligence experience lower stress during international experiences. Motivation, length of stay abroad, and age did not yield statistically significant stress level differences, highlighting Cultural Intelligence's importance as a mitigating factor.

Conclusion: By emphasizing the link between Cultural Intelligence and reduced expatriate stress, this study underscores the need for intercultural training and interventions in preparation for (or during) this experience. The study also provides HR training and approach recommendations to improve on these CQ levels.

Keywords: *Expatriate stress, Cultural Intelligence, Moderating factors, Cultural adaptability*

1 Introduction

The past decade has witnessed a marked increase in the global workforce's cross-cultural mobility, leading to an intensified focus on the well-being and adaptability of expatriates (OECD, 2020). There has been a noticeable surge in stress levels experienced by individuals engaged in cross-cultural work environments.

This phenomenon is verified by the findings of Cigna Global (2022). Alarming, 84% of employees reported experiencing stress. Particularly concerning are the escalating stress levels among younger generations, with 87% of individuals aged 25 to 34 and 91% of those aged 18 to 24 acknowledging heightened stress. Furthermore, a staggering 98% of Generation Z respondents disclosed experiencing symptoms of burnout, ranging from physical and

mental manifestations (Queensland Health, 2021) to the persistent feeling of being unable to get off work-related matters.

Expatriates often face stress due to factors such as culture shock, language barriers, and social isolation. These stress factors and the financial and family components (Cigna Global, 2022) collectively contribute to adverse outcomes for individuals and organizations. Notably, decreased job satisfaction, impaired work performance, and premature return from assignments are documented consequences of expatriate stress (Doghan & Malik, 2022).

In this context, Cultural Intelligence (also referred to as CQ or Cultural Quotient), defined as the ability to effectively adapt to and function in cross-cultural contexts (Earley & Ang, 2003), has been identified as a critical factor in expat success. However, while existing research has already identified the CQ as a critical factor in managing cultural differences among employees (Ang et al., 2007), a knowledge gap exists concerning its potential to alleviate stress levels among expatriates. This study aims to bridge this gap by examining the significance of cultural intelligence in mitigating expatriate stress.

Therefore, the primary objectives of this research are three: firstly, to identify the predominant source(s) of stress experienced by expatriates; secondly, to explore the role of cultural intelligence in mitigating these stress levels; and thirdly, to determine optimal strategies for cultivating and harnessing cultural intelligence to decrease expatriate stress. Addressing this imperative issue holds the potential to offer valuable insights for expatriates, human resources practitioners, and organizations alike, facilitating the effective management and reduction of stress levels among expatriates. Ultimately, the outcomes of this study aspire to enhance the adjustment, performance, and overall well-being of expatriates immersed in cross-cultural contexts.

2 Theoretical Background

2.1 Stress Levels Rising and Symptoms of Burnout

This rise in stress raises pertinent questions about the related phenomenon of burnout. Examining the symptoms and underlying causes of burnout within the context of expatriates is crucial. According to Darling Downs Health (Queensland Health, 2021), burnout's symptoms manifest through three distinctive categories: Physical symptoms, emotional symptoms, and behavioral signs, which lead from procrastination and reduced performances to outbursts and the use of substances to cope.

The origins of burnout are varied and can derive from both professional and personal spheres. Stressors within the professional realm include workload, the balance between effort and reward, incongruence with personal

values, and interpersonal dynamics within the workplace (Sanders, 2019). On the other hand, personal aspects like community involvement, familial relationships, and partnerships can also contribute to burnout (Psychology Today, n.d.). In the specific case of expatriates, other stressors are recognized as potential additional causes that may heighten stress levels and eventually lead to burnout: A language barrier, local customs, loneliness, bureaucracy, access to healthcare, the feeling of safety, connecting to locals, and Homesickness.

While it is true that during the past year, the pandemic was the cause of exceptional stress for the masses, even causing a significant number of expatriates a solid desire to withdraw from their host countries (Koveshnikov et al., 2022), stress levels in 2021 have shown a slight decline (Cigna Global, 2022). This underscores that although some of the stressors mentioned may have witnessed an increase due to the pandemic, as Dr. Peter Mills said in one of his interviews, "We cannot attribute all our modern stress levels to COVID; there are myriad other factors from the pressure of being 'on' all the time at work to the number of media we consume, through to the cost-of-living crisis." (Mills, 2022: 4).

While expatriates employ various strategies to combat stress, including meditation, introspection, and professional therapy sessions, it is still a known fact that the infamous culture shock can be a significant source of fear and stress, much like the sudden change in language (Naeem et al., 2015). In this context, it is mandatory to have the skills and competencies to face these situations; otherwise, as in numerous cases, individuals could come short due to environmental and contextual impediments, which would, in turn, show the existence of a gap between theory and practice, "knowing" and "doing" (Johnson et al., 2006). Here, Cultural Intelligence emerges as a potential mediator, as it not only analyses skills related to language or knowledge of the host country but also reflects how these are used in cross-cultural interactions and other relevant scenarios.

2.2 Concept of Cultural Intelligence

Cultural Intelligence was created just before the beginning of the 21st century. It was a time when cultural hatred had a major impact around the world with a constant flow of violence and conflicts. This cultural hatred was a force that acted almost like a backlash of globalization, which at the time was experiencing exponential growth too, and this drove researchers to ask themselves the question: "Why do some individuals adapt easily and effectively their views and behaviors cross-culturally, and others do not?" (Ang et al., 2011). However, given that the cultural-competency literature at the time was referred to by many as dubious and confusing, authors coined the concept of Cultural Intelligence as a result of four capabilities that express the

ability to function effectively in cross-cultural environments (Ang et al., 2015). In other words, Cultural Intelligence can also refer to the abilities of people who have the skills to rapidly adjust when they interact for more extended periods in cultures different than the ones they are used to, without this being the cause of excessive stress (Brislin et al., 2006). Whereas intelligence involves logical reasoning, communication skills, and behaviors such as admitting mistakes and proving interest in the world (Sternberg, 2000), Cultural Intelligence encompasses a broader range of intercultural skills and abilities.

During the first decade after the formulation of this concept, Cultural Intelligence rapidly grew in popularity among researchers. It started to be analyzed from multiple perspectives and in connection to other factors. Research after research, this new concept seemed to prove an essential skill to develop for expatriates and in other multicultural contexts, showing potential for international leadership (Kym & Van Dyne, 2012), becoming an essential element for decision-making and cultural judgment (Ang et al., 2007), proving its usefulness in voice behaviors (Ng et al., 2019) and more.

We should step back and expound on how the original concept was formulated. Starting from the four loci of individual intelligence proposed by Sternberg at the end of the 80s (Sternberg, 1986) – these being metacognitive intelligence, cognitive intelligence, motivational intelligence, and behavioral intelligence – and applying them in the cross-cultural context, Earley & Ang (2003) identified the four factors of CQ. That defined the Cultural Quotient as a multidimensional construct that provides comprehensive information on the cross-cultural abilities of individuals (Rockstuhl & Van Dyne, 2018).

According to Sternberg, metacognition, cognition, and motivation are all mental capabilities that respectively reflect the cognitive processes of awareness of thoughts, acquiring and understanding information, and driving. The fourth one, however, behavioral intelligence, refers to physical actions, both verbal and non-verbal, and motions. On this base, Earley & Ang (2003) identified the four factors of CQ: Metacognitive CQ, Cognitive CQ, Motivational CQ, and Behavioral CQ.

3 Methodology and Research Design

While the significance of cultural intelligence has been widely acknowledged in various organizational contexts, ranging from managing cultural differences among employees to influencing voice behaviors, talent selection processes for leadership positions and expatriation, and decision-making strategies, a notable void still exists in the existing research. Specifically, this gap concerns a scarcity of studies that directly explore and analyze the critical role of cultural intelligence in mitigating stress levels ex-

perienced by expatriates during their stay abroad. As mentioned, expatriates, individuals who temporarily relocate to foreign countries for work assignments or study-related matters, often encounter many challenges connected to the adjustment to a new culture, norms, and social contexts. These challenges can be caused by dangerously high-stress levels, potentially affecting expatriates' overall well-being and job performance in the long term. While current research has demonstrated the positive correlation between cultural intelligence and successful cross-cultural interactions, the direct influence of cultural intelligence on reducing expatriates' stress remains relatively unexplored. In order to address the research gap and gather significant data that could be used to advance the study on this topic, the following Research Questions (RQs) and hypotheses (H) have been formulated:

1. RQ 1: Is there a negative correlation between the total levels of Cultural Intelligence (F.TOT) and the overall stress levels reported by the expatriates during their experience?

The first hypothesis is based on the assumption that the higher the level of CQ an individual presents, the better they can deal with stressful situations. This implies that Cultural Intelligence plays a significant role in the international experiences of expats and can potentially be used as a relieving or preventing factor for higher stress levels.

- H0: There is no significant negative correlation between F.TOT and STRESS LV.
- H1: There is a significant negative correlation between F.TOT and STRESS LV. If a significant negative correlation is found, this would also allow further hypotheses and/or assumptions on the usefulness of tools for CQ training. The prediction of negative relationships is based on the relevance of cultural intelligence in similar assessment tools such as the ICAPS (Matsumoto et al., 2007) and MPQ (Van der Zee & Van Oudenhoven, 2001) analyzed in existing literature, as well as studies that prove that different factors of the CQ individually have a positive influence on the challenges of an intercultural context. A compound variable will be called S.AVG, meaning "stress average." This will be set at the average of the score given to the eight stressors selected to appear in the survey as main stressors, and it will serve as a supplementary value to evaluate stress.

2. RQ 2: Is there a significant correlation between the total values of the CQ and the evolution of stress over time?

This RQ inquires about the potential relationship between the overall levels of cultural intelligence (F.TOT) and the trajectory of stress evolution over time (S.EVO), a variable derived from a specific question posed in the distributed survey.

- H0: There is NOT a significant correlation between F.TOT and S.EVO.
- H1: There is a significant correlation between F.TOT and S.EVO. This research question derives its relevance from the intention to discover if Cultural Intelligence, as measured by F.TOT, has a noticeable relationship with how stress evolves among expatriates. Exploring this relationship carries implications for understanding the long-term impacts of Cultural Intelligence on the expatriate experience. The evolution of stress over time, captured by S.EVO, provides a measure that can provide potential further patterns or trends. By analyzing the potential correlation between F.TOT and S.EVO, this research hypothesizes that individuals with higher levels of Cultural Intelligence might experience distinct trajectories in stress evolution. Identifying a significant correlation would increase comprehension of the relationship between cultural intelligence and stress. However, it could also be used to plan interventions or strategies to improve long-term well-being during cross-cultural experiences.

The anticipation of a potential correlation is founded on the precedent of similar studies in the existing literature. While specific studies examining the relationship between Cultural Intelligence and stress evolution are limited, parallels can be drawn from analogous research endeavors. Assessment tools such as ICAPS (Matsumoto et al., 2007) and MPQ (Van der Zee & Van Oudenhoven, 2001), often used in assessing Cultural Intelligence, hint at the potential influence of Cultural Intelligence on dynamic cross-cultural processes.

3. RQ 3: Is there a significant difference between the generations represented by age groups and the total scores of CQ?

This RQ aims to reveal potential disparities across different generations, represented by distinct age groups (AGE), concerning the cumulative scores of Cultural Intelligence (F.TOT)

- H0: There is no significant difference in F.TOT between age groups (AGE).
- H1: There is a significant difference in F.TOT between age groups (AGE). The importance of this research question comes from the aspiration to encounter plausible variations in Cultural Intelligence (F.TOT) scores among different age groups. The parameter of age holds the potential to interact with an individual's capacity to assimilate and wield Cultural Intelligence abilities. Exploring these dynamic holds implications for understanding how generational attributes relate to the improvement and manifestation of Cultural Intelligence. This draws inspiration from the Chinese student study (Gebregergis et al., 2019), which

proposes age-based discrepancies in CQ scores by highlighting the adaptability of younger students to mainstream society and their potential integration skills aligning with the hypothesis examined. However, these attributes may be influenced by experiences of emotional immaturity or psychological challenges that affect the application of Cultural Intelligence skills. With this hypothesis, the potential differences in F.TOT scores across age groups will be inspected to prove or disprove the connection between age and Cultural Intelligence levels.

4. RQ 4: Is there a significant difference between the stress levels of younger expatriates and their older counterparts?

This fourth RQ aims to discover whether or not a significant difference exists in stress levels between younger expatriates and their older counterparts, as defined by age groups (AGE).

- H0: There is no significant difference in the stress levels between age groups (AGE).
- H1: There is a significant difference in the stress levels between age groups (AGE). The relevance of this research question comes from the potential to discover variations in stress levels among distinct age groups of expatriates. The previous proposals made in the study of Chinese students (Gebregergis et al., 2019) affirmed that younger individuals express higher adaptability and integration skills in mainstream societies, specifically if younger people experience lower stress levels compared to their older counterparts. Extending this observation to stress levels, we hypothesize that this adaptability might translate into a difference in stress experiences between age groups. This will be proven or disproven by analyzing the perceived overall stress level (STRESS LV and S.AVG) that the participants declared during the survey, setting the age group 18-24 as the control group. Exploring the relationship between the two variables holds implications for understanding how generational differences might affect the perception and experience of stress during time abroad.

The results of these questions could be a starting point for targeted development of support strategies for varied age groups of expatriates, contributing to enhanced well-being and effective cross-cultural engagement.

5. RQ 5: Is there a significant difference between the stress levels of expatriates who had their international experience for work-related reasons and those who had it for study-related reasons?

This fifth RQ aims to explore potential differences in stress levels among expatriates based on the motivation behind their international experiences. The two

motivations under examination are work-related and study-related experiences (MOTIVATION).

- H0: There is no significant difference in the stress levels between work- and study-related experiences (MOTIVATION).
- H1: There is a significant difference in the stress levels between work- and study-related experiences (MOTIVATION).

This research question is essential to investigate potential variations in stress levels based on the diverse motivations driving individuals to undertake international experiences. If a significant difference were to be proved, this would create a foundation for exploring the potential influence of these two motivations on the perceived stress encountered by expatriates during their stay.

This will be analyzed by comparing the stress levels reported by individuals with these distinct motivations. This research question implies that if a significant difference in stress levels is found, the motives of the experience – be it work or study – could influence stress perceptions during international stay. This insight might lead both organizations and educational institutions to tailor specific support mechanisms that align with the motivations of expatriates, ultimately contributing to their well-being and practical adaptations in diverse cultural contexts. Furthermore, this research question contributes to a broader theoretical aspect by providing insights into how diverse motivations interact with the stress experiences of expatriates, offering a detailed view of how work-related and study-related goals might shape the cross-cultural experience.

6. RQ 6: Is there a significant difference between the stress levels of expatriates with shorter experiences and those with longer experiences?

RQ 6 explores the potential differences in stress levels between two distinct categories of expatriate experiences (LENGTH): shorter ones – up to a semester – and the ones of longer durations – up to a year and more than a year.

- H0: No significant difference exists in stress levels between longer and shorter experiences (LENGTH).
- H1: There is a significant difference in the stress levels between longer and shorter experiences (LENGTH).

The relevance of this RQ comes from searching for a possible impact of the length of an international experience on the stress levels encountered by expatriates. This would highlight the potential influence of the temporal dimension on the stress perception of cross-cultural experiences. Understanding whether the duration of an international experience correlates with variations in stress perceptions holds further implications for tailoring robust support systems and strategies for individuals about to partake in different durations of

expatriation, aligning them with the unique challenges posed by shorter and longer international experiences. Furthermore, it would show implications for practical interventions and theoretical inquiries. On the practical side, if a significant difference in stress levels is detected, it could underscore the role of temporal duration in shaping the stress experiences of expatriates. Additionally, for the theoretical side, this research question contributes to the discussions by portraying how the variable of temporal duration interacts with the stress dimensions of cross-cultural contexts.

While exploring the relationship between the duration of international experiences and stress, this research question based its formulation on existing literature that underscores the temporal aspect's role in cross-cultural adaptation and the associated stressors such as the ones illustrated in the ICAPS (Matsumoto et al., 2007) and MPQ assessments (Van der Zee & Van Oudenhoven, 2001).

7. RQ 7: Is there a significant correlation between the amount of HR training received prior to the experience and the overall CQ (F.TOT) scores?

The seventh and last RQ investigates the potential relationship between the extent of Human Resources (HR) training and the overall Cultural Intelligence (F.TOT) levels. This question addresses whether the amount of HR training received by expatriates correlates with the overall Cultural Intelligence scores obtained by the participants in the survey.

- H0: There is no significant correlation between F.TOT and HR Training received.
- H1: There is a significant correlation between F.TOT and HR Training received.

The context surrounding HR training within the distributed survey's framework provides a background for exploring the potential impact of training processes on expatriates' Cultural Intelligence. This exploration is particularly pertinent given the critical role of training in enhancing cross-cultural competencies. Therefore, the implications of this RQ extend to practical considerations for training interventions and theoretical investigations into the convergence of training and Cultural Intelligence. If a significant correlation between HR training and Cultural Intelligence scores is identified, it could provide insights into the effectiveness of training programs received by the expatriates prior to their experience, showing improvements in their cross-cultural competencies. These implications could lead to designing and implementing targeted training strategies, contributing to improved cross-cultural adaptability among expatriates. Moreover, this research question contributes to the theoretical framework by offering insights into the links between specific training interventions and Cultural Intelligence development.

Quantitative Approach

One of the purposes of this research is to gather brand-new data that could prove helpful in the future as a base for further research. For said purpose, a quantitative approach was chosen. Data was collected through a survey created on “questionpro.com.” This was later spread through social media such as LinkedIn and Instagram, networking circles, and other international connections. The survey was initially created in English and then translated into Spanish, Italian, and German to facilitate the international distribution process.

The sampling type is to be considered “random sampling”; therefore, the calculations for the minimum sample size are as follows:

- Population size: As the population in this case is relatively large, considering the definition of expatriate used for this research, the population size is UNKNOWN, therefore considered UNLIMITED.
- Confidence level: Given the unlimited population size, in order to achieve a realistically achievable goal of surveys completed, a confidence level of 90% was chosen.
- The margin of error: As a confidence interval, a margin of error of 5% was chosen
- Population Proportion: As the sampling is going to be random, the population proportion is considered to be 50%.

Using the following as the formula for Sample Size with an unlimited population

Where:

$$n = \frac{z^2 \times \hat{p}(1-\hat{p})}{\epsilon^2}$$

- z is the z score – given a confidence level of 90%, $z=1.645$
- ϵ is the margin of error = 0.05
- \hat{p} is the population proportion = 0.5

The sample size resulting from the calculations is 270.6025, rounded to 271. This number would be the minimum number of surveys completed to achieve a confidence level such as the selected one.

Three requirements were set in order for a participant’s response to be considered valid and, therefore, used as part of the analysis:

1. At least one experience in a foreign country lasted at least three months. This was set because burn-out, or burnout syndrome, is defined as prolonged or chronic unmanaged stress (Guimaraes, 2023).
2. At least one of these experiences was done at an age of at least 18 years old.

3. At least one of the experiences that fall into the previous requirements in a foreign country had to be either work- or study-related.

Participants who failed to meet one or more of these requirements were discarded.

The survey was divided into four sections, plus the dedicated section to the introduction message:

1. General questions constituted of 7 questions define the general traits of the individuals.
2. Cultural Intelligence consists of 4 questions based on the four factors of the “Cultural Intelligence Scale” (Earley & Ang, 2003). As in the original CQS, each question contained five statements proposing scenarios with seven options on a Likert scale from “1-Strongly Disagree” to “7-Strongly Agree”.
3. Stress Factors in Host Country consisted of 3 questions. The eight stressors selected for this section were chosen according to the pre-existing literature and research on the stress levels of expatriates.
4. HR Training on Cultural Intelligence is composed of 3 questions.

5 Results

Firstly, the database was downloaded from the analytics section of questionpro.com; this data was then skimmed to reach the final database used for the analysis. Overall, the survey was seen by 374 individuals over 41 days and presented a completion rate of around 79.14%, with 296 responses marked as completed by the Question-Pro website. The remaining 78 responses were discarded as a result of incompleteness. Of the 296 completed responses, 11 of them (3.72% of the total) were also discarded as they did not meet the requirement of having lived in a foreign country for at least three months or the other two set requirements, therefore bringing the actual completion rate at 76.20% and 285 valid completed responses. Valid responses were collected from 40 different countries overall.

These are referred to as “O. REGION” in the analysis file, indicating the region of origin of the individuals. The exact geographical regions indicated where the international experience occurred are called “I.E. REGION.” The proportions in Table 1 show the frequencies of the selections for this question.

One hundred twenty participants stayed in the same geographical region for their international experience, whereas the remaining 165 traveled to a different geographical region.

Of the total 285 valid participants, 164 (or 57.54%) identified themselves as “Female,” 117 (or 41.05%) as “Male,” and 4 (or 1.4%) identified as “non-binary.” 198 (or 69.47%) reported being between 18 and 24 years old,

80 (or 28.07%) to be between 25 and 34 years old, and 7 (or 2.46%) chose the group 35 years old or more. However, as no valid participants fell into the groups of “45-54” and “55-64”, and as only one of the participants reported to be 64 or above during their experience, the groups were merged as a single group named “Above 35”.

Of the valid responses, 82 (or 28.76%) of them were reported to be work-related experiences, while the remaining 203 (or 71.23%) were reported as study-related experiences, which was to be expected considering the age trends of the sample leaning heavily on the younger age group. More than three-quarters of the 203 participants

with study-related experience (154) were in the “18-24” age group.

Regarding the length of international experience, “3 to 6 months” proved to be the most common option amongst both groups of participants being chosen a total of 185 times; “7 to 12 months” chosen a total of 64 times, and “more than 12 months” was chosen a total of 36 times. This again shows a potential connection to the theoretical framework, particularly with the study made by the Kozai Group (2022), which identified a trend of choosing closer destinations rather than “long-haul” destinations.

Table 1: Proportions of IE Regions

Proportions - I.E.REGION		
Level	Count	Proportion
Australia	1	0.00
Africa	3	0.01
Asia	24	0.08
Central America	24	0.08
Europe	175	0.61
Middle East	3	0.01
North America	36	0.13
South America	19	0.07

Source: Own calculations of the authors

Table 2: Average Scores per CQ Factor

Score F1	85,94%	Average F1	30,08
Score F2	80,40%	Average F2	28,14
Score F3	76,73%	Average F3	26,86
Score F4	79,66%	Average F4	27,88

Source: Own calculations of the authors

Analysis of CQS Results

The results of the second section of the survey were firstly analyzed factor by factor, meaning each CQ factor (F1 to F4) was evaluated singularly by calculating the average score out of 35 maximum points, and only after this compared to the rest. The highest scoring factor was F1 (Metacognitive CQ). Following F2 (Cognitive CQ) and

F4 (Behavioral CQ). Lastly, F3 (Motivational CQ) was the lowest scoring, as seen in Table 2.

These numbers show that the most challenging aspect for the expats was managing their own emotions and energy levels while responding appropriately to the emotions of others rather than understanding and accepting cultural norms and values or adapting to the new, unknown physical environment.

After analyzing the factors individually, the following step was to analyze the total CQ score, addressed in the database as “F.TOT.” The 285 participants averaged a mean value of 112.96 out of 140, with a minimum value of 51 and a maximum of 139. The scores were then separated into classes from “Way below average” to “Above average.” This separation was done by assigning a range to the average results; as shown in Table 3 below, the mean (112.96) and the median (115) are very close. Nonetheless, the mean score was lower than the median. This indicates that the distribution is skewed negatively (or to the left), as

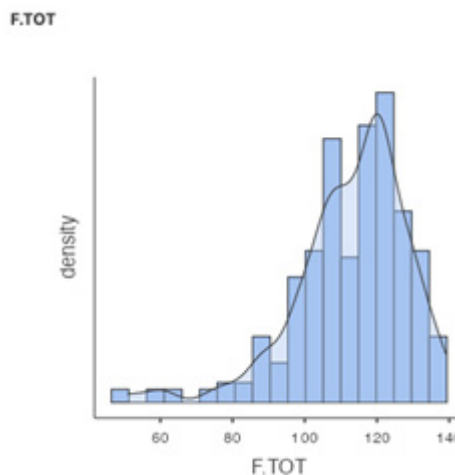
shown in Figure 1.

Due to this skewness, the median value was considered the average result. Considering this value as a starting point, class results were established to analyze the sample’s responses better. Firstly, an interval of the “Average” class as $110 \leq F.TOT < 120$ was created. The other classes were created maintaining an interval of 10 points, except the class “Way Below Average,” which represents all the results under a score of 90. The frequencies of the classes are shown in Table 4.

Table 3: Descriptives of FTOT

Descriptives	
	F.TOT
Mean	112.96
Median	115
Standard deviation	15.54
Minimum	51
Maximum	139
25th percentile	105.00
50th percentile	115.00
75th percentile	122.00

Source: Own calculations of the authors



Source: Own calculations of the authors

Figure 1: Density of FTOT

Table 4: Frequencies of F. Levels

Frequencies of F. LEVEL			
Levels	Counts	% of Total	Cumulative %
Way Below Average	21	7%	7%
Below Average	25	9%	16%
Slightly below Average	55	19%	35%
Average	75	26%	62%
Slightly above Average	76	27%	88%
Above Average	33	12%	100%

Source: Own calculations of the authors

Table 5: Frequencies of Stress Levels

Frequencies of STRESS LV			
Levels	Counts	% of Total	Cumulative %
1	42	15%	15%
2	88	31%	46%
3	86	30%	76%
4	44	15%	91%
5	22	8%	99%
6	3	1%	100%

Note: 1= Very Low; 2=Low; 3=Somewhat Low; 4=Somewhat High; 5=High; 6 =Very High.

Source: Own calculations of the authors

Analysis of Stress Data

For the first question of this section, the participants were asked about their overall stress levels during their experience. They were presented with six options from Very Low to Very High. These are reported in the database and Table 5.

These frequencies indicate that the majority of the participants, 174 out of 285 (or 61.05%) to be exact, reported to have had an overall “Low” to “Somewhat Low” level of stress during their experience, with an almost equal split between the two categories, and even the third quarter of the distribution falling into the category 3. This indicates some discrepancies with the existing literature, as the general level of stress level participants in this study has only been reported to be higher in roughly 24% of the cases, with only 3 participants reporting very high levels of stress levels, also proven by analyzing the average of the total scores given to the eight stressors, which resulted in a 3.90 out of 10.

The single stressors were also analyzed singularly in order to determine if and which stressors affected the average stress levels the most. The results showed that the

stressor “S3–Loneliness” scored higher on average than all the others, followed by “S4–Bureaucracy”, “S1–Language Barrier,” and “S7–Connecting to Locals.” Whereas the last three stressors, “S5–Access to Healthcare”, “S6–Feeling of Safety,” and “S2–Local Customs,” all scored an average under 4 out of 10.

Additionally, the participants were asked about the evolution of their stress levels with time. In particular, they could choose whether they felt a decrease, slight decrease, no change, slight increase, or increased stress during their experience (S.EVO).

As shown in Table 6, 54% of the participants experienced a significant decrease in their stress level as time passed. A plausible explanation for this could be that some stressors affect an expatriate more during the beginning of their experience. Regarding the other participants, 6% – 17 individuals – experienced increased stress levels. Of these, only 7 reported that the increase was significant, whereas the remaining 32 participants did not experience any significant change in their stress level throughout their international experience as expatriates.

Analysis of HR-Related Data

Of the 285 participants, 37.19% reported not having had any training, making this the singular most chosen option amongst the displayed ones – closely followed by “Language Training,” which was selected by 36.14%. However, while this was the singular most chosen option, this still entails that the majority of the participants in the sample had at least some training before their experience as expatriates. Cross-cultural mentoring proved to be a pretty popular option, with 23.86% scoring just shy of 5 percentage points higher than the next training, “Cultural Competency Workshops,” with 17.89%. The last three options for training, “Online Courses,” “Diversity and Inclusion Training,” and “Cultural Immersion Programs,” scored 15.44%, 12.63%, and 10.18%, respectively. On average, each participant partook in 1.16 of the possible six trainings displayed in the survey.

When asked which of the training done, they considered valuable and/or which they think would have been helpful before their time as expatriates, the top 3 choices were “Language Training” with 57.19% (163 participants), “Cultural Immersion Programs” with 41.50% (117 participants), and “Cross-Cultural Mentoring” with 32.98% (94 participants). Following choices by popularity were “Cultural Competency Workshops,” selected by 28.42% of the sample (81 participants), “Diversity and Inclusion Training” with 23.51% (67 participants), and “Online Courses” with 13.33%, indicating that most participants rather have in-person scheduled training rather than virtual courses and online material to self-analyze. Additionally, only 31 of them chose the option for “None of them,” making it the least chosen option and indicating that 89.12% of the participants found or would have found it helpful to have CQ training or related training previous to their international experience with an average of 1.96 desired training out of the six displayed in the survey, essentially doubling

the average amount of training they experienced.

Figure 2 shows a visual representation of the received (in red) and desired training (in blue) as reported by the sample in a radar chart. Diversity and Inclusion, Training, and Language Training present a moderately higher demand than the sending institutions currently offer. The necessity of a cross-cultural mentor also proves highly relevant for the sample of expatriates that partook in the study. However, of the potential training shown, the opportunity to gather hands-on experience with Cultural Immersions Programs seems to be of significantly higher importance to the expatriates. This type of program’s need and expected usefulness come from having a direct connection to a culture rather than a mere result of a lecture or a workshop.

Moreover, the offer of online courses presents a slightly lower demand than the current offer by the organizations. However, this is not a surprising factor given that online courses, such as pre-registered lectures or the offering of literature, present a significantly lower cost to the organization than other training and activities listed.

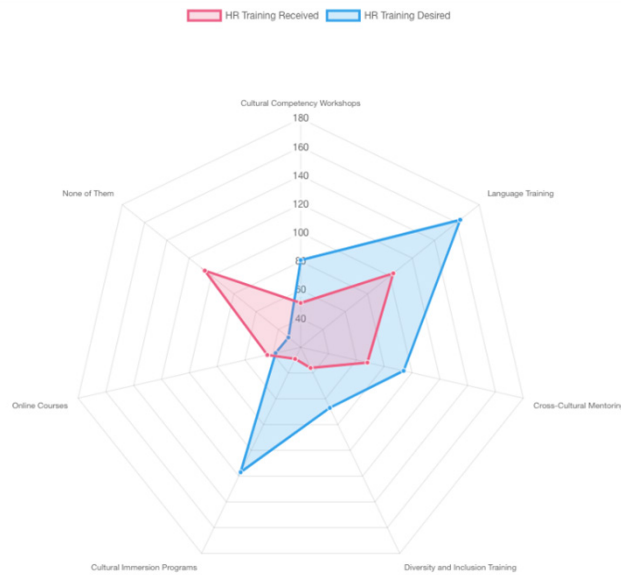
As a final question to the survey, participants were asked to express how important it was for them to receive these or other types of training from their sending institution. Table 7 shows the results of this question.

This shows once again not only that the expectation for a higher level of support from their sending institution in preparation for their experience is a priority for expatriates but that the expatriates value in a considerable manner their personal growth potential – in the form of CQ training – in the face of a challenge such as an international experience as expatriates. A company that offers desirable training may have more friction with the talent pool on a national and international level, obtaining a significant competitive advantage over other institutions and competitors. This, in turn, will help sustain their employee well-being while also supporting a better internal company culture across multicultural teams.

Table 6: Frequencies of S.EVO

Frequencies of S.EVO			
Levels	Counts	% of Total	Cumulative %
Decreased	153	54%	54%
Slightly Decreased	83	29%	83%
No Change	32	11%	94%
Slightly Increased	10	4%	98%
Increased	7	2%	100%

Source: Own calculations of the authors



Source: Own calculations of the authors

Figure 2: HR Received/Desired

Table 7: Frequencies of Importance HR

Frequencies of IMPORTANCE HR			
Levels	Counts	% of Total	Cumulative %
Not Important	9	3%	3%
Slight	44	15%	19%
Moderate	102	36%	54%
High	81	28%	83%
Extreme	49	17%	100%

Source: Own calculations of the authors

Table 8: Correlation Table RQ1

Correlation Matrix		
		F.TOT
F.TOT	Spearman's rho	—
	p-value	—
STRESS LV	Spearman's rho	-0.44
	p-value	<.001
S.AVG	Spearman's rho	-0.20
	p-value	<.001

Note. H. is negative correlation

Source: Own calculations of the authors

6 Discussion

Using the data collected and after finishing the database preparations for the analysis, Jamovi was used as the primary method to answer the research questions.

1. RQ 1: Is there a negative correlation between the total levels of Cultural Intelligence (F.TOT) and the overall stress levels reported by the expatriates during their experience?

- H0: There is no significant negative correlation between F.TOT and STRESS LV.
- H1: There is a significant negative correlation between F.TOT and STRESS LV.

In order to establish if a negative correlation is present between the variables F.TOT (total score of CQ) and STRESS LV (overall stress level), the type of analysis chosen was a correlation matrix. In order to proceed with the analysis, a correlation coefficient must be chosen. As both variables were previously analyzed with a Normality test (Shapiro-Wilk) and resulted as both not normally distributed ($p < .001$ for both), Spearman was chosen as the correlation coefficient. This choice lies in the fact that Spearman's coefficient is less sensible to outliers than Pearson's coefficient; however, the two show quite similar results in this particular case.

The analysis – circled in blue – gave a p-value of $< .001$ with a Spearman's rho value of -0.44 , indicating the presence of a moderate negative correlation. Analyzing this with Pearson's coefficient, we get the exact p-value with an r of -0.47 . Therefore, the null hypothesis is discarded, and the alternative hypothesis is validated, meaning there is a significant negative correlation between the level of CQ and the overall stress level during the experience as an expatriate.

The same test was also run using the average score of the stressors "S.AVG" – circled in red in the table – instead of "STRESS LV" as an additional way to analyze the relationship between the CQ score and stress, since as mentioned previously the variable S.AVG was created as an extra measure to ensure a better evaluation of stress lev-

els of the expatriates. Again, according to the Normality test (Shapiro-Wilk), it was confirmed that this variable is also not normally distributed ($p = 0.007$); therefore, Spearman's rho was again chosen as the correlation coefficient. This returned a similar result as the p-value was again $p < .001$, with a lower Spearman's rho value of -0.20 , showing a weak negative correlation.

This analysis delved into the relationship between Cultural Intelligence (CQ) and stress levels among expatriates, a crucial area often discussed in intercultural literature. By employing Spearman's correlation coefficient, known for its robustness against skewed distributions, our findings corroborate previous studies suggesting a moderate negative correlation between Cultural Intelligence and stress levels ($\rho = -0.44, p < .001$). This aligns with existing research indicating that higher levels of Cultural Intelligence may serve as a buffer against the stresses inherent in cross-cultural experiences. Furthermore, integrating S.AVG as an additional measure to evaluate stress provided nuanced insights, albeit revealing a weaker negative correlation ($\rho = -0.20, p < .001$). These findings underscore the importance of Cultural Intelligence training as a potential strategy for stress mitigation among expatriates, aligning with prior literature advocating for the integration of CQ development programs in cross-cultural contexts.

2. RQ 2: Is there a significant correlation between the total values of the CQ and the evolution of stress over time?

- H0: There is NOT a significant correlation between FT and S.EVO.
- H1: There is a significant correlation between F.TOT and S.EVO.

In order to establish if a significant correlation is present between the variables F.TOT (total score of CQ) and S.EVO (evolution of stress over time), the type of analysis chosen was a correlation matrix. In order to proceed with the analysis, a correlation coefficient must be chosen. As F.TOT is not normally distributed but skewed negatively, Spearman was chosen as the correlation coefficient, given the lower sensitivity to outliers.

Table 9: Correlation Table RQ2

Correlation Matrix		S.EVO	FTOT
S.EVO	Spearman's rho	–	–
	p-value	–	–
FTOT	Spearman's rho	-0.05	–
	p-value	0.443	–

Source: Own calculations of the authors

Table 10: Anova KW RQ3

Kruskal-Wallis				
	χ^2	df	p	ϵ^2
FTOT	2.14	2	0.344	0.01

Source: Own calculations of the authors

Table 11: Anova KW RQ4

Kruskal-Wallis				
	χ^2	df	p	ϵ^2
STRESS LV	0.17	2	0.917	0.00
S.AVG	4.36	2	0.113	0.02

Source: Own calculations of the authors

The analysis given as a result is shown in Table 9 with a p-value of $p=0.443$; therefore, as $p>0.05$, the alternative hypothesis is discarded, and the null hypothesis is validated, meaning that there is not a significant correlation between the level of CQ and the evolution of stress over time.

Contrary to expectations, our analysis did not reveal a significant correlation between Cultural Intelligence and the evolution of stress over time ($p = 0.443$). This finding diverges from some existing literature, suggesting that while Cultural Intelligence may influence immediate stress levels, its impact on the longitudinal trajectory of stress during an expatriate experience might be less pronounced. This underscores the complexity of cross-cultural adaptation processes and highlights the need for nuanced interventions tailored to the evolving needs of expatriates throughout their assignments.

3. RQ 3: Is there a significant difference between the generations represented by age groups and the total scores of CQ?

- H0: There is no significant difference in F.TOT between age groups (AGE).
- H1: There is a significant difference in F.TOT between age groups (AGE).

In order to establish if a significant difference is present in the three groups of the variable AGE (age groups) in regards to the variable F.TOT (total score of CQ), the type of analysis chosen was a non-parametric One-way ANOVA.

The One-way ANOVA is needed as the variable AGE presents more than two groups. At the same time, the choice of utilizing a non-parametric analysis (Kruskal-Wallis) was dictated by the fact that F.TOT is not normally distributed.

The analysis in Table 10 gave, as a result, a p-value of $p=0.344$; therefore, as $p>0.05$, the alternative hypothesis is discarded, and the null hypothesis is validated, meaning that there is not a significant difference between the three age groups in regards of the total scores of CQ.

In exploring the relationship between age groups and Cultural Intelligence scores, our analysis utilizing the non-parametric Kruskal-Wallis test did not reveal a significant difference ($p = 0.344$). While this finding contrasts with some literature suggesting age-based discrepancies in CQ scores, it emphasizes the need for a more nuanced understanding of how generational attributes intersect with Cultural Intelligence development. Practical implications include the design of targeted training programs that cater to the diverse needs of different age cohorts, fostering inclusive environments conducive to cross-cultural success.

4. RQ 4: Is there a significant difference between the stress levels of younger expatriates and their older counterparts?

- H0: There is no significant difference in the stress levels between age groups (AGE).
- H1: There is a significant difference in the stress levels between age groups (AGE).

In order to establish if a significant difference is present in the three groups of the variable AGE (age groups) regarding the variable S.AVG, the type of analysis chosen was a non-parametric One-way ANOVA. The One-way ANOVA is needed as the variable AGE presents more than two groups. At the same time, the choice of utilizing a non-parametric analysis (Kruskal-Wallis) was dictated by the fact that the variable S.AVG is not normally distributed.

As shown in Table 11, the analysis gave a p-value of $p=0.113$; therefore, as $p>0.05$, the alternative hypothesis is discarded, and the null hypothesis is validated. There is no significant difference between the three age groups regarding the stress the expatriates felt during their experience.

Our analysis, using the Kruskal-Wallis test, did not unveil a significant difference in stress levels between age groups ($p = 0.113$). This finding contradicts previous assertions suggesting higher adaptability and lower stress levels among younger expatriates. It underscores the need to reevaluate assumptions about age-based differences in stress experiences and to tailor support mechanisms accordingly, irrespective of age.

5. RQ 5: Is there a significant difference between the stress levels of expatriates who had their international experience for work-related reasons and the ones who had it for study-related reasons?

- H0: There is no significant difference in the stress levels between work- and study-related experi-

ences (MOTIVATION).

- H1: There is a significant difference in the stress levels between work- and study-related experiences (MOTIVATION).

In order to establish if a significant difference is present in the two groups of the variable MOTIVATION regarding the variable S.AVG, the type of analysis chosen was a non-parametric One-way ANOVA. The choice of utilizing a non-parametric analysis (Kruskal-Wallis) was dictated by the fact that the variable S.A.VG is not normally distributed.

As shown in Table 12, the analysis gave, as a result, a p-value of $p=0.343$; therefore, as $p>0.05$, the alternative hypothesis is discarded, and the null hypothesis is validated, meaning that there is not a significant difference between work-related and study-related experiences, in regards of the stress the expatriates felt during their stay abroad. The p score of the variable STRESS LV seems to be significantly higher than the one obtained by the compound variable S.AVG. A plausible explanation of this might be the implication that the motivation of the expatriation has a more significant impact on the experience of the stressors rather than the general level of perception of overall stress. This could signify the possibility of a more complex relationship between the motivation of the expatriation and how much the stressors affect the expatriates during their experience.

Table 12: Anova KW RQ5

Kruskal-Wallis				
	χ^2	df	p	ϵ^2
S.AVG	0.90	1	0.343	0.00
STRESS LV	0.00	1	0.976	0.00

Source: Own calculations of the authors

Table 13: Anova KW RQ6

Kruskal-Wallis			
	χ^2	df	p
S.AVG	0.16	2	0.924
STRESS LV	2.97	2	0.226

Source: Own calculations of the authors

Contrary to expectations, our analysis using the Kruskal-Wallis test did not detect a significant difference in stress levels between work- and study-related experiences ($p = 0.343$). This suggests that while the motivation behind expatriation may influence stress perceptions, its impact might be more nuanced than previously assumed. Practical implications include the development of holistic support strategies that consider diverse motivations driving expatriate experiences.

6. RQ 6: Is there a significant difference between the stress levels of expatriates with shorter experiences and those with longer experiences?

- H0: No significant difference exists in stress levels between longer and shorter experiences (LENGTH).
- H1: There is a significant difference in the stress levels between longer and shorter experiences (LENGTH).

In order to establish if a significant difference is present in the three groups of the variable LENGTH regarding the variable STRESS LV, the type of analysis chosen was a non-parametric One-way ANOVA. The One-way ANOVA is needed as the variable AGE presents more than two groups. At the same time, the choice of utilizing a non-parametric analysis (Kruskal-Wallis) was dictated by the fact that the variable STRESS LV is not normally distributed.

The analysis gave, as a result, a p -value of $p=0.226$ as shown in Table 13; therefore, as $p>0.05$, the alternative hypothesis is discarded, and the null hypothesis is validated, meaning that there is not a significant difference in the stress levels between longer and shorter experiences. The p score of the compound variable S.AVG is significantly higher than that of STRESS LV. A plausible explanation of this might be the implication that the length of the expatriation has a more significant impact on the experience of the general perception of stress rather than an impact on the experience of the stressors. This could signify the possibility of a more complex relationship between the length of the expatriation and how much stress was perceived during their experience.

Our analysis did not reveal a significant difference in stress levels between shorter and longer expatriate expe-

riences ($p = 0.226$). These finding challenges previous assumptions about the temporal dimension's impact on stress perceptions and underscores the need for tailored support systems that accommodate the unique challenges posed by different durations of expatriation.

7. RQ 7: Is there a significant correlation between the amount of HR training received and the overall CQ (F.TOT) scores?

- H0: There is no significant correlation between F.TOT and HR Training received.
- H1: There is a significant correlation between F.TOT and HR Training received.

In order to establish if a negative correlation is present between the variables F.TOT (total score of CQ) and HR Training received the type of analysis chosen was a correlation matrix. In order to proceed with the analysis, a correlation coefficient must be chosen. As both variables were previously analyzed with a Normality test (Shapiro-Wilk) and resulted in neither being normally distributed, Spearman was chosen as the correlation coefficient.

As Table 14 shows, the analysis gave, as a result, a p -value of $p=0.145$; therefore, as $p>0.05$, the alternative hypothesis is discarded, and the null hypothesis is validated, meaning that there is not a significant correlation between the level of CQ and the overall HR Training experienced by the expatriates.

This result may be discouraging for HR practitioners at first glance. However, the low number of trainings done on average by the sample (1.16 of 6 possible trainings displayed, plus the option to add any other different training as part of their answer, which was not chosen by any of them) could be a determining factor for this result. Keeping in mind that each of the 285 participants could have reported having received 6 different types of training (excluding other training that might have been added through the "other" option in the survey), we get a possible 1710 pieces of training received by the sample. However, only 331 were received by participants of this sample or less than 20% of the maximum. Thanks to the results of the last section of the survey (subchapter 3.4.4), the expectations for more training and practices are significantly higher than the currently offered HR practices aimed at improving

Table 14: Correlation Table RQ7

Correlation Matrix		HR Training	S.AVG
HR Training	Spearman's rho	—	—
	p-value	—	—
S.AVG	Spearman's rho	0.09	—
	p-value	0.145	—

Source: Own calculations of the authors

cultural intelligence factors.

Another plausible explanation might be derived from the expats' level of satisfaction with these trainings. In the last section of the survey, participants were asked to mark which of the training proved useful or would have proved helpful as preparation for their international experience; this section was used for an additional brief analysis. By pairing the results of the training received and the training considered valid, the number of times each individual reported to have received training while also marking it as applicable turns out to be 154. In simpler terms, out of the 331 trainings done as preparation, only 154 (a mere 46.53%) were considered helpful by the expatriates. Unfortunately, given the type of data collected in this research, it will not be possible to explain why this is. However, this could be a starting point for further research.

Contrary to expectations, our analysis did not identify a significant correlation between HR training received and Cultural Intelligence scores ($p = 0.145$). However, the low level of reported training utilization and the mismatch between received and perceived effectiveness highlight opportunities for HR practitioners to reassess training strategies and align them more closely with expatriates' needs.

7 Conclusion

The study showed a significant negative correlation between CQ scores, as measured by the Cultural Intelligence Self-Assessment (CQS) test, and the stress levels experienced by expatriates, both in general stress levels and in the average experience of the eight selected stressors. This observation underlines the critical role of higher levels of Cultural Intelligence in mitigating stress within cross-cultural contexts. The ability to adapt to diverse cultural interactions and situations, communicate effectively, and adapt to unfamiliar physical environments contributes to reduced stress perceptions among expatriates. However, an exciting aspect comes to light when considering the evolution of stress levels over time. The findings reveal that while CQ scores are indeed linked to stress experiences, there is no significant correlation between these scores and the stress trajectory over time. This suggests that the CQ scores act as a buffer against stress, but the subsequent increase or decrease of stress levels does not necessarily correlate with the CQ scores.

Moreover, the age of expatriate experiences has been explored as a potential factor impacting CQ scores and stress levels. Nonetheless, the study did not identify significant differences in CQ scores or stress levels among different age groups. Similarly, the length of expatriation experiences, whether short-term or more extended, did not yield significant differences in stress levels either. Additionally, no significant difference was detected between participants with study-related and work-related experiences concerning stress levels.

After analyzing the findings, implications for both theory and practice emerge. The correlation between CQ scores and stress levels emphasizes the significance of improving cross-cultural competencies as a means of stress reduction. Organizations could leverage this insight to design tailored training programs that aim to enhance CQ and consequently support the well-being of their expatriate workforce. While this entails a more significant amount of resources, this is a solid competitive advantage for the institution.

Several limitations were identified, which should be acknowledged for the interpretations of the results:

- Limited Demographic Diversity - Although the participant pool may lack representation across various demographics, affecting the generalizability of the findings, this study sheds significant light on the critical role of cultural intelligence in mitigating stress levels experienced by expatriates during their stay abroad. It is essential to acknowledge this limitation as it provides context for interpreting the results and underscores the need for future research to encompass more diverse participant demographics.
- Scarce Responses of Individuals Over 35;
- Limited Participation of Long-Term Expatriates;
- Reliance on Memory for Stress Identification;
- Absence of Specific Workplace-Related Data;
- Absence of Comparable Datasets.

The limitations identified in this study and the need for deeper exploration suggest areas in which future research and in-depth studies can contribute to a more exhaustive understanding of the complex relationship between CQ levels and stress in cross-cultural experiences. One significant limitation of this study is the limited demographic representation within the participant pool. The absence of diverse demographics may hinder the generalizability of the findings to broader populations. Additionally, reliance on self-reported measures, although common in research of this nature, introduces potential biases and limitations in the accuracy of data collected. Future research endeavors should aim to address these limitations by incorporating more diverse participant demographics and employing a mix of objective and subjective measures to ensure robustness and reliability of the findings.

One of the promising directions for future research involves conducting longitudinal studies to capture the exact evolution of stress factors over time in conjunction with the development of cultural intelligence throughout expatriation. By tracking stress factors at different points throughout an individual's cross-cultural experience, researchers could discover an in-depth model of the evolution of stress in the experiences. Additionally, investigating how these stress factors correlate with the overall CQ scores could further explain which specific skills are more relevant and adaptive as individuals become more culturally intelligent.

Moreover, further research could focus on understanding the trajectory of CQ development during an expatriate's time abroad. This could be done with a comprehensive analysis of how various components of Cultural Intelligence evolve with a full-immersion experience in a foreign culture, such as in an expatriation while considering factors such as initial CQ levels, level of exposure to new cultural contexts, and the impact of training done with HR practices versus the experiential learning.

In order to gain a more detailed understanding of the factors influencing CQ development, future research could inquire into the role of specific cultural contexts. Investigating whether certain cultural environments facilitate or hinder the acquisition of a determined CQ skill could lead to a more personalized approach to training and support.

The significance of HR training in enhancing Cultural Intelligence emerges as a key theme within cross-cultural experiences. As highlighted by the survey's findings, expatriates' desire to receive training underlines the role of HR professionals – or equivalent stakeholders responsible for training initiatives – within organizations. This section will give insights into the critical role that HR training plays in promoting improved CQ levels and linked abilities and skills.

The survey results indicate a notable trend, considering that a significant majority of expatriates within the sample expressed the desire for increased training opportunities from their organizations, particularly in the areas highlighted by the study. This discovery is a strong call for HR professionals to recognize the untapped demand for targeted training interventions to enhance CQ-related skills.

Identifying training as an area for improvement indicates individuals' readiness and desire to improve their cultural intelligence. However, the viability of training programs depends upon the amount of organizational resources and the policies of sending institutions. The varied availability of resources calls for tailored approaches to training implementation depending on the organization. This training should ideally reflect the diverse nature of the expatriates' backgrounds and organizational contexts.

Organizations can identify and target skills that can be improved by utilizing assessments such as the CQS – or one of the other assessments mentioned, such as the ICAPS and the MPQ. This would contribute to higher CQ while mitigating or preventing stress-induced burnout symptoms over time. This is especially true for organizations striving to achieve a high degree of employee diversity since these are the ones that would stand to gain substantially from investments in targeted CQ-focused training.

To summarize, the desire for training and its potential to alleviate stress and promote individual growth highlights its strategic significance for both individuals and organizations. Recognizing these varied benefits, HR professionals are incited to formulate targeted training initiatives that expand on CQ competencies, contributing to a broader

spectrum of successful cross-cultural interactions.

To effectively leverage the study's findings and enhance intercultural training initiatives, HR professionals and organizations can consider the following detailed guidance:

1. **Tailored Training Programs:** Utilize the insights from the study to design tailored training programs that address specific CQ-related skills identified as crucial for expatriate success. These programs should cater to the diverse backgrounds and needs of expatriates, acknowledging the unique challenges posed by different cultural contexts.
2. **Needs Assessment and Skill Identification:** Conduct thorough needs assessments to identify the specific CQ-related skills that require enhancement within the organization. This could involve utilizing assessments such as the Cultural Intelligence Scale (CQS), Intercultural Development Inventory (IDI), or Multicultural Personality Questionnaire (MPQ) to pinpoint areas for improvement.
3. **Resource Allocation and Policy Development:** Allocate adequate resources and develop supportive policies to facilitate the implementation of targeted training initiatives. This may include budget allocations for training programs, time allowances for participation, and policies that promote a culture of continuous learning and development.
4. **Incorporation of Assessment Tools:** Incorporate assessment tools such as the CQS, Intercultural Competence Assessment Portfolio (ICAPS), or MPQ into training programs to track participants' progress and measure the effectiveness of interventions. Regular assessment and feedback loops can help tailor training content to address evolving needs.
5. **Promotion of Diversity and Inclusion:** Recognize the strategic importance of promoting diversity and inclusion within the organization and align training initiatives with these goals. Investing in targeted CQ-focused training not only enhances individual competencies but also contributes to creating a more inclusive and culturally competent workplace environment.
6. **Stress Reduction and Well-being Support:** Acknowledge the role of intercultural training in mitigating stress and promoting well-being among expatriates. Integrate stress management techniques and resilience-building strategies into training programs to equip expatriates with the necessary tools to navigate cross-cultural challenges effectively.
7. **Continuous Evaluation and Improvement:** Implement mechanisms for continuous evaluation and improvement of training initiatives based on feed-

back from participants and stakeholders. Regularly review training content, delivery methods, and outcomes to ensure alignment with organizational objectives and expatriate needs.

By adopting a proactive approach to intercultural training based on the study's findings, HR professionals and organizations can foster a culture of cultural intelligence, enhance cross-cultural competencies, and ultimately drive success in global business endeavors.

In conclusion, our study contributes valuable insights into the nuanced interplay between Cultural Intelligence, demographic factors, and expatriate experiences. These findings not only enrich the existing literature but also provide practical implications for designing targeted interventions aimed at enhancing expatriate well-being and cross-cultural success. Further research is warranted to delve deeper into the complexities of cross-cultural adaptation and to refine strategies for supporting expatriates in diverse organizational contexts.

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Vloga kulturne inteligence pri zmanjševanju stresa v tujini: strategije za izboljšanje dobrega počutja v medkulturnih kontekstih

Ozadje/namen: Ker globalna poslovna in izobraževalna okolja postajajo vse bolj medkulturna, lahko dolgotrajen stres, s katerim se soočajo posamezniki, ki delujejo v drugačnih kulturnih okoljih, povzroči simptome izgorelosti. Ta študija raziskuje razmerje med stresom izseljencev in kulturno inteligenco, pri čemer upošteva dejavnike, kot so starost, motivacija, dolžina izkušenj in starostna skupina.

Metode: Izvedena je bila obsežna raziskava za več kot 300 izseljencev — posameznikov, ki so imeli vsaj trimesečne mednarodne izkušnje, povezane z delom ali študijem — iz 40 različnih držav po vsem svetu, ki je zajela različne starostne skupine, motivacije in trajanje bivanja. Validirane lestvice so ocenile ravni stresa v tujini in rezultate kulturne inteligence. Na zbranih podatkih smo izvedli korelacijske in regresijske analize.

Rezultati: Ugotovitve razkrivajo pomembno negativno korelacijo med kulturno inteligenco in stresom v tujini, kar kaže na to, da posamezniki z višjo kulturno inteligenco med mednarodnimi izkušnjami doživljajo manjši stres. Motivacija, dolžina bivanja v tujini in starost niso prinesle statistično značilnih razlik v ravni stresa, kar poudarja pomen kulturne inteligence kot olajševalni dejavnik.

Zaključek: S poudarjanjem povezave med kulturno inteligenco in zmanjšanim stresom izseljencev ta študija poudarja potrebo po medkulturnem usposabljanju in intervencijah v pripravah na (ali med) to izkušnjo. Študija zagotavlja tudi usposabljanje človeških virov in priporočila za pristop k izboljšanju ravni kulturne inteligence.

Ključne besede: *Stres izseljencev, Kulturna inteligenca, Blažilni dejavniki, Kulturna prilagodljivost*

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Career Development Strategies in Maintaining Turnover Intention Through Organizational Commitment

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Background and purpose: The results of calculating the turnover rate for the Indonesian Air Force in 2022, for officers reaching 17.4%, non-commissioned officers at 7%, and enlisted personnel at 3%. The objective of this study is to investigate the impact of career development on turnover intention and to examine the mediating role of organizational commitment in this relationship.

Methodology: This research is research with a quantitative approach. The samples tested in this study were 270 samples of a proportion of Indonesian Air Force officers. The statistical test tool used in this research is SmartPLS 3.

Results: The research results show that career development does not affect Turnover Intention. Furthermore, career development influences organizational commitment. Research findings indicate that turnover intention is adversely affected by organizational commitment. Furthermore, it has been established that organizational commitment acts as a mediator in the association between turnover intention and career development.

Conclusion: The Indonesian Air Force needs to increase organizational Commitment to the career development activities of each Indonesian Air Force personnel in order to reduce turnover intention that can arise in each member personnel. Further research can expand the research object to other Indonesian military organizations to obtain a more general view regarding the performance of human resources in the Defense of the Republic of Indonesia.

Keywords: *Organizational commitment, Career development, Turnover intention*

1 Introduction

The task of the Indonesian Air Force (TNI AU) as the main component of the national defense apparatus in the air is to carry out the tasks of the Indonesian Air Force in the domain of defense, uphold legal regulations, and ensure security within the airspace under national jurisdiction in accordance with ratified national and international law; execute the responsibilities of the Indonesian Air Force in development and development of air forces, implement-

ing the empowerment of air defense areas (Act No. 34 of 2004) Article 10. One of the problems in the Indonesian Air Force currently is the lack of personnel manning the Personnel Composition List (DSP) in the Indonesian Air Force organizational structure. Soldiers are grouped into officer, non-commissioned officer, and enlisted ranks (Act No. 34 of 2004). The percentage of manning in the officer group is 59%, non-commissioned officers 62%, and enlisted personnel 65%. The percentage of DSP manning for the officer class shows the most diminutive figure compared to the non-commissioned officer and enlisted soldiers. It con-

tradicts the significant duties, burdens, and responsibilities in the continuity of the Indonesian Air Force organization. The shortage of DSP manning, especially in the officer class, will significantly affect military strength, especially the Indonesian Air Force in the field, and will have a severe impact on the Indonesian Air Force’s preparedness condition and will be a problem of great concern for national defense. The percentage of manning outside the TNI AU structure in the officer group is 13%, non-commissioned officers 4%, and enlisted personnel 2%. The percentage of officers serving outside the Indonesian Air Force structure is the largest compared to the non-commissioned officers and enlisted soldiers. It contradicts the percentage of DSP manning in the TNI AU officer structure, which is less (only 59%), especially at the rank of lieutenant to lieutenant colonel, compared to the non-commissioned officers and enlisted officers in the TNI AU structure.

Organizations need to maintain professional soldiers to maintain organizational continuity. In this case, soldiers become essential assets in the organization. Today, the world’s militaries face the same problem in soldier turnover, for example, data on the military turnover rate of the US Army at 29.7%, it has the highest turnover compared to the Marines at 18.6% (Marrone, 2020 in Chetri, 2022), and the Indian Military is experiencing an officer shortage of approximately 24 percent (Thaindian News, 2008). The situation is comparable, albeit to a lesser degree, for the Indian Air Force and Navy. This deficiency is most prevalent among those less than the rank of lieutenant colonel (Kanwal, 2008 in Jaiswal et al., 2015). Replacement or rotation of Indonesian Air Force soldiers both within and outside the Indonesian Air Force structure is a phenomenon that often occurs. Turnover in the TNI AU organization can be interpreted as the replacement and resignation of soldiers either voluntarily (at their request/aps) or on orders from the TNI AU organization through the Tour of Area/Duty (TOA/TOD) program outside the TNI AU structure where TNI soldiers can occupy positions in the State civil service. In general, the turnover rate in the Indonesian Air Force can be calculated based on the latest statistical data from the Indonesian Air Force for the 2023 period in Table 1.

Based on the calculation results of the Indonesian Air Force turnover rate in the 2022 period, for the officer group, it reached 17.4%, non-commissioned officers 7%, and enlisted personnel 3%. Referring to Gallup (2023), the ideal turnover is 10% yearly. From this data, it was found that transfers from officers to agencies made a significant contribution to the turnover rate in the Indonesian Air Force. Suppose the turnover rate cannot be prevented, especially at the officer level. In that case, it will impact the lack of personnel manning the Personnel Composition List (DSP) in the organization. The Indonesian Air Force will also lose experienced soldiers in one position, burdening the organization because it has to start by searching and recruiting the best candidates who match the job qualifications, provide initial training, and guide soldiers until their skills are equivalent to soldiers who are outside the TNI AU organization so that more time is wasted, creating losses in terms of material, where the TNI AU has incurred costs from selecting, educating and caring for these personnel so that they can be used for the benefit of the organization and not achieving the ideal composition in organizational staffing. In general, manning is only 63.78%, which is still below the target of 80%, and there are many personnel shortages at the officer level. It contradicts the high/not ideal turnover rate, especially in the officer class at 17.4%. However, for the fulfillment of the DSP/colonel position box above 100%, in this case, turnover is a solution for the balance of the Indonesian Air Force organization. It is necessary to develop a complete understanding of soldier turnover intentions to reduce turnover intentions at the officer level, especially to find out the causes that trigger soldier turnover intentions (Elburdah, 2022).

Assignment at the officer level with the rank of colonel and above to be assigned outside the TNI AU structure as a solution for individual career development and balance for the TNI AU organization. However, at the rank of lieutenant to lieutenant colonel, the percentage of DSP fulfillment is less than 100%; there are even percentages below 50% in particular corps. It is contradictory where the hope of promotion to the rank of colonel will be difficult for a particular corps, where in the organizational structure, the implementation of career development reaches above 100%,

Table 1. TNI AU Turnover Calculation for the 2022 Period

Rate Turnover	2021			2022		
	Pa	Ba	Ta	Pa	Ba	Ta
	18%	8%	3%	17,4%	7%	3%

Source: Researchers’ calculations (2022)

thus impacting the number of non-job officers with the rank of colonel in each corps. Workers who, by increasing their knowledge, skills, attitudes, and others, become more productive in terms of career development will have three alternatives in how the organization treats them, namely: a. The organization must retain him in his original position for a certain period by providing appropriate rewards; b. Organizations need to move these workers to other positions/positions horizontally that are more relevant to increasing and improving knowledge, skills, attitudes, and others. Its relevance is essential so that transferred workers can use their ability to achieve optimally; c. The organization needs to promote these workers vertically or to fill a position/position that is structurally higher in position.

However, the research gap shows that in other research by Pramudika et al. (2016), turnover intention is significantly and negatively impacted by organizational commitment and career development. Greater employee engagement and effort can result from strong organizational commitment (Johannes et al., 2023). Referring to the turnover data, where the number of officers was 17.4%, information was collected to determine the causes. According to Hilton (2015), organizational commitment is the firm belief that employees have in embracing the organization's objectives and core values, being eager to contribute to the organization's success, and sincerely wanting to stay on board. When someone enters the military, a particular commitment is made to the organization. This Commitment develops over time and results from experience gained within the organization. Turnover intentions will be studied in more depth to determine the strength of influence between variables with a narrower scope, namely at a specific level only in the Indonesian Air Force officer group. Given the context of the topic described above, it is possible to formulate specific issues that will be answered in this research as part of efforts to create a model. Turnover intentions among Indonesian Air Force officers, so based on this phenomenon, the problem formulated is as follows: 1.) Does career development directly influence turnover intention? 2.) Does organizational Commitment mediate the influence of career development on turnover intention?

2 Literature Review

Pramudika et al. (2016) found that on the impact of job satisfaction, career advancement, and organizational commitment on turnover intention suggests that career development significantly and negatively affects turnover intention. Employees will stay in an organization depending on their future (Kraemer, 2000; Annisa & Zulkarnain, 2013). Having clear and appropriate career development will significantly influence an employee to have high work enthusiasm and be motivated to work. Career development

is also one-way organizations attract and retain talented employees (Annisa & Zulkarnain, 2013).

H1. Career development is negatively related to turnover intention

The definition of career, Rivai (2010) defines job positions as all the roles a person occupies throughout their professional career. According to Handoko (2013), a career is all jobs or positions handled or held during a person's work. The career development of soldiers essentially aims to ensure the implementation of educational norms, ranks, positions, and assignment shifts for the development of organizational abilities and skills relatively following applicable regulations and in line with the organization's interests so that the implementation of basic tasks can be achieved. With appropriate soldier career development, the soldier's organizational Commitment to duty can be maintained. A career that suits individual needs can increase loyalty and commitment to the organization (Werther & Davis, 1996). Dessler (2013) also said that individual Commitment to the organization can be obtained by providing career development that suits individual needs. Findings from a discussion led by (Valentine et al., 2002) show that Commitment to the organization is positively related to the fit of the person to the organization.

H2. Career development is positively related to organizational Commitment

Commitment to an organization does not just happen but through a relatively long and gradual process. Several factors also determine employee commitment to the organization. Various factors influence commitment to the organization. According to Winarta (2008), organizational commitment factors include: a) Work characteristics, namely work that demands great responsibility and wide open promotional opportunities, will have higher organizational Commitment; b) Reasonable, fair, and satisfying employee rewards will result in higher Commitment; c) Opportunity to get alternative work. Employees with confidence who can get work elsewhere will have lower organizational Commitment; d) Treatment of new employees. Selection and training methods, good communication, and clear organizational values will influence employee commitment, e) Personal characteristics. a) Organizations with a good position and long tenure tend to have higher Commitment than those with a new tenure. From the perspective of Organizational Identification, the psychological relationship between employees and the company organization where they work. Employees who are identified with their organization have a self-image that is mixed with the values and image of the organization; b) Job involvement. Employees with high levels of work engagement strongly identify with the type of work they do and genuinely care about that type of work. For example, employees contribute ideas for work progress, happily comply with company regulations, and support company policies; c) Organizational loyalty. Organizational loyalty

is the extent to which employees are loyal to the organization and have feelings of attachment and devotion. It can also be described as the extent to which there is an employee's willingness to make personal investments or sacrifices for the good of the organization.

H3. Organizational Commitment is negatively related to turnover intention

Turnover intention is a conscious and planned desire to leave the company. Oehley (2007) argues that specific competencies influence the intention to leave an organization, but these competencies do not all have a direct causal

influence on turnover intention but somewhat indirectly through constructs such as job satisfaction and organizational Commitment. Turnover intention is also considered a proximal antecedent refers to a factor that is closely related to or directly influences something else. In this case, it pertains to the capturing of employees' views and assessments of career choices, as mentioned (Allen et al., 2003). Paramarta and Reny (2014) the turnover intention is the desire of an organization/employee to leave or stop working voluntarily. Mahdi et al. (2012) state that turnover intention is a form of withdrawal behavior in the world of

Table 2: Outer Loading Before Deleting Invalid Items

Career Development (X)	PK1	0.751	0.5	Valid
	PK2	0.774	0.5	Valid
	PK3	0.781	0.5	Valid
	PK4	0.808	0.5	Valid
	PK5	0.754	0.5	Valid
	PK6	0.934	0.5	Valid
	PK7	0.935	0.5	Valid
	PK8	0.882	0.5	Valid
	PK9	0.851	0.5	Valid
	PK10	0.826	0.5	Valid
	PK11	0.893	0.5	Valid
	PK12	0.928	0.5	Valid
	PK13	0.911	0.5	Valid
Organizational Commitment (Y)	KO1	0.676	0.5	Valid
	KO2	0.854	0.5	Valid
	KO3	0.038	0.5	Invalid
	KO4	-0.015	0.5	Invalid
	KO5	0.029	0.5	Invalid
	KO6	-0.006	0.5	Invalid
	KO7	0.080	0.5	Invalid
	KO8	0.889	0.5	Valid
	KO9	0.834	0.5	Valid
	KO10	0.932	0.5	Valid
	KO11	0.475	0.5	Invalid
Turnover Intention (Z)	T1	0.836	0.5	Valid
	T2	0.921	0.5	Valid
	T3	0.738	0.5	Valid
	T4	0.794	0.5	Valid
	T5	0.588	0.5	Valid

Source: Data Processed (2023)

Table 3: Outer Loading After Deleting Invalid Items

Career Development (X)	PK1	0.758	0.5	Valid
	PK2	0.782	0.5	Valid
	PK3	0.789	0.5	Valid
	PK4	0.816	0.5	Valid
	PK5	0.762	0.5	Valid
	PK6	0.929	0.5	Valid
	PK7	0.932	0.5	Valid
	PK8	0.877	0.5	Valid
	PK9	0.848	0.5	Valid
	PK10	0.826	0.5	Valid
	PK11	0.892	0.5	Valid
	PK12	0.925	0.5	Valid
	PK13	0.909	0.5	Valid
Organizational Commitment (Y)	KO1	0.666	0.5	Valid
	KO2	0.875	0.5	Valid
	KO8	0.908	0.5	Valid
	KO9	0.873	0.5	Valid
	KO10	0.949	0.5	Valid
	KO11	0.533	0.5	Valid
Turnover Intention (Z)	T1	0.817	0.5	Valid
	T2	0.911	0.5	Valid
	T3	0.736	0.5	Valid
	T4	0.815	0.5	Valid
	T5	0.609	0.5	Valid

Source: Processed Data (2023)

work. Nevertheless, it is ultimately the responsibility of each corporation to decide whether to retain their employees or allow them to depart from the company. Intention to turnover signifies the voluntary inclination to depart from the company, a factor that can influence both the company's reputation and the productivity of its employees (Issa et al., 2013). The level of job satisfaction is related to thoughts about leaving work. Late turnover in the Indian military stems from various factors, like limited or delayed career progression, familial challenges, and premature retirement or settlement problems, and others. With the improvement of the economy, an increasing number of soldiers are enticed to transition from the barracks to the commercial sphere (Abdi, 2007).

H4. Organizational Commitment mediates the relationship between career development and turnover intention

3 Methodology

The population in this study was officers with the rank of lieutenant to lieutenant colonel in the Indonesian Air Force work unit, totaling 5,167 personnel. If the sample is not representative, it will be difficult to conclude a phenomenon being studied (Hair et al., 2006), suggesting

the significance of the research sample size lies in its being at least five times greater than the variables or indicators analyzed. The indicators from this research totaled 54, so the sample calculation results were as follows: Number of samples = $5 \times 54 = 270$ samples. Following the problem to be researched, this research is classified as associative descriptive quantitative research. From these research variables, the indicators, research instruments, and sample design used can be determined. The next step is to collect data, either by means of observation, interviews, or

the distribution of questionnaires, the quantitative analysis method employed is multiple regression analysis. Next, researchers collected data by interviews and then analyzed the interview results. Analysis results from questionnaires and interviews using a 1-7 Likert scale. The independent variable in this research is career development; indicators of career development include Organizational wisdom, work performance, educational background, training at-

tended, work experience, loyalty to the organization, and relationships between people (Gouzali, 1996). The dependent variable in this research is Turnover Intention, with indicators including turnover intention, namely thinking of quitting and intention to search (Mobley, 1978).

Meanwhile, measuring organizational Commitment using a questionnaire can be done using the Organizational Commitment Scale (OCS) developed by Meyer and Allen

Table 4: Average Variance Extracted (AVE)

Variabel Laten	AVE
Career Development (X3)	0.726
Organizational Commitment (Y)	0.663
Turnover Intention (Z)	0.615

Source: Processed Data (2023)

Table 5: Cross Correlation

Indicator	Y	X	Z
KO1	0.666	0.646	-0.100
KO10	0.949	0.330	-0.272
KO11	0.533	0.139	-0.139
KO2	0.875	0.324	-0.190
KO8	0.908	0.346	-0.376
KO9	0.873	0.317	-0.222
PK1	0.250	0.758	-0.073
PK10	0.431	0.826	-0.152
PK11	0.410	0.892	-0.095
PK12	0.552	0.925	-0.184
PK13	0.467	0.909	-0.090
PK2	0.281	0.782	-0.045
PK3	0.300	0.789	-0.038
PK4	0.284	0.816	-0.053
PK5	0.237	0.762	-0.036
PK6	0.507	0.929	-0.132
PK7	0.490	0.932	-0.082
PK8	0.440	0.877	-0.057
PK9	0.412	0.848	-0.088
T1	-0.090	-0.062	0.817
T2	-0.307	-0.126	0.911
T3	-0.030	0.020	0.736
T4	-0.226	-0.087	0.815
T5	-0.017	-0.012	0.609

Source: Processed Data (2023)

(1990). This questionnaire measures organizational commitment through the three dimensions of organizational commitment, as posited by Meyer and Allen (1990), consist of affective commitment, normative commitment, and continuance commitment. The statistical testing tool chosen in this research is SmartPLS 3.

4 Results and Discussion

The assessment of the reflective model's validity aims to ascertain the validity of indicators in measuring reflective variables, achieved through the calculation of convergent validity and discriminant validity. Convergent validity is determined by outer loading, with an instrument passing the convergent validity test if its outer loading exceeds 0.5. The findings from the convergent validity assessment are outlined in Table 2.

Based on the table above, some indicators measure the Organizational Commitment (Y) variable, which has an Outer Loading value smaller than 0.5. These indicators are declared invalid for measuring the variables, so they need to be removed individually so that an SEM-PLS model is obtained where all the indicators for each variable are valid. After re-analysis after removing the invalid indicators, the outcomes of the convergent validity test are displayed in Table 3.

Apart from seeing convergent validity through Outer Loading, it can also be seen through The Average Variance Extracted (AVE) is displayed in Table 4 along with the results of convergent validity testing.

Table 4 show the variables Career Development (X), Organizational Commitment (Y), and Turnover Intention (Z) produce Average Variance Extracted (AVE) values above 0.5.

Thus, the variable indicator is deemed valid for assessing the variable. Subsequently, discriminant validity is determined by cross-correlation, where an indicator is deemed valid in measuring the corresponding variable

if its Outer Loading value surpasses the correlation value of the indicator in other variables. The results of the cross-correlation calculation are presented in Table 5.

Table 5 show that overall, the indicators measuring the variables Career Development (X), Organizational Commitment (Y), and Turnover Intention (Z) yield a higher outer loading than the cross-correlation value observed in other variables. Consequently, each indicator is capable of gauging the latent variable associated with it. To assess construct reliability, calculations such as Cronbach's Alpha, rho A, and composite reliability are employed. The reliability of an indicator is affirmed if Cronbach's Alpha, rho A, and composite reliability exceed 0.7. The outcomes of these calculations are summarized in Table 6.

The goodness-of-fit model assesses the extent to which exogenous variables account for the variance in endogenous variables, essentially measuring the contribution of exogenous variables to endogenous variables. In PLS analysis, this assessment is conducted through R-Square (R2). The goodness of fit Model results are summarized in Table 7.

The R-square for the Organizational Commitment (Y) variable is 0.254 or 25.4%. It shows that the diversity of the Organizational Commitment variable can be explained by the Career Development variable (X3) of 25.4%. Then the Turnover Intention (Z) variable is 0.074 or 7.4%. It shows that the diversity of TurnOver Intention variables can be explained by Career Development (X) and Organizational Commitment (Y) of 7.4%. If you look at the Q-Square predictive relevance (Q2), it is also 0.309 or 30.9%. It indicates that 30.9% of the variability in the data can be accounted for by the entire model, suggesting a satisfactory explanation of the available data. Significance testing is employed to determine if there is an effect of the independent variable on the dependent variable. According to the test criteria, if the p-value < significance level (alpha = 0.05), it confirms the presence of an influence of the independent variable on the dependent variable. The outcomes of significance testing are presented in Table 8.

Table 6: Construct Reliability

Latent Variables	Cronbach's Alpha	Rho A	Composite Reliability
Career Development (X)	0.969	0.984	0.972
Organizational Commitment (Y)	0.894	0.928	0.919
Turnover Intention (Z)	0.866	1.011	0.887

Source: Processed Data (2023)

Table 7: Coefficient of Determination

Variable	R ²
Organizational Commitment (Y)	0.254
Turnover Intention (Z)	0.074
$Q^2 = 1 - (1 -)*(1 -)$ $Q^2 = 1 - (1 - 0.254)*(1 - 0.074)$ $Q^2 = 0.309$	

Source: Processed Data (2023)

Table 8: Hypothesis Testing

Hypothesis	Path	Original Sample (O)	Standard Deviation (STDEV)	T Statistics (O/STDEV)	P Values	Description
H1	X → Z	0.059	0.122	0.484	0.629	Rejected
H2	X → Y	0.679	0.116	5.842	0.000	Accepted
H3	Y → Z	-0.287	0.061	4.703	0.000	Accepted
H4	X → Y → Z	-0.195	0.053	3.677	0.000	Accepted

Source: Processed Data (2023)

Examining the impact of career development (X) on Turnover Intention (Z) yields a t-statistic of 0.484, with a corresponding p-value of 0.629. The findings indicate that the obtained p-value (0.629) exceeds the significance level (alpha = 0.05), suggesting that, at the 5% significance level, there is no significant influence of career development on Turnover Intention. The positive path coefficient of 0.059 states that career development has the potential to have a positive relationship with Turnover Intention, but it is not significant, or it can be said that the test results are rejected. Career Development Priansa (2014) stated that Career Development is a formal approach in institutions and organizations to ensure qualification standards and experience align with needs. Meanwhile, career coaching targets aim to increase employee career effectiveness, including performance, attitude, adaptability, and identity. So, the better the career development carried out by an organization, the lower the employee turnover rate. The results of this study show different things at the level of relationship between career development, which is positively but not significantly related to intern turnover. The portrayal of career development is exemplified by a scenario demonstrating an elevation in an individual’s position within an organization as they progress along the career trajectory established by the organization. Researchers suspect that

this positive relationship is actually due to the tendency of individuals to want good career development, which triggers them to leave their old positions rather than intending to leave their agency. It is supported by previous research, which states that career development is a form of the planning process that tends to motivate employees to identify career targets and paths that lead to specific targets/goals, for example, job rotation (Nurmasari, 2015). Meanwhile, according to Ardana (2012), in particular research objects, it is necessary to refresh employees in occupying higher positions. However, this needs more attention. It is because, in management, particular gangs are more dominant and can occupy higher positions even though they do not meet the requirements.

Testing the effect of career development (X3 on Organizational Commitment (Y) produces t statistics of 5,842 with the p-value obtained is 0.000. This indicates that the test results reveal a p-value (0.000) < the significance level (alpha = 0.05), it implies that the level 5% shows a significant influence of career development on Organizational Commitment. The positive path coefficient of 0.679 states that career development exerts a notable positive impact on Organizational Commitment. It means that better career development can increase Organizational Commitment. Career is a predictor of the causes of turn-

over employee intention. According to Nawaz and Pangil (2016), if employees are very concerned about their career development, they may intend to leave their organization, especially if their prospects for advancing their careers are unclear or non-existent. Employees intend to leave their organization when another organization offers a better salary or position for employees. Previous research findings corroborate the results of this study, indicating that the strength of Commitment is positively related to perceived suitability of values, support from instructors and fellow employees, and well-being (Andersen et al., 2021).

Testing the effect of Organizational Commitment (Y) on Turnover Intention (Z) produces t statistics of 4.703, with the obtained p-value is 0.000, indicating that it is less than the significance level ($\alpha = 0.05$). This suggests that at a significance level of 5%, there is a significant impact of Organizational Commitment on Turnover Intention. The path coefficient displays a negative value of -0.287, signifying that Organizational Commitment significantly decreases Turnover Intention. This implies that higher levels of Organizational Commitment correspond to lower levels of Turnover Intention. Prior research findings reinforce the outcomes of this study, demonstrating a notable correlation between turnover intention and organizational commitment. Additionally, Wang (2016) asserts a significant impact of employee job satisfaction and turnover intention on organizational commitment. As organizational commitment increases, turnover intention carried out by TNI AU individuals decreases. Previous research results that are in line with the results of this research are Srimindarti & Hardiningsih (2017), Susanti & Palupiningdyah (2016), Pramudika (2016), and Widyantara (2015).

Testing the influence of career development (X) on Turnover Intention (Z) through Organizational Commitment (Y) produces t statistics of 3,677 with a p-value of 0.000. The test findings indicate that the p-value (0.000) is less than the level of significance ($\alpha = 0.05$). At a basic level of 5%, career development has a notable impact on Turn Over Intention through Organizational Commitment. Organizational Commitment serves as a mediator for the impact of career advancement on Turnover Intention. The negative path coefficient of -0.195 states that the higher the Organizational Commitment caused by high career development, the lower the Turnover Intention can be. The findings of this study suggest that career development does not directly influence turnover intention. The mediating variable developed represents a positive increase, so the Organizational Commitment felt by each individual in the Indonesian Air Force will stimulate their career development to maintain the stability of their institution so that they refuse to leave the Air Force institution. The existence of organizational Commitment triggers TNI AU personnel to explore the true meaning and goals of the organization so that TNI AU personnel tend to put aside turnover intentions. The findings of this study align with previous re-

search, which highlights the mediating function of organizational commitment in the inverse association between career development and turnover intention (Wang, 2016; Yamazakia, 2015).

5 CONCLUSION

The results of this research show that: 1) Turnover intention is not directly influenced by career development. 2) Career development has been proven to influence organizational Commitment. 3) Organizational Commitment has been proven to influence turnover intention. 4) Organizational Commitment is proven to mediate the correlation between career advancement and turnover intention. The results of this research prove that the organizational Commitment of Indonesian Air Force personnel mediates a response from career development to the turnover intention of each personnel. The Indonesian Air Force needs to raise the spirit of Commitment of each of its personnel in career development activities to build understanding regarding the ideals and goals of the institution. The understanding that is interpreted by Indonesian Air Force personnel will encourage and build the tendency of personnel to put aside turnover intentions, and this is because the encouragement of personnel to show the best performance is supported by internal Commitment that has been formed through career development. The results of this research can provide input to the Indonesian Air Force to consider organizational Commitment as a focus for achieving optimal organizational performance. Furthermore, this research can be researched further on a broader scope in a more comprehensive line of Indonesian Defense, for example, the Indonesian Navy (TNI AL) and the Indonesian army (TNI AD), to fully represent the generalized meaning of the existing defense system in the Republic of Indonesia.

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Vloga organizacijske zavezanosti pri karierni rasti in nameri odhoda zaposlenih v javnem sektorju

Ozadje in namen: Rezultati izračuna stopnje fluktuacije indonezijskih zračnih sil v letu 2022, za častnike (17,4 %), podčastnike (7 %) in vojaško osebje (3 %). Cilj te študije je raziskati vpliv razvoja kariere na namero menjave in preučiti posredniško vlogo organizacijske predanosti v tem odnosu.

Metodologija: Uporabili smo raziskavo s kvantitativnim pristopom. V vzorec je bilo zajetih 270 pripadnikov indonezijskih letalskih sil. Orodje za statistično testiranje, uporabljeno v tej raziskavi, je SmartPLS 3.

Rezultati: Rezultati raziskave kažejo, da razvoj kariere ne vpliva na namero menjave. Poleg tega razvoj kariere vpliva na organizacijsko predanost. Ugotovitve raziskave kažejo, da organizacijska zavezanost negativno vpliva na namero menjave. Poleg tega je bilo ugotovljeno, da organizacijska predanost deluje kot posrednik v povezavi med namero menjave in razvojem kariere.

Zaključek: Indonezijske zračne sile morajo povečati organizacijsko zavezanost dejavnostim razvoja kariere vsakega osebja indonezijskih zračnih sil, da bi zmanjšale namere menjave, ki se lahko pojavijo pri vsakem članskem osebju. Nadaljnje raziskave lahko razširijo predmet raziskovanja na druge indonezijske vojaške organizacije, da bi pridobili bolj splošen pogled na uspešnost človeških virov v obrambi Republike Indonezije.

Ključne besede: Organizacijska predanost, Razvoj kariere, Namera menjave

Transition from CSR to ESG in Tourism – A Bibliometric Analysis

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Background and Purpose: The study examines whether the growing popularity of the ESG (Environmental, Social, and Governance) approach could result in the decline or disappearance of the CSR (Corporate Social Responsibility) concept, which has encountered numerous challenges in practical implementation, and what the main sustainability issues are, helping to examine where the transition is, what elements already exist and where there are gaps. The question is analysed in the context of the tourism sector.

Methods: The empirical research methodology used is bibliometric analysis, which involves 924 studies using Publish or Perish (PoP) software and the PRISMA methodology.

Results: The analysis has explored the relationship between sustainability and tourism, as well as between tourism and ESG. The bibliometric maps reveal a strong relationship between CSR and ESG concepts in the study area.

Conclusion: The study highlights that ESG does not replace CSR but rather provides a measurement and framework for it to address its problems. In the tourism sector, the ESG field is dominated by the first 'E' pillar, meaning that sustainability is mainly focused on environmental and natural aspects, while social or even economic sustainability, and ethics are less prominent. The study provides suggestions for future research and useful information for policy makers, and tourism managers, organizations.

Keywords: Sustainable tourism, CSR; Corporate social responsibility, ESG, Sustainability transition, Bibliometric analysis

1 Introduction

In recent years, there has been an increasing focus on addressing the shortcomings and unanticipated negative effects of the CSR concept. Bajic and Yurtoglu (2018) and Bernardová et al. (2020) draw attention to the problem of measuring CSR in a heterogeneous or even particular way, which can obscure the real driver(s) of CSR. Bajic and Yurtoglu (2018) propose the ESG approach as a general measurement tool for CSR. Szczanowicz and Saniuk (2016) identified trends for improving CSR in the SME sector by examining CSR assessment and reporting models. The authors developed an assessment model based on monitoring and reporting ESG risks. In addition, some

studies have used ESG approximations or specific ESG databases to measure CSR performance, such as the Bloomberg ESG database (Wang et al., 2017; Taylor et al., 2018).

What are the similarities and differences between CSR and ESG that could lead to the conclusion that ESG can solve the problems of CSR measurement and prevent colour washing (whitewashing, greenwashing, etc.) practices while being suitable for measuring CSR? ESG stands for Environment, Social, and Governance pillars, and primarily refers to a set of criteria that investors can use to make decisions. The aim of ESG is to enable organizations, such as companies, and countries, to shift from a short-term profit-maximizing mindset to a longer-term and ethical profit-maximizing one. Csapi and Balogh (2020) have shown that profitability and size can contribute to

competitiveness growth for SMEs, while ESG is playing an increasingly important role in the perception of companies. The three pillars of ESG (Environmental, Social, and Governance) have been present in CSR (Corporate Social Responsibility) measurement solutions. ESG and CSR are similar in essence, but they are carried out by different groups of people. CSR describes a company's socially responsible commitment, efforts, and practices and is often used by the corporate side. ESG is a term used by asset managers and investors to assess corporate behaviour and identify financial risks and growth opportunities for companies. CSR and ESG are becoming cornerstones of corporate success by improving companies' reputation, innovation, risk management, and revenues (Godfrey et al., 2009; Porter & Kramer, 2011; Maletič et al., 2014; Sen et al., 2016). Although CSR is typically more readily adopted by foreign-owned enterprises, due to the various barriers that prevent it from being used by many SMEs, it is not an unattainable concept for SMEs. However, it should be noted that one of the key drivers of sustainability is the vision of the enterprise (Lesnikova & Schmidtova, 2020).

Although this paper does not cover all the problems related to CSR, it is important to note that consumers have become increasingly sceptical. CSR has been an unregulated field for a long time since its emergence in practice, with no accurate measurement and reporting standards. The International Organization for Standardization (ISO, 2010) introduced ISO 26000:2010 to clarify the practice of CSR. This standard lists several criteria and standards for socially responsible practices of public and private sector companies. However, CSR was perceived by many organizations as a new marketing communication tool with no real substance, causing the concept to erode. ESG presents an opportunity to renew and integrate previous content and concepts in a more verifiable form, primarily aimed at investors and decision-makers. While it may still influence consumer decisions, ESG's primary target group is investors, unlike CSR.

ESG evaluates companies based on their environmental, social, and governance efforts, like CSR, but with a more integrated approach. The reporting of ESG scores has significantly increased in recent decades. According to the KPMG International Survey on Corporate Responsibility Reporting 2017, the reporting rate of N250 companies (the 250 largest companies in the Fortune Global 500) has remained stable at 90-95% over the past four years. For N100 companies, there is a steady catch-up, with a current rate of 75 percent (Cheffi et al., 2021).

The practical implementation of CSR and ranking based measurement of CSR performance have been imperfect, which has tarnished its reputation and called its credibility into question (Bernardová et al., 2020). The theoretical concept of CSR should not disappear but rather be renewed and reborn in a more reliable and credible form, eliminating the problems. This is where the concept

of ESG can be useful. The following analysis examines whether international literature supports our ideas and whether CSR is being replaced by ESG by narrowing the analysis to tourism industry.

2 Literature review

2.1 Tourism and ESG

Firstly, our study explores how ESG can be understood in tourism and how responsibility and sustainability are reflected in this sector. Tourism is a significant industry that promotes economic development and generates income in many countries. However, the rapid growth of tourism has resulted in negative impacts on the environment and host communities and societies (Forster, 1964; Pizam, 1978; Van der Borg et al., 1996; Fun et al., 2014; Baloch et al., 2023; Alamineh et al., 2023). It is important to note that ESG considerations are becoming increasingly important in the tourism industry, and businesses must take responsibility for their impact on the environment and society. The concept of sustainable tourism aims to mitigate negative impacts while promoting economic growth and preserving natural resources for future generations (Harris et al., 2012; UNWTO, 2017; Job et al., 2017; Fennell & Cooper, 2020; Peng, 2021). However, there is no uniform understanding of this concept.

The World Economic Forum Travel & Tourism Development Index 2021 (TTDI) represents the first indication of an ESG approach in the tourism sector. It enables sustainable and resilient development of the sector, marking a shift from the previous competitiveness-focused Travel & Tourism Competitiveness Index (TTCI). The TTDI index evaluates destinations based on five pillars: (1) enabling environment, which includes ethical tourism and economic sustainability, (2) policy and enabling conditions, (3) infrastructure, (4) demand drivers, which reflect social sustainability and destination stewardship, and (5) sustainability, with a focus on environmental sustainability (World Economic Forum, 2022). How can sustainable tourism be defined based on all of this? We are discussing a form of tourism that adopts a responsible approach to travel and seeks to reduce adverse effects on the environment while promoting cultural and social awareness, as well as contributing to economic development. According to the World Tourism Organization (WTO), sustainable tourism fully considers its present and future economic, social, and environmental impacts while also taking into account the needs of visitors, the industry, the environment, and host communities (UNWTO, 2017).

Sustainable tourism has numerous benefits for local communities. These include preserving natural resources and cultural heritage, creating jobs, supporting local businesses, and generating income. Additionally, it can con-

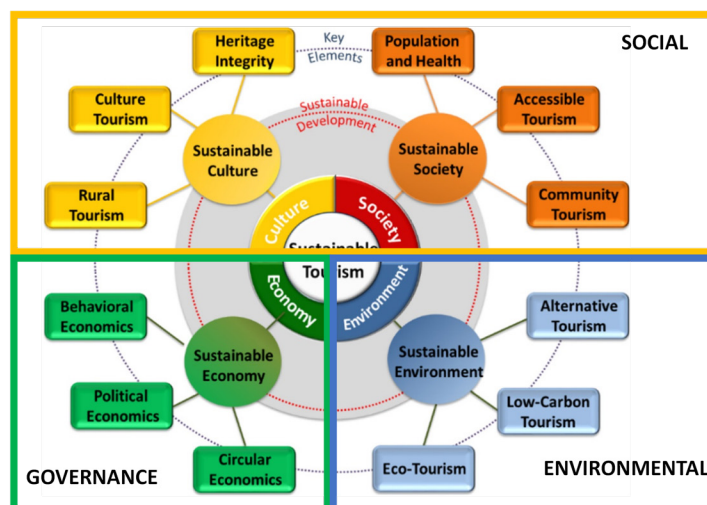
tribute to reducing poverty, improving living standards, and increasing social well-being. Sustainable tourism can provide environmental benefits, including biodiversity and ecosystem conservation, pollution and greenhouse gas emission reduction, and sustainable use of natural resources (Bramwell & Lane, 1993; Neto, 2003; Jarvis et al., 2010; Harris et al., 2012; Saarinen, 2019; Fennell & Cooper, 2020). However, sustainable tourism faces several challenges, such as balancing economic development with environmental protection. The pursuit of economic growth may result in the exploitation of natural resources and harm to the environment, which can compromise the sustainability of tourism. Furthermore, the challenge of sustainable tourism lies in the lack of awareness and understanding among stakeholders and the general public, as well as the absence of clear metrics for measuring success. Addressing these issues will require a collective effort to increase awareness, promote education, and establish policies and regulations that promote sustainable tourism (Bramwell & Lane, 1993; McMinn, 1997; Jarvis et al., 2010; UNWTO, 2017; Pan et al., 2018).

Sustainable or responsible tourism involves various elements that follow the principles of sustainable development and have a positive impact on the environment, local communities, and the economy. This definition is based on the works of Harris et al. (2012), Swarbrooke (2014), UNWTO (2017), Pan et al. (2018), and Gonda and Rátz (2023):

- Environmental sustainability involves minimizing the impact of tourism on the environment through sustainable practices such as reducing carbon emissions, conserving natural resources, and protecting biodiversity. Tourism businesses can achieve environmental sustainability by imple-

menting environmentally friendly policies such as energy-efficient operations, waste management, and water conservation.

- Social sustainability in tourism development involves promoting social equity, cultural diversity, and community involvement. Tourism enterprises can achieve social sustainability by supporting local businesses, promoting cultural awareness, respecting local customs and traditions, and involving local communities in decision-making processes.
- Economic sustainability involves ensuring that tourism generates economic benefits for local communities while contributing to the long-term economic development of the region. Tourism businesses can achieve economic sustainability by promoting sustainable employment, supporting local businesses, and investing in community infrastructure.
- Ethical tourism involves promoting ethical behaviour among tourism stakeholders, including tourists, tourism businesses, and local communities. Ethical tourism practices involve promoting animal welfare, respecting human rights, and ensuring fair labour practices.
- Destination Stewardship involves managing tourism development in a way that preserves its natural and cultural heritage. Tourism businesses can achieve destination stewardship by adopting sustainable tourism practices, such as reducing the impact of tourism on the environment and promoting the conservation of natural resources and cultural heritage.



Source: Pan et al. (2018, 454.) is supplemented by the authors' ESG categorisation

Figure 1: Classification of specific areas of sustainable tourism into ESG pillars

Instead of the broad and general approach, there is no consensus in the literature regarding the concept of sustainable tourism and its relationship to responsible tourism. Some approaches combine them as 'sustainable and responsible tourism' (UNWTO, 2012; Mihalic et al., 2021). Additionally, although sustainable tourism is dominant, 'green tourism' and 'ecotourism' are also used as synonyms (Mihalic et al., 2021; Saarinen, 2021). In our research, we examine these concepts separately in order to gain a comprehensive picture of this area of tourism. We use Pan et al.'s (2018) segments as a basis, we can identify the ESG elements - environmental, social, and corporate governance pillars - for tourism (see Figure 1). The E (environmental) pillar encompasses alternative and ecotourism, as well as carbon footprint reduction. The S (social) pillar includes elements related to culture and community, while the G (governance) pillar includes newer types of economic models, such as circular economy or behavioural economics.

In conclusion, sustainable tourism is a concept that promotes responsible travel, seeks to minimize negative impacts on the environment, and fosters economic development. It brings several benefits, including the conservation of natural resources and cultural heritage, the preservation of communities, economic model change, new governance mechanisms that create jobs, support local businesses, and generate income. After explaining the concept of sustainable tourism and the ESG pillars in tourism, we will compare the popularity of CSR and ESG in the tourism industry.

2.2 ESG and sustainability transition in tourism

The challenges posed by climate change and the achievement of the 17 Sustainable Development Goals (SDGs) set by the UN in 2015 are both driving stakeholders, including companies, to start a process of adopting a new approach to formulating their strategies and goals and to their day-to-day operations and decision-making. This practice reflects the growing recognition by companies that sustainable and responsible business practices contribute to long-term business value creation, risk mitigation and challenge management. At the same time, the need to move towards sustainability is not only emerging from the corporate side but is also being promoted and encouraged at various levels of government. The demand from government regulation, investors and other stakeholders has created the need for companies to demonstrate their ESG performance, and their corporate sustainability policy, which in the future will include both reporting and accountability.

According to the literature, internal or external drivers (Corporate Sustainability Performance (CSP) drivers), including the shift towards stakeholder-driven sustainability,

include socio-technical elements applied in the everyday work of companies, such as the combined application of individuals, institutions, resources and practices towards sustainable practices (Ferreira-Quilice et al., 2023). According to Popescu et al. (2022), the implementation of ESG practices requires social innovation, circularity and energy transformation. The shift towards an ESG approach is primarily driven by social and environmental issues, while economic issues should not be overlooked.

Sustainability reporting and ESG ratings are considered by some literature sources as the guiding and measuring tools for the transition to sustainability (Crifo et al., 2019; Pompella & Constantino, 2023). Among the external and internal drivers of the sustainability transition, Johnstone (2018) mentions social pressure as one of the external drivers and this approach is based on legitimacy theory and stakeholder theory. In addition, research on external drivers also uses institutional theory to explain corporate responses to these. In the case of internal incentives, signalling theory comes to the fore as it focuses on how companies manage information asymmetries related to sustainability issues (Ferreira-Quilice et al., 2023).

It is similarly inevitable that the tourism sector will align with ESG criteria. As Ionescu et al. (2019) and Bualay et al. (2022) have demonstrated, ESG factors exert a significant influence on the market value of companies in the travel and tourism industry. In order to facilitate a sustainable transition, it is therefore essential that the tourism sector develops in an adaptive and responsible manner. This transition will require a systematic approach and commitment from all levels of the organization (Bualay et al., 2022).

As in any other case, the leadership commitment and the engagement of stakeholders will be crucial in managing change (Benčič, 2006; Uran & Juvan, 2010). Senior management must demonstrate a strong commitment to ESG principles and sustainability goals. This includes developing a clear vision, allocating resources and providing guidance and support throughout the transition process. In the meantime, it is important to engage with internal and external stakeholders, including employees, local communities, government agencies, NGOs and investors. It is essential to ensure that ESG initiatives are in line with stakeholder expectations and address relevant issues. (Salvioni & Almici, 2020; Gonzalez-Porras et al., 2021)

Risk assessment and materiality analysis are also important steps in the transition. The international tourism demand might be influenced by countries' risk rating on ESG factors (Hassan & Meyer, 2022). The global pandemic has compelled the sector's stakeholders to adopt more efficacious crisis management strategies (Kukanja et al., 2020). These have included discourse on the transformative shifts occurring within the tourism industry, the identification of benchmarks, and the fortification of the sector's resilience. This process merits observation in the context

of sustainability transition, which is currently predicated on the concept of materiality assessment. This is the process by which industry must identify and respond to stakeholder expectations. (Guix & Font, 2022) The development of ESG policies, codes of conduct and guidelines is essential for the organisation to demonstrate its commitment to responsible tourism practices. This includes the setting of clear objectives, targets and performance indicators to monitor progress and measure impact (Ionescu et al., 2019).

Green Human Resource Management (GHRM) and Green Transformational Leadership (GTL), which encompasses capacity building and training, are fundamental elements of the sustainability transition. These facilitate employees' comprehension of green, or in this case, ESG, matters and their role in implementing responsible tourism practices. Additionally, they affect employees' green or sustainable work behaviour, which entails the generation of ideas, initiatives, and solutions to advance sustainability goals. (Agrawal & Pradhan, 2023)

Finally, ESG considerations must be integrated into business processes, including strategic planning, decision-making, risk management, procurement, marketing and performance management. Key performance indicators (KPIs) for the transition should be identified, monitored, measured and reported on an ongoing basis. Leoni (2024) integrated ESG and organizational resilience (OR) in ESGOR matrix which introduces nine organizational typologies that determine various strategic possibilities of the organizations and the decision-making emphases in terms of ESG factors and OR components, as well as the organization's behaviour. Tourism organizations also need to monitor and measure ESG performance, collect relevant data to assess progress towards sustainability goals, and reports regularly in a transparent and accountable manner.

By effectively managing the transition to responsible tourism and responsible organizational development, organizations can enhance their competitiveness, reputation and resilience, foster a culture of continuous improvement and innovation, and contribute to the well-being of society and the planet. It is also necessary that the transition touches on all the pillars of ESG presented earlier, and in the following section we will use bibliometric analysis to examine which elements are more prominent and which are the more neglected areas.

3 Research method

Based on the literature review, we wanted to investigate two things. The first is whether CSR or ESG is dominant in the tourism sector, and the second is what the main issues are in terms of sustainability, which helps to examine where the transition is, what elements already exist and where there are gaps. The research questions are ad-

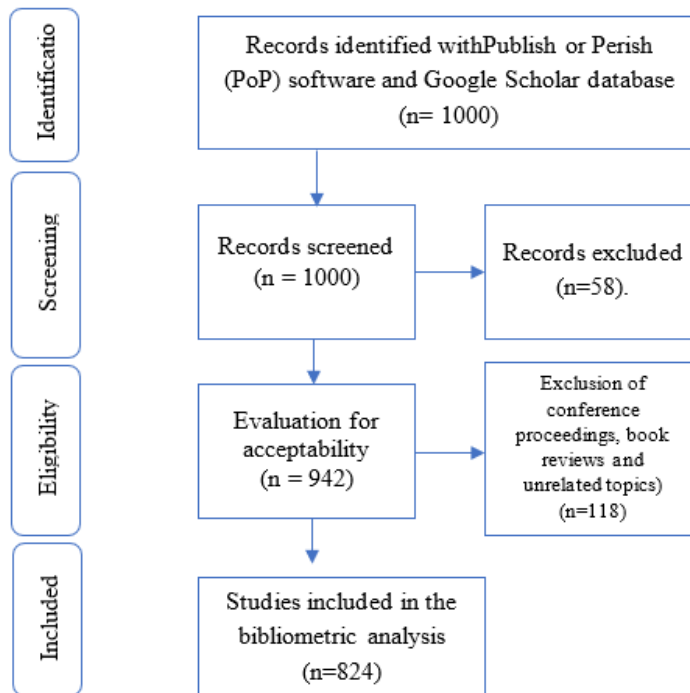
ressed through bibliometric analysis. Bibliometric analysis enables the discovery, processing, and analysis of large amounts of scientific data, illustrating the development of a given field and highlighting current research trends. Mukherjee et al. (2022) state that high-quality bibliometric analyses can advance a field by identifying research gaps and defining new research directions. To establish the basis for a systematic literature review and bibliometric analysis, we used the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analysis) method (Moher et al., 2009). This method is widely used in the literature to ensure clear, objective, and transparent analysis.

The keywords were selected through the literature review and based also on Pan et al. (2018) classification. The following keywords were used in our search and were separated using a Boolean operator, i.e., if any of the following terms matched, the studies could be selected: 'sustainable tourism' OR 'green tourism' OR 'responsible tourism' OR 'ecotourism' OR 'cultural tourism' OR 'circular tourism'. Sustainable tourism was first mentioned in 1995 in the Charter for Sustainable Tourism at the first World Conference on Sustainable Tourism. However, some authors, such as Mihalic et al. (2021), attribute its appearance to the academic debate on the sustainability of tourism following the publication of the Brundtland Report. This study examines studies published between 1990 and 2023.

We used the Publish or Perish (PoP) software for scientometric analysis, which can also contribute to mapping a concept or related studies using other databases. The PoP software uses, among others, the freely accessible Google Scholar database, covering a wide range of scientific publications. Through the use of keywords, a detailed search can be initiated on Google Scholar within the specified time interval.

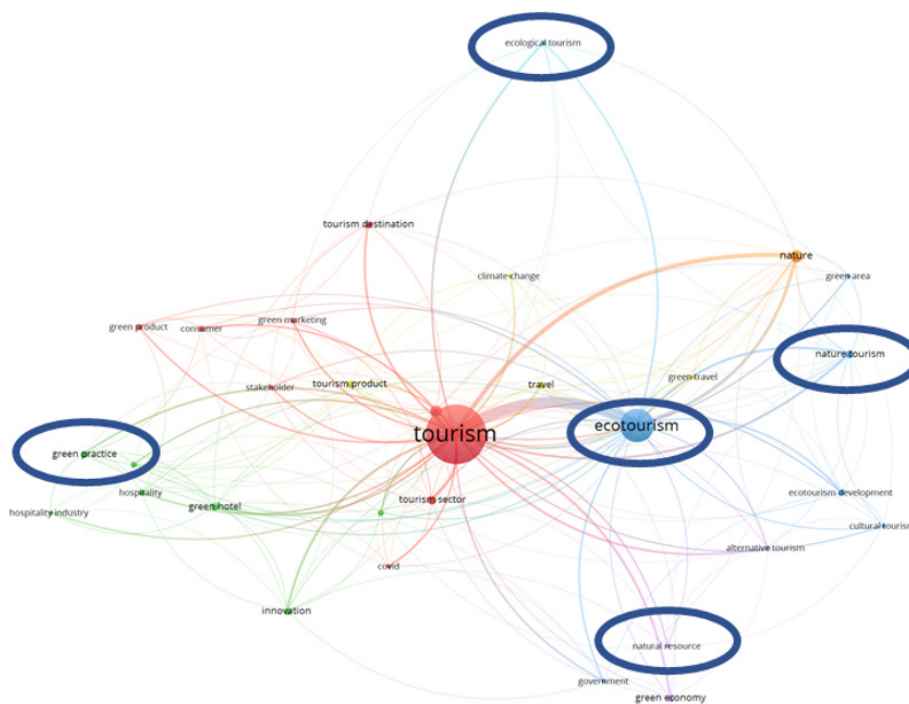
However, the only disadvantage is that during this period, we can only collect and examine the first thousand hits. Running the search under the conditions above allowed for creating a sample of 1000 elements, but its review is necessary as part of the PRISMA method. The PoP software and Google Scholar search do not allow for the inclusion of non-English language studies in the sample, and only focus on studies published in scientific journals. Therefore, we conducted a review and removed studies that were not written in English based on their titles, as well as book excerpts, book reviews, and conference papers. As a result, we narrowed down the original sample of 1000 elements to 824 studies.

The PRISMA method can be divided into four steps (Figure 2):



Source: the authors' own editing

Figure 2: PRISMA Research Process Flow Diagram



Source: own construction with the Vosviewer program

Figure 3: The bibliometric map of responsible or sustainable tourism

4 Tourism and Corporate Social Responsibility (CSR) or Environmental, Social, and Governance (ESG)? - Results of bibliometric analysis

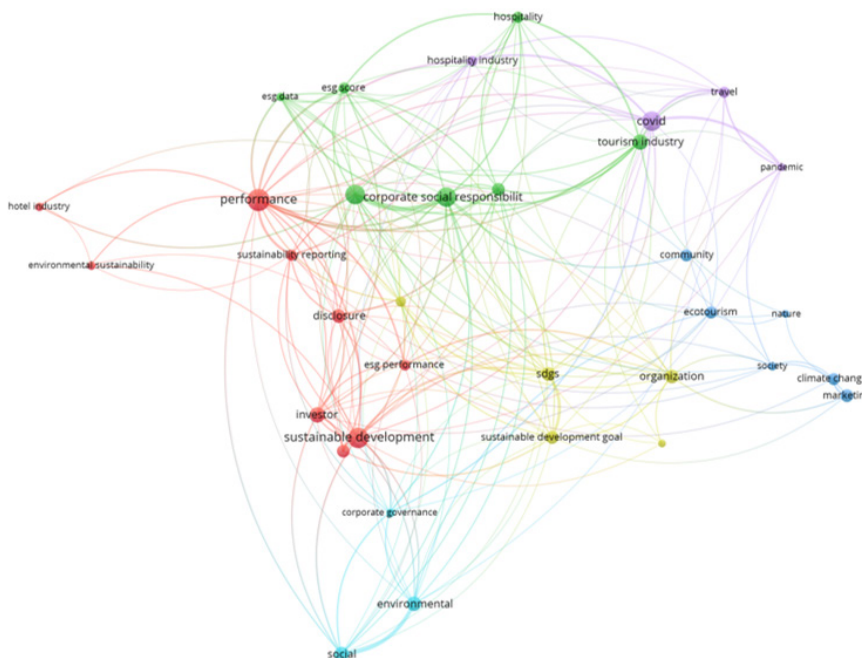
We created a bibliometric science map using the computer program VOSviewer to investigate the topic further. As described by Van Eck and Waltman (2011), this program allows for the investigation of citation relationships between studies and journals, collaborations between researchers, and occurrence relationships between scientific terms and concepts. The VOSviewer employs its own clustering technique (Waltman et al., 2010) to examine clusters at an aggregate level using visualization techniques. One method that can be used is the concept map. This tool visualizes the relationship between concept clusters through distances, and each term is marked with a circle. Some terms also have a label, which is only visible for certain terms to avoid overlapping labels. The size of the circle reflects the number of publications on the topic, and the distance between two terms is an approximate indication of their relationship. Common events determine this relationship; the more studies in which the two terms appear, the stronger the link between them. The diagram illustrates the correlation between term groups, with colours representing the strength of the relationship. Curves indicate the

strongest relationships.

For each publication, we identified terms in the title and abstract, selecting those that appeared in at least 15 publications. The analysis resulted in more than a hundred terms, each assigned a relevance score by the software to determine their importance. The software recommends selecting 60% of the terms, and we filtered the algorithmically selected terms manually, too. The manual filtering excluded terms that could have distorted the clustering, such as e. g. theory, terms, and country names. Two maps were created: the first examines the relationship between tourism and sustainable development (Figure 3), while the second explores how these aspects are reflected in tourism through its relationship with ESG (Figure 4).

Based on the results, sustainable and responsible tourism prioritizes environmental and natural sustainability over social sustainability, culture, ethics, and destination care. This highlights the significance of the 'E' pillar in ESG, which is also evident in other sectors.

When examining the sustainable or responsible tourism linkages with ESG, we identified six clusters ranked in order of strength: 1. CSR, 2. ESG (including ESG data and scores, country ranking in tourism, and ESG performance at country and company level), 3. Sustainable Development, 4. COVID-19 and hospitality, 5. Corporate Sustainability and SDGs, and 6. Marketing, Community, and Eco-tourism.



Source: own construction with the Vosviewer program

Figure 4: Bibliometric map of sustainable or responsible tourism and ESG

5 Discussion

The research paper offers insights into the growing popularity of the ESG approach, which could result in the decline or disappearance of the CSR concept and the existing and lacking practices to support ESG transition in tourism. The shift towards ESG in corporate strategy and day-to-day operations is also reflected in our research, with a growing role for green and sustainable practices in tourism and a shift towards sustainable development with a focus on environmental sustainability.

The bibliometric analysis revealed that environmental considerations are already present in the sector. It can be observed that tourism organizations are paying increasing attention to reducing their environmental footprint, and related measures such as energy efficiency, waste reduction and the promotion of environmentally friendly transport options are becoming increasingly popular. Furthermore, there is a growing number of sustainable tourism practices that aim to minimize negative impacts on natural habitats, wildlife and ecosystems while promoting conservation and biodiversity conservation.

However, the elements of the other two pillars are less emphasized. Regarding social responsibility, it is evident that there is a need to increase efforts to support local communities, preserve culture and ensure fair labour practices. While these issues are partially reflected, there is a clear opportunity to enhance the sector's commitment to these values. Investing in community engagement initiatives would not only support local economies, but also respect indigenous rights and traditions.

The governance pillar, which also encompasses accountability, is the least developed of the three pillars in the tourism industry. It is therefore imperative that good governance practices become an integral part of the industry, emphasizing transparency, accountability and ethical behaviour. In order to achieve this, it is necessary to develop and adopt ESG policies, codes of conduct and guidelines discussed in the transition chapter, to introduce responsible management structures and to communicate and report information about their ESG performance.

In conclusion, it can be stated that integration into the business strategy is important. ESG considerations are becoming increasingly integrated into the fundamental business strategies of these tourism companies. However, for the time being, they are often focused on appearing in one element at a time. It is crucial to recognize that sustainability is not only a moral imperative, but also a business necessity for long-term success. In response to demands for greater transparency and accountability on ESG issues from investors, consumers and regulators, companies in the tourism sector are incorporating sustainability goals into their operations and decision-making processes.

In the process of transitioning to an ESG framework,

CSR can serve as a valuable starting point. Companies can build upon their existing CSR practices and enhance them, thereby supporting the integration of ESG principles into their corporate strategies. The more rigorous framework can also help to address the shortcomings of previous CSR initiatives. Given that CSR does not disappear, it represents a valuable foundation for a more responsible transition. The knowledge accumulated during this process can be leveraged by the organization in the ESG review process. CSR activities can continue to exist and find their place in the ESG framework and reporting system.

6 Conclusion

Our study uses bibliometric analysis to investigate whether CSR is still the dominant focus in tourism or whether ESG is emerging as a new priority. The study analysed 824 papers using the PoP software and PRISMA methodology. The results indicate that the environmental and natural resource aspects of tourism are currently the most prominent. The results indicate that sustainability and sustainable development are becoming more significant in tourism, including ecotourism and responsible tourism. The link between ESG, CSR, and corporate social responsibility not only remains but has emerged as a distinct cluster and the strongest of the six identified.

This suggests that CSR will continue to exist but will have a new position and function within ESG. It is probable that the experts who predicted that ESG will function more as a measurement and evaluation tool, as a framework, will be correct. Meanwhile, CSR, which has not been able to fulfil this role, or rather has been lacking in this aspect, can support ESG efforts providing appropriate content, activities, and action plans to address the weaknesses and gaps identified by ESG assessments. ESG and CSR can complement each other in the life of companies. The link between ESG and tourism results in a strong focus on natural resources and environment in the ESG approach. However, the social, cultural, economic, and ethical elements of sustainable tourism are less popular. This leads to a more prominent emphasis on Pillar E, which pertains to the natural environment, in publications. This emphasis on Pillar E is not surprising, as it is observed in most sectors. Pillar S and especially Pillar G are much more neglected, while playing a critical role in terms of the transition.

The results of our study provide important information on the transition to ESG principles in the tourism sector - existing and neglected areas and topics - represents a fundamental shift towards more sustainable, responsible and ethical practices. The integration of ESG criteria into all aspects of the organization's operations is a key aspect of responsible tourism organizational development. This encompasses environmental protection and community involvement, as well as governance and accountability. By

meeting ESG criteria, tourism organizations can promote sustainable development, mitigate negative impacts and contribute positively to the well-being of both communities and the planet.

However, like any research, also our research has limitations. The most significant limitation is that it was not possible to analyse specific practical applications, but the topic was investigated through studies and academic papers, which are typically based on practical examples, cases, and interviews with tourism actors, stakeholders. Consequently, the practice of the sector appears indirectly. Accordingly, we posit that the initial findings and conclusions can be drawn from this analysis. However, further examination of the potential shortcomings in the ESG elements outlined here is necessary. This can be achieved through qualitative or quantitative primary research, such as case studies, interviews, questionnaires, or text mining. This will enable the exploration of the ESG elements in practice and the identification of any gaps. This will provide a comprehensive understanding of the transition and its current organizational challenges.

The bibliometric analysis presented in our study also has limitations. The bibliometric analysis requires open access to data, data quality correction and consideration of differences between bibliometric databases. Google Scholar, as the most comprehensive source of free bibliographic data available, provided a reasonable basis for conducting the research. However, the PoP software was used to analyse a sample of only 1000 items, which required further adjustments. Increasing the sample size would help to get a more accurate picture of the transition to sustainability. However, in addition to extending the sample, the use of other databases or an extension of the current one would also help to identify the sustainability in the sector.

Finally, in order for the transition and responsible, integrated ESG practice to appear as soon as possible, it is crucial to recognize that sustainability is not merely a moral imperative but also a fundamental business requirement for long-term success. To this end, further research is required to substantiate this assertion and inform the attitudes and behaviours of those involved in the sector.

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Prehod od korporativne družbene odgovornosti k okoljski, družbeni in upravljavski odgovornosti v turizmu – bibliometrična analiza

Namen in namen: Študija preučuje, ali naraščajoča priljubljenost pristopa ESG (okoljska, družbena in upravljavska odgovornost) lahko privede do upada ali izginitja koncepta korporativne družbene odgovornosti (CSR), ki se je srečal z mnogimi izzivi pri praktični izvedbi. Prav tako preučuje glavna vprašanja trajnosti, ki pomagajo raziskati, kje je prehod, katere elemente že obstajajo in kje so vrzeli. Vprašanje je analizirano v kontekstu turističnega sektorja.

Metode: Uporabljena je bila bibliometrična analiza, ki vključuje 924 študij z uporabo programske opreme Publish or Perish (PoP) in metodologije PRISMA.

Rezultati: Analiza je raziskala odnos med trajnostjo in turizmom ter med turizmom in ESG. Bibliometrične karte kažejo močno povezavo med konceptoma CSR in ESG na področju študije.

Zaključek: Študija poudarja, da ESG ne nadomešča CSR, temveč zagotavlja merjenje in okvir za reševanje njegovih težav. V turističnem sektorju je področje ESG prevladujoče na prvem stebričku 'E', kar pomeni, da je trajnost predvsem osredotočena na okoljske in naravne vidike, medtem ko so družbena ali celo ekonomska trajnost ter etika manj izpostavljeni. Študija ponuja predloge za prihodnje raziskave in uporabne informacije za odločevalce ter upravitelje v turizmu.

Ključne besede: *Trajnostni turizem, CSR; Korporativna družbena odgovornost, ESG, Prehod k trajnosti, Bibliometrična analiza*

Digital Competencies in Formal and Hidden Curriculum

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Background purpose: Research on digital competence has been one of the most important policy goals in the area of education in the European Union for almost two decades. In 2017, two essential documents were published: DigComp 2.1 - The Digital Competence Framework for Citizens with eight proficiency levels (Carretero et al., 2017) and examples of use and the European Framework for the Digital Competence of Educators – DigCompEdu (Redecker, 2017). Despite these documents and all the research in the field of digital competencies, there is still no unified instrument for measuring the digital competencies of citizens. The problem is that digital competencies encompass a wide range of skills, from basic digital literacy to advanced technical proficiency, and they evolve with technological advancements. Researchers and policymakers face several obstacles in creating a one-size-fits-all tool for assessing these competencies. This paper expands existing research in the field of digital competence in formal education in Slovenia. Our research aimed to explore curricular aspects of acquiring digital competencies within the three levels of formal education and the level of achieving digital competencies among citizens (students) in Slovenia. The purpose of our study was to gain a broader understanding of how participants in formal education obtain digital competencies to obtain a publicly recognized qualification within the education system in Slovenia.

Design/Methodology/Approach: To examine the field of digital competence in formal and hidden curricula, we first survey students (citizens) to assess their self-perception regarding digital competencies. Then, we interviewed teachers from various faculties to identify elements of the hidden curriculum. Finally, we reviewed publicly available educational content regarding acquiring digital competencies in primary and secondary schools and universities.

Results: The extent of formal teaching of content related to digital competencies within the public education system in Slovenia is small. During the average duration of formal education, a Slovenian citizen listens to approximately 2,000 hours of mathematics lessons, around 1,000 hours of art lessons, and 200 hours of computer science and informatics lessons. The research results have shown that, even in subjects unrelated to computer science, informatics, and digital competencies, students acquire digital competencies as part of the hidden curriculum at universities. The arithmetic mean among students' (citizens') research of other competencies indicates that respondents can operate independently. The results of the level of digital competencies according to DigiComp 2.1. show that, except for two competencies; all are within level 5. This means that the self-assessed level of digital competencies among students (citizens) has mostly stopped at tasks they perform for their own needs.

Conclusion: In the future, EU countries will need to standardize the assessment system for digital competencies to determine the level of individuals' digital competencies. The school system in Slovenia will have to introduce a significant amount of computer science knowledge into the curricula of subjects, with particular attention given to upgrading digital competencies within hidden curricula.

Keywords: *Formal curriculum, Hidden curriculum, Digital competence, DigiComp 2.1*

1 Theoretical perspectives

In the article, we address the curricular aspects of acquiring digital skills within the framework of three levels

of formal education and the attainment of digital competencies by citizens (students) in Slovenia.

Digital competencies have been one of the most important policy goals in the European Union education area for

almost two decades, at least at the declarative level.

On 26 February 2021, the European Union Council published a document. »Resolution on a strategic framework for European cooperation in education and training towards the European Education Area and beyond (2021-2030) «¹

Through this political document, the European Commission, acting as the executive body, published a document called »The European Education Area Strategic Framework. «². This document outlines seven vital operational objectives, all of which are measurable. One of these objectives is that by 2030, less than 15% of eighth graders should have needed computer and information literacy results.

In recent years, citizens' digital competencies have become one of the more critical areas of operation in the European Union's policies, education, and various social subsystems. It is important to note that the documents mentioned from 2021 are only some of the first documents of the European Union related to the areas described by the keywords computing, informatics, digitalization, and digital competencies.

The European Parliament had already, in December 2006³ adopted recommendations on lifelong learning. Building upon this, the European Commission addressed digital competencies in 2007 in the document "Key Competencies for Lifelong Learning, European Reference Framework." In this document, the European Commission established eight key operational objectives for lifelong learning, with the attainment of digital competencies listed as the fourth among the eight objectives for lifelong learning.

In 2009, the European Commission adopted Education and Training 2020. This document outlined four key strategic objectives for the education system in EU member states. While digitization was not explicitly listed as one of the key objectives, it was mentioned several times in the document.

In 2017, two essential documents were published:

- "DigComp 2.1: The Digital Competence Framework for Citizens with eight proficiency levels and examples of use"(Carretero et al., 2017) and
- "European Framework for the Digital Competence of Educators: DigCompEdu" (Redecker, 2017).

The document DigComp 2.1 (Carretero et al., 2017) defines and describes key areas of digital competencies for citizens. It serves as a tool at the EU level to enhance the digital skills of citizens, assist policymakers in shaping policies supporting the strengthening of digital skills, and

plan initiatives for education and training to improve digital competence.

On the other hand, the DigCompEdu (Redecker, 2017) document presents and describes digital competencies tailored explicitly for educators. It proposes 22 foundational competencies organized into six areas. The framework also includes a progression model to help educators assess and develop their digital competencies.

On 22 May 2018, the Council of the European Union adopted recommendations regarding key competencies for lifelong learning⁴. In this document, all member states of the European Union pledged in writing, among other commitments, to "...increase and improve the level of digital competencies at all stages of education and training across all segments of the population."

Digital competencies are not only a politically relevant topic but also the subject of serious academic research. The digital competencies of individuals, whether they are students or the working population, have likely been the subject of study since the advent of computers. The fundamental method of studying digital competencies has been and continues to be self-assessment. Various questionnaires were developed before 2017. However, these questionnaires have also faced criticism. Ballantine et al. (2007) evaluated the reliability of self-assessment as a measure of computer literacy. The results reveal the surveyed students' statistically significant overestimation of computer competencies.

Although self-assessment is not the most reliable indicator of actual competency levels, both 2017 questionnaires - DigCompEdu (Redecker, 2017) and DigComp 2.1 (Carretero et al., 2017) « are based on self-assessment.

After 2017, the exploration of the levels of digital competencies has once again become more prominent. Digital competencies are once again the subject of numerous academic research endeavours. Within the broader context of the study, the digital competencies of primary and secondary school students, faculty students, and learners are mainly focused on research subjects.

Godaert et al. (2022) conducted a systematic review of empirical research on assessing the digital competencies of primary school students. They based their study on the European framework of digital competencies. The results showed that most previous studies originated from a different conceptual framework of digital competencies. Previous studies assessed digital competencies as "information and data literacy," "communication and collaboration," and "creating digital content." Less attention was given to assessing competencies in "safe and responsible use" and "problem-solving."

¹ Publication Office of the European Union (2021)

² European Commission, European Education Area (2021)

³ Official Journal of the European Union (2006)

⁴ Official Journal of the European Union (2018)

Martzoukou et al. (2020) conducted a study on a sample of library and information science students from three higher education institutions in Scotland, Ireland, and Greece. The survey focused on students' technical and higher-order digital competencies. Self-assessment of students' digital competencies revealed a deficient level of achieved competencies in various areas, including the development of information literacy, digital creation, digital research, and management of digital identity.

1.1 The concept of competencies and digital competencies

Competencies are a relatively old concept that has long been defined and supported by scientific research. Over the decades, numerous definitions of competence content and models for measuring competence levels have evolved. Due to the breadth of this field, we will only have a short review of academic literature. However, we will summarize how major international organisations conceptualize competencies.

The OECD (2005) defines competence in the document "Definition and Selection of Competencies." According to the OECD, competence is more than just knowledge and skills. It involves the ability of an individual to face complex situations by using and mobilizing psychosocial resources (including skills and attitudes) in a specific context. For example, the ability to communicate effectively is a competence based on an individual's language knowledge, practical skills in information technology, and attitude toward the people they are communicating with.

In the document "Key competencies for lifelong learning, European reference framework", the European Union defined and recognized eight essential competencies for lifelong learning. These competencies include: 1. communication in the mother tongue, 2. communication in foreign languages, 3. mathematical competence and basic competencies in science and technology, 4. digital competence, 5. learning to learn, 6. social and civic competencies, 7. sense of initiative and entrepreneurship, 8. cultural awareness and expression.

Unlike competencies, digital competencies are. Various understandings and models for measuring levels have evolved between the end of the 20th and the beginning of the 21st century. Ilomäki al. (2011) published a review of existing conceptualizations.

In our research, we used the DigiComp 2.1 model (Reecker, 2017). This model comprises 21 competence items categorized into five content areas:

Information and data literacy

- Browsing the web, searching, and filtering data, information, and digital content
- Evaluating data, information, and digital content
- Managing data, information, and digital content

Communication and Collaboration

- Interaction through digital technologies
- Sharing through digital technologies
- Engaging in citizenship through digital technologies
- Collaborating through digital technologies
- Netiquette
- Managing digital identity

Digital content creation

- Developing digital content
- Integrating and re-elaborating digital content
- Copyright and licenses
- Programming

Safety

- Device protection
- Protecting personal data and privacy
- Protecting health and well-being
- Protecting the environment

Problem-solving

- Solving technical problems
- Identifying needs and technological responses
- Creatively use of digital technologies
- Identifying digital competence gaps

DigiComp 2.1 recognizes eight levels of achieving competencies. The levels are defined by the complexity of the task and the independence with which someone performs that task.

1.2 Curriculum

We are practically all involved in the education system: either as participants in education, as education providers, as parents, or as employers. In various contexts, the term "curriculum" is often encountered. Some may also use the word "curricula." The word "curriculum" has Latin origins and means course or path. The word "curricula" is not found in the Latin-Slovenian dictionary. In the 16th and 17th centuries, "curriculum" meant a sequence of learning over the years. The word "curricula" is said to have originated in the 18th century and most often refers to the course of work in school (Ferjan, 2005).

Today, there are dozens, perhaps even hundreds, of definitions for the term "curriculum." What they all have in common is that the curriculum has, for centuries, meant something related to education.

Posner (2004) also answers the question of why there are so many definitions of the term "curriculum." The differences in understanding and definitions stem from the fact that the curriculum in schools (nowhere in the world, it seems) is not ideologically and politically neutral.

Many authors in the literature still treat the curriculum merely as a selection of learning materials, even though as early as 1949, Ralf W. Tyler (1949) defined the curriculum much more broadly, including methods of education and evaluation as part of the curriculum.

Table 1: Levels of achieving competencies according to DigiComp 2.1 (Redecker, 2017)

LEVEL	COMPLEXITY OF TASKS	AUTONOMY
1	Simple tasks	With guidance
2	Simple tasks	Autonomy and guidance where needed
3	Well-defined and routine tasks and straightforward problems	On my own
4	Tasks and well-defined and non-routine problems	Independent and according to my needs
5	Different tasks and problems	Guiding others
6	Most appropriate tasks	Able to adapt to others in a complex context
7	Resolve complex problems with limited solutions	Integrate to contribute to the professional practice and guide others
8	Resolve complex problems with many interacting factors	Propose new ideas and processes to the field

Since the education system in Slovenia, like in most European countries, is fundamentally based on principles recognized by UNESCO, we will also base our work on curriculum definitions as understood by UNESCO. Arieh Lewy wrote the foundational theoretical works shaping UNESCO's understanding. Lewy (1977) conceptualizes the curriculum as a process that includes:

- Defining educational goals
- Selecting learning content
- Designing educational strategies
- Preparing educational materials
- Recruiting teachers
- Evaluation
- Implementation

The curriculum should not be understood merely as a "syllabus." The curriculum should always be treated as a whole of planning, implementation, and evaluation. Therefore, the curriculum means:

- Planning the process initially
- Implementing it by the plan
- Following the implementation with evaluation aimed at identifying opportunities for improvement.

Every education has a specific goal. Educational goals can be defined in various ways:

- These are the cognitive, educational, and educational field goals that we want to achieve.
- Describe specific educational goals using Bloom's taxonomy model (1969).
- By explicitly describing the competencies acquired by the participant in education and using one of the concrete competence models.

The selection of learning content must stem from the definition of educational goals.

The education strategy primarily involves methods;

an active method implies that the goal will be achieved through the participant's activity, while a passive method means that the participant receives the experience from another. Each education requires material and personnel conditions. Evaluation is also part of the curriculum.

The curriculum must be formalized when dealing with curricula to obtain officially recognized education. This means that the content must include all the elements of the curriculum, and the process of preparation and approval must be formally defined. In practice, this means that educational programs are prepared according to the curriculum model as a whole and syllabi for individual subjects.

1.3 Digital curriculum

When we talk about the digital curriculum, it is about more than just educational content related to digital competencies; it is about materials for electronic education and, for example, distance learning using tools such as MS TEAMS, ZOOM, or others. Matos et al. (2019) understand the digital curriculum as integrating digital technology into all curriculum elements. Therefore, it involves incorporating digital content and digitizing all curriculum components.

However, we can understand the digital curriculum even more broadly. A suitable framework for a broader understanding of the digital curriculum is the European Framework for the Digital Competence of Educators: DigCompEdu (Redecker, 2017). The goal of the DigCompEdu framework (Redecker, 2017) is to present and describe digital competencies specific to educators. The framework proposes 22 core competencies categorized into six areas.

The European Framework for the Digital Competence of Educators, DigCompEdu (Redecker, 2017), classifies

teachers' competencies into six areas: professional engagement, digital resources, teaching and learning, assessment, empowering learners, and leading and supporting students in acquiring digital competencies. None of these can be argued to be unrelated to the digital curriculum.

1.4 The hidden curriculum

The hidden curriculum concept was first introduced in 1968 by researcher Phillip Jackson (1968) in his book "Life in Classroom." The hidden curriculum is what teachers unintentionally teach students through their interpersonal relationships, models, and the school or classroom culture without being consciously aware of it. It consists of unspoken values, beliefs, norms, and cultures.

The hidden curriculum has four key attributes:

- It needs to be formally documented.
- Nevertheless, it occurs or is implemented.
- If it involves educational content, the content is not necessarily linked to the formal curriculum.
- The consequences are "learning outcomes" for the participants in education.

The literature describes numerous examples of the hidden curriculum, many of which are also related to digital competencies.

In the context of our research, the study conducted by Tribukait and co-authors in 2017 is worth mentioning. This study investigates how modern European educational policies and curricula shape digital learning in schools, explicitly emphasizing history lessons. It focuses on teaching history, with students also acquiring digital competencies in the background (Tribukait et al., 2017). This research is also relevant to our context, as in our study, we have also explored digital competencies, but in the context of teaching social and business sciences.

Mertala (2020) used the "hidden curriculum" concept as a heuristic tool in his research to analyze everyday practices related to data in formal education. Based on a thorough reading of theoretical literature, he argues that everyday practices related to data in modern education can be considered functional forms of education for data literacy. Because functional data literacy education occurs subconsciously, it can be conceptualized as a form of hidden curriculum. This idea refers to lessons taught and learned but not consciously intended or documented in the formal curriculum.

2 Research Methodology

The purpose of our research was to gain a broader understanding of participants' acquisition of digital competencies in formal education to obtain a publicly recognized qualification within the education system in Slovenia. Our research aimed to gather data on the level of digital com-

petencies among students and the existing methods of acquiring these competencies in the education system at all three levels. Therefore, we conducted:

- a survey among students to assess their self-perception regarding their digital competencies,
- a structural interview among teachers from various faculties to identify elements of the hidden curriculum and
- a review of publicly available educational content regarding acquiring digital competencies in primary and secondary schools and universities.

The entire research results will serve as a basis for planning and designing a new curriculum at the faculty within the framework of the pilot project BIONIKA (more information within acknowledgements).

The research questions were:

- What is the level of digital competence among students?
- To what extent are educational contents related to digital competence included in the formal curriculum at primary and secondary schools and universities?
- To what extent are contents related to digital competence included in the hidden curricula of universities?
- How much attention do universities give to the digitalization of the entire curriculum?

Digital competences of students at the faculty of organisational sciences

As our research was a pilot study, we examined the levels of digital competence among students only at one faculty, namely the Faculty of Organisational Sciences at the University of Maribor. The sample included 115 undergraduate study program students from the second and third years. The sample did not include computer science students but only students of Human Resource Management, a social science program. The self-assessment anonymous survey was conducted online using the IKA platform in October 2023. The questionnaire included all 21 competency statements from the DigiComp 2.1 document. The scoring scale covered all eight levels of self-assessment. The formulations were verbatim from the Slovenian translation of the DigiComp 2.1 model.

Digital competencies in the formal curriculum at primary and secondary schools and universities

To determine the extent of learning content related to digital competencies in the formal curriculum at primary and secondary schools, we examined the curricula of primary schools and gymnasiums, which are publicly available on the websites of the Ministry of Education or the National Education Institut Slovenia. We were interested only in the extent of the content, and we did not examine the specific content of the curricula.

To determine the extent of learning content related to digital competencies in the formal university curriculum,

we examined the syllabi publicly available on the faculties' websites. We were specifically interested in the social sciences and business studies faculties. The situation might be different on technical faculties. We were interested only in the extent of the content, and we did not examine the specific content of the syllabi.

Digital competences in hidden curricula and the digitalization of university curricula

Since our research is pilot, it is focused only on social sciences and business faculties. The selected faculties in our study were:

- University of Ljubljana: Faculty of Economics, Faculty of Administration, Faculty of Social Sciences;
 - University of Maribor: Faculty of Organisational Sciences, Faculty of Tourism, Faculty of Logistics, Faculty of Criminal Justice and Security, Faculty of Education;
 - University of Primorska: Faculty of Management;
 - Faculty of Applied Social Studies.
- From each faculty, we selected one professor. The criteria for selecting the sample were:
- the person must be the holder of subjects in the field of social sciences or business;
 - the person must be a member of the senate of the selected faculty (as we also inquired about the frequency of discussions related to the digital curriculum in the professional bodies of the faculty - senate and department).

Characteristics of the sample based on gender: 5 males and 5 females. The sample included 8 full professors and 2 assistant professors. The average age of the respondents was 49 years. The oldest was 61 years old, a male with the title of full professor. The youngest was a 39-year-old female with the title of assistant professor. We ensured the anonymity of all participants as well as the anonymity of the institution. In October 2023, we conducted structured telephone interviews with ten professors from ten faculties.

To gather information about the inclusion of content related to digital competencies in the hidden curriculum, we used 21 statements of competence content from DigiComp 2.1. The formulations were verbatim from the Slovenian translation of the DigiComp 2.1 model. We in-

quired about how often these contents were included in the subject they last taught. The significance of the responses was as follows:

- 0 - this form of "digitalization" is not formalized or included in the curriculum and is not part of the subject.
- 1 - this form of "digitalization" is not formalized or included in the curriculum, but I include it indirectly in the subject ("hidden curriculum").
- 2 - this form of "digitalization" is formalized or included in the curriculum and is part of the subject.

Furthermore, we were interested in the digitization of the curriculum. To obtain data on the importance attributed to the digitization of the entire curriculum at the faculty, we asked one question for each of the curriculum items: defining educational goals, selecting teaching materials, devising education strategies, preparing education materials, acquiring teachers, evaluation, and implementation. We asked how often formal discussions about the digitization of the curriculum take place at the faculty senate and the departments. Table 2 shows the significance of the answers.

3 Research Results Digital Competence of Students

Arithmetic means and standard deviations of students' self-assessed digital competencies are presented in Table 3.

Most competencies are equal to level 3 and higher than level 5. The lowest level of competence is observed in the "programming" competence. The majority of them need help to program even simple things. However, almost everyone can solve other routine tasks and simple problems independently. Handling unconventional issues, except for programming, is manageable for most respondents, according to their needs. Providing support to others is an average ability among respondents, particularly in competencies related to online etiquette and communication using digital technologies. In contrast, for other competencies, it could be more pronounced.

Table 2: The significance of the answers

0	1	2	3	4	5	6
Never	Several times a year or less often	Once a month or less often	Several times a month	Once a week	Several times a week	Every day

Table 3: Descriptive Statistics of Students' Digital Competences According to DigiComp 2.1. (n= 115)

	COMPETENCE AREAS	MEAN	STD. DEV
	Information and data literacy		
1	Browsing the web, searching, and filtering data, information, and digital content	4,76	1,565
2	Evaluating data, information, and digital content	4,57	1,686
3	Managing data, information, and digital content	4,66	1,664
	Communication and collaboration		
4	Interaction through digital technologies	5,19	1,654
5	Sharing through digital technologies	4,90	1,698
6	Engaging in citizenship through digital technologies	4,09	1,814
7	Collaborating through digital technologies	4,83	1,738
8	Netiquette	5,29	1,746
9	Managing digital identity	4,90	1,722
	Digital content creation		
10	Developing digital content	3,91	1,927
11	Integrating and re-elaborating digital content	3,62	1,745
12	Copyright and licenses	3,59	1,752
12	Programming	2,81	2,047
	Safety		
14	Device protection	4,28	1,740
15	Protecting personal data and privacy	4,31	1,698
16	Protecting health and well-being	4,57	1,778
17	Protecting the environment	4,74	1,727
	Problem-solving		
18	Solving technical problems	3,84	1,852
19	Identifying needs and technological responses	4,02	1,706
20	Creatively use of digital technologies	3,95	1,751
21	Identifying digital competence gaps	3,69	1,815

Acquiring digital competences in primary and secondary school

Furthermore, we were interested in the extent to which schools provide students with digital competencies. The curricula of publicly recognized schools in Slovenia could be more extensive regarding digital content. This can be stated for all levels of education. An exception, of course, is those schools that educate for professions directly related to computing and informatics.

The curriculum of publicly recognized primary schools does not contain any content related to digital competencies at all. The primary school provides instruction in the following mandatory subjects for all students: Slovenian and Italian or Hungarian in ethnically mixed areas, a for-

eign language, history, society, geography, homeland and civic culture and ethics, mathematics, natural science, environmental studies, science and technology, chemistry, biology, physics, visual arts, music, physical education, technology, and home economics. The school also conducts special pedagogical activities in adapted educational programs with an equivalent educational standard.

The school must also provide elective subjects for 7th, 8th, and 9th grade students (third educational period). The school must offer at least three subjects from the social-humanistic and at least three from the natural science-technical group. Within the social-humanistic group, the school must offer instruction in a foreign language, non-denominational religious education, ethics, and rhetoric⁵.

⁵ Zavod Republike Slovenije za šolstvo (2023)

High school students receive more computer science and informatics content. All high schools of the same type in Slovenia have identical and standardized curricula. For example, let us look at the curricula of the educational programs for the General Gymnasium, Economic Gymnasium, and Technical Gymnasium⁶:

- the curriculum for the General Gymnasium includes the subject Informatics in the 1st year, with a scope of 70 hours
- the curriculum for the Economic Gymnasium includes the subject Informatics in the first and second years, both with a scope of 70 hours each
- the curriculum for Technical Gymnasium includes the subject of Informatics in the 1st year, with a scope of 105 hours.

The subject of our study in higher education was only faculties in the field of social and business sciences. We found that in study programs related to business sciences at these faculties, it is common to have a course in the first year of undergraduate studies that is thematically related to students' digital competencies. Here are a few examples of study programs from faculties in the field of business sciences:

- At the Faculty of Economics and Business, University of Maribor (2023), the university study program at the undergraduate level, 'Economic and Business Sciences,' includes the compulsory course 'Business Informatics' in the first year, with a scope of 5 ECTS⁷;
- At the Faculty of Economics, University of Ljubljana (2023), the university study program at the undergraduate level, 'Business Economics,' includes the compulsory course 'Informatics' in the first year, with a scope of 6 ECTS⁸;
- At the Faculty of Management, University of Primorska (2023), the university study program at the undergraduate level, 'Management,' includes the compulsory course 'Study and ICT Practicum' in the first year, with a scope of 3 ECTS⁹.
- At the Faculty of Social Sciences, University of Ljubljana (2023), there is bachelor and master program Social Informatics. We have also found that in social science study programs, it is not necessarily included in the curriculum to have a course that imparts digital competencies¹⁰.

Digital competence in hidden curricula

Table 4 shows the frequency of teacher self-assessment regarding the incorporation of digital competencies into the curricula of their subjects.

The results indicate that a significant amount of con-

tent related to digital competencies is already formally prescribed in the curricula of subjects not directly related to computer science and informatics. The most common aspects include searching, retrieving, and selecting data, information, digital content, and communication using digital technologies.

As for the hidden curriculum, most mentioned aspects are data management, information, digital content, and digital identity management. Five out of ten respondents mentioned this competency. It is highly likely that students acquire this competency as a result of digitizing the entire curriculum, not just activities in a specific subject.

Based on the participants' responses, considerable attention is given to digitizing the entire curriculum at the faculties. Table 5 shows the frequency of professors' self-assessments regarding the frequency of addressing curriculum aspects of digitization in departments and the senate.

The results indicate that at faculties, the most frequently addressed aspects are the objectives of introducing digitalization into education, educational content related to digitalization, and the digitization of educational materials. On average, these aspects are addressed approximately once a month. Other aspects of curriculum digitization are addressed less frequently. The least frequently addressed aspect is the digitization of evaluations.

4 Discussion

According to World Bank (2020) data, the expected duration of education in Slovenia is 13.6 years, but when excluding repetitions and "gaps," the actual duration is 11.4 years. Our research focused on determining the average extent of formal education content related to digital competencies that a Slovenian citizen receives. First, we examined the primary school level. This period is crucial for acquiring knowledge, and at the same time, missed opportunities during this time can be challenging to make up for. The program that can be considered an international reference is PISA.

PISA is the OECD program for international student assessment. PISA measures the ability of 15-year-olds to apply their reading, mathematical, and scientific knowledge and skills to real-life challenges. Unfortunately, PISA does not directly assess digital competencies. In the PISA 2022 study, conducted from 26 July to 16 September 2022, 85 countries participated. Three key learning areas were evaluated: reading literacy, mathematics, and science. An innovative area, which changes from cycle to cycle, was

⁶ Ministrstvo za šolstvo Republike Slovenije (2023)

⁷ Ekonomsko poslovna fakulteta Univerze v Mariboru (2023)

⁸ Ekonomska fakulteta Univerze v Ljubljani (2023)

⁹ Fakulteta za management Univerze na Primorskem (2023)

¹⁰ Fakulteta za družbene vede Univerze v Ljubljani (2023)

Table 4: Frequencies of responses from surveyed professors on incorporating content into the subject (n=10)

	COMPETENCE AREAS	0	1	2
	Information and data literacy			
1	Browsing the web, searching, and filtering data, information, and digital content	0	3	7
2	Evaluating data, information, and digital content	3	3	4
3	Managing data, information, and digital content	1	6	3
	Communication and collaboration			
4	Interaction through digital technologies	0	3	7
5	Sharing through digital technologies	0	4	6
6	Engaging in citizenship through digital technologies	7	1	2
7	Collaborating through digital technologies	1	4	5
8	Netiquette	3	4	3
9	Managing digital identity	2	5	3
	Digital content creation			
10	Developing digital content	2	3	5
11	Integrating and re-elaborating digital content	3	3	4
12	Copyright and licenses	2	4	4
12	Programming	8	1	1
	Safety			
14	Device protection	5	3	2
15	Protecting personal data and privacy	2	5	3
16	Protecting health and well-being	5	3	2
17	Protecting the environment	6	1	3
	Problem-solving			
18	Solving technical problems	8	0	2
19	Identifying needs and technological responses	6	2	2
20	Creatively use of digital technologies	4	3	3
21	Identifying digital competence gaps	6	4	0

Table 5: Frequencies of responses from surveyed professors on the frequency of addressing curriculum aspects of digitization in departments and the senate (n=10)

	CURRICULUM ITEM	MEAN	0	1	2	3	4	5	6
22	Objectives of introducing digitalization into education	2,20	2	5	2	1	0	0	0
23	Educational content related to digitalization.	3,40	1	5	1	2	1	0	0
24	Organisational forms and teaching methods	1,60	1	4	3	2	0	0	0
25	Digitalization of educational materials	2,10	3	3	3	4	0	0	0
26	Digital competencies of the teaching staff	1,70	4	5	1	0	0	0	0
27	Digitization of knowledge assessment	1,60	1	3	5	1	0	0	0
28	Digitization of evaluations	1,00	1	8	1	0	0	0	0

added. Mathematics remains a key area, and the innovative area for this cycle was creative thinking. The top ten countries with the highest scores in the Programme for International Student Assessment (PISA) are China, Singapore, Estonia, Japan, South Korea, Canada, Taiwan, Finland, Poland, and Ireland. China leads with an impressive overall score of 578.7 points in the PISA study. Singapore secured the second position with a score of 556.3, Estonia is third with a score of 525.3, and Slovenia is ranked 11th, achieving a score of 503.8 points¹¹.

11th place for Slovenia in the PISA study is indeed a commendable result. However, it is essential to analyze the context behind it. We found that the primary school curriculum includes:

- more than 1,600 hours of instruction in the native language (Slovenian)
- more than 1,300 hours of instruction in mathematics
- more than 900 hours of instruction in various natural science subjects.

It is evident that the extent of instruction in these subjects is sufficiently large, and the quality of instruction in these subjects is also high enough to be reflected in the PISA results.

However, numerous documents have been adopted at the European Union level since December 2006, aiming to achieve a higher level of digital competence among citizens (which PISA does not measure).

At the primary school level in Slovenia, practically nothing has happened since 2006 (when the European Parliament adopted recommendations regarding lifelong learning) that would, at least in the following ten years, raise the level of digital competence among adolescents. To achieve a similar level of digital competence among adolescents as measured by the PISA methodology, it would be necessary to introduce a mandatory subject in primary schools. This has not happened yet due to frequent changes in governments and ministers. From 2006 to 2023, Slovenia has had 9 different governments, with the minister changing 11 times (one person served as minister twice). The Law on the Organisation and Financing of Education stipulates that the minister responsible for education adopts publicly valid educational programs, except for the educational programs of private schools.

The consequences of this could be catastrophic. As seen in the example of the PISA results, European Union member states are not leading, with Asian countries prevailing. Slovenia should immediately incorporate the same extent of computer science and informatics education into the primary school curriculum as all-natural science subjects combined. There is room for this in the curriculum, especially since almost 1,000 hours are allocated to arts

education in the primary school curriculum.

Therefore, a first-year student enrolling in a Slovenian university will come with a relatively good knowledge of mathematics, having studied almost 2,000 hours, including hours in primary school and at least 560 hours in secondary school. However, at best, the total hours for subjects related to acquiring digital competence before university enrollment are 140 hours. Our research focused solely on faculties in social and business sciences. A student at such a faculty will likely take one more subject during undergraduate studies, with lectures and exercises totalling a maximum of 75 hours, usually even less. Typically, there are no such subjects at the postgraduate level. The extent of formal teaching content related to digital competencies within the public school system needs to be more significant. To illustrate, during the average duration of formal education in Slovenia, a citizen listens to approximately 2,000 hours of mathematics, about 1,000 hours of arts education, and only 200 hours of computer science and informatics education. With such a ratio of instructional hours, it is not feasible for citizens to achieve the same level of digital competence through formal education as they might, for example, in mathematics.

Most research, including ours, indicates that students possess a certain level of digital competence. Therefore, there is no doubt that students acquire knowledge and competence from formal curricula in public schools and outside sources. Part of this occurs within the “hidden curriculum,” and a portion occurs outside the school environment.

In our research, we were interested in exploring what happens in subjects whose content is unrelated to computer science, informatics, and digital competence. Additionally, the professors teaching these subjects are not computer science and informatics specialists. We were curious whether, even in these subjects, students might be acquiring digital competence. Thus, we investigated the phenomenon known in theory as the “hidden curriculum.” In our study, we examined the hidden curriculum with ten professors from ten different faculties in the field of social and business sciences.

Digital competence that professors most frequently incorporate formally into the curricula of subjects in the field of social and business sciences include:

- Browsing the web, searching, and filtering data, information, and digital content
- Sharing through digital technologies
- Collaboration through digital technologies
- Developing digital content

Digital competence that professors most frequently include in the curriculum, even though they are not part of the formal curriculum, are:

¹¹ OECD (2022): PISA Scores by Countries

- Protecting personal data and privacy
- Managing data, information, and digital content
- Managing digital identity

Martzoukou et al. (2020) based on their research in three countries, argue that existing definitions and perspectives in the field of digital competence go beyond the use of technological tools or media, focusing on shaping a mindset of digital literacy that develops throughout life. However, higher education strategies still need to catch up with this agenda. Our research findings do not provide a basis for agreeing with this.

We have identified a favorable “mental model” towards digital competence among university faculties. The idea is reflected in the relatively high frequency of addressing digital curriculum content in Senate meetings, departments, and other bodies of the faculties. It is worth noting that our focus was on faculties in the social and business sciences rather than technical faculties. We recognized that professors incorporate “digital” content into the curricula of subjects and engage in discussions about the digital curriculum. In this, we see a significant difference in the mindset of the staff between faculties and lower levels of education.

While it is true that faculties have a considerable degree of autonomy in designing curricula (within the framework of accreditation of study programs), public programs at lower levels are prescribed by the Minister of Education. However, it surprises us that, at least within elite circles in the educational field, there needs to be more mental shifts to give greater attention to digital competence at lower levels. The mindset towards digital literacy needs to be more decisively at lower levels of education. We fear that decision-makers are aware of the need for digitization, but when designing curricula for primary and secondary schools, interests may take precedence over anything else.

Ultimately, we were interested in the essential aspect: students’ level of digital competence. Firstly, we did not identify significant differences in the level of competence among different content areas. Nevertheless, there are differences among specific competencies.

The highest level was identified in the following competence:

- Netiquette
- Interaction through digital technologies

These are the only two competencies where the arithmetic mean of responses is 5 or higher. The result means that respondents are capable of providing support to others.

The lowest level was identified in the Programming competency. On average, respondents need help performing common tasks and solving simple problems. The arithmetic mean of the other competencies indicates that respondents can operate independently and according to their own needs. The results also show that students need help with more advanced tasks and solving complex prob-

lems with a limited number of solutions.

To some extent, we agree with (Ballantine et al., 2007) findings, which highlighted the typically overestimated computer competencies of surveyed students based on self-assessment questionnaires. An interesting finding in our research is that for any competency, we did not find respondents capable of assisting others. In this aspect, respondents certainly did not overestimate themselves. They were self-critical enough to recognize that they were not capable of helping others. On the other hand, the self-assessed level of students’ digital competencies mostly stops at tasks they perform for their own needs. The level of their own needs can, of course, vary significantly. In this part, self-assessment cannot be objective.

5 Conclusion

In researching the field of digital competencies, we were surprised by the lack of tools that would objectively measure the level of digital competencies. Both DigiComp 2.1 and DigiEdu, representing the most widespread and formally accessible documents for measuring digital competencies in the EU, have not undergone any significant updates or changes in recent years. Suppose European Union countries aim to reach the level of some Asian countries. In that case, they need to develop a more advanced tool for measuring the levels of digital competencies, following the example of PISA.

Despite objective criteria for measuring the level of mathematical competence and the reliance on self-assessment questionnaires for measuring digital competencies, we dare to assert, based on the research results, that there are differences between mathematical and digital competencies. Throughout the history of education, it has been known that primary and secondary school students and even university students have helped each other. Historical records even indicate that many students supported themselves through tutoring. However, our research found that, on average, surveyed students need help to support others in most digital competencies.

Of course, our research has limitations. We have already mentioned that most research on digital competence levels is based on self-assessment questionnaires. One of the aforementioned weaknesses of such questionnaires was that respondents tend to rate their level of competence as higher than it is. This factor is purely subjective. However, we suspect that the self-assessment of digital competencies may also be influenced by the culture of a society. We know that culture has different dimensions, including performance orientation, future orientation, etc. Therefore, it would be worthwhile to investigate the impact of a society’s culture on digital competencies in future research.

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Digitalne kompetence v formalnem in skritem kurikulumu

Ozadje in namen: Raziskovanje področja digitalnih kompetenc je eden izmed najpomembnejših političnih ciljev na področju izobraževanja v Evropski uniji že skoraj dve desetletji. Leta 2017 sta bila objavljena dva zelo pomembna dokumenta: DigComp 2.1 - Okvir digitalnih kompetenc za državljane z osmimi stopnjami usposobljenosti in primeri uporabe ter Evropski okvir digitalnih kompetenc izobraževalcev - DigCompEdu. Kljub tem dokumentom in vsem raziskavam na področju digitalnih kompetenc še vedno ni enotnega instrumenta za merjenje digitalnih kompetenc državljanov. Težava je v tem, da digitalne kompetence obsegajo širok nabor veščin, od osnovne digitalne pismenosti do naprednih tehničnih veščin, in se razvijajo s tehnološkim napredkom. Raziskovalci in odločevalci se srečujejo s številnimi ovirami pri ustvarjanju enotnega orodja za ocenjevanje teh kompetenc. Članek zato razširja obstoječe raziskave na področju digitalnih kompetenc v formalnem izobraževanju v Sloveniji. Raziskava je usmerjena v raziskovanje učnih načrtov pridobivanja digitalnih kompetenc na treh ravneh formalnega izobraževanja ter ravni doseganja digitalnih kompetenc med državljani (študenti) v Sloveniji. Namen študije je pridobiti širše razumevanje, kako udeleženci v formalnem izobraževanju pridobivajo digitalne kompetence za pridobitev javno priznane kvalifikacije v izobraževalnem sistemu v Sloveniji.

Načrt/Methodologija/Pristop: Da bi preučili področje digitalnih kompetenc v formalnem in prikritem kurikulumu, je bila najprej izvedena anketa med študenti (državljeni) s ciljem ocenitve njihove samopodobe glede digitalnih kompetenc. Zatem so bili izvedeni intervjuji med učitelji z različnih fakultet, da bi identificirali elemente prikritega kurikuluma. Tretji del raziskave se je nanašal na pregled in analizo javno dostopnih izobraževalnih vsebin v osnovnih in srednjih šolah ter univerzah glede tem, povezanih s pridobivanjem digitalnih kompetenc.

Rezultati: Obseg formalnega poučevanja vsebin, povezanih z digitalnimi kompetencami znotraj sistema javnega šolstva v Sloveniji, je majhen. V času povprečnega trajanja formalnega izobraževanja državljan Slovenije posluša približno 2.000 ur pouka matematike, približno 1.000 ur pouka umetnosti in 200 ur pouka računalništva in informatike. Rezultati raziskave so pokazali, da na fakultetah tudi pri predmetih, katerih vsebina ni povezana z računalništvom in informatiko, študenti pridobivajo digitalne kompetence kot del skritega kurikuluma. Aritmetična sredina ostalih kompetenc kaže na to, da vprašani zmorejo delovati samostojno. Rezultati ravni digitalnih kompetenc po DigiComp 2.1. kažejo, da razen pri dveh kompetencah, pri nobeni ni presežena raven 5. Samoocenjena raven digitalnih kompetenc študentov se je pri večini kompetenc ustavila pri opravljenih, ki jih študenti opravljajo za njihove lastne potrebe.

Zaključek: V prihodnosti bodo države EU morale standardizirati sistem ocenjevanja digitalnih kompetenc, da bi določile raven digitalnih kompetenc posameznikov. Šolski sistem v Sloveniji bo moral vključiti pomembno količino znanja s področja računalništva v učne načrte predmetov, pri čemer bo treba posebno pozornost nameniti nadgradnji digitalnih kompetenc znotraj prikritega kurikuluma.

Ključne besede: *Formalni kurikulum, Skriti kurikulum, Digitalna kompetenca, DigiComp 2.1*

Effectiveness of Communication Tools in Slovak Enterprises Before and During the Covid-19 Pandemic

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Background and purpose: The Covid-19 pandemic brought about a shift in the way businesses operate, accelerating the adoption of digital communication tools. The study examines the effectiveness of communication tools in Slovak enterprises, comparing the dynamics before and during the pandemic. The study highlights the need for businesses to address communication-related issues.

Methodology: An electronic questionnaire was used to collect the data. The representative survey sample consisted of 555 respondents. The results of the research were processed using the statistical tools McNemar Test, Pearson's Chi square test and Cramer's V.

Results: Before the pandemic, Slovak enterprises relied on traditional means of communication, with face-to-face meetings, phone calls and emails being the primary means of interaction. However, when the pandemic forced people to work from home, dependence on digital communication tools such as video conferencing and collaboration platforms increased significantly.

Conclusion: The research findings indicate that during the pandemic, businesses recognized the importance of digital communication tools for sustaining business operations and employee collaboration. In conclusion, the Covid-19 pandemic was a catalyst for the transformation of communication practices in Slovak enterprises. The findings emphasise the continued importance of digital communication tools in the post-pandemic era and the need for businesses to strike a balance between traditional and digital communication methods in order to optimise overall effectiveness.

Keywords: *Communication, Communication tools, Effectiveness, Slovak companies, Covid-19*

1 Introduction

The COVID-19 pandemic has brought in significant changes across various sectors, with businesses experiencing profound transformation. As governments implemented lockdowns and social distancing measures to limit the spread of the virus, businesses had to quickly adapt to remote working conditions. This sudden shift accelerated

the adoption of digital communication tools, which led to modification of traditional business operations and interactions.

Slovak enterprises, as their global counterparts, faced the need to transition from in-person interactions to virtual ones. Prior to the pandemic, business communication in Slovakia relied mainly on face-to-face meetings, phone calls, and emails. These traditional methods, although effective prior to pandemic, proved to be insufficient in ad-

addressing the challenges that remote working environments represented. As a result, enterprises turned to digital communication tools such as video conferencing, instant messaging, and collaborative platforms in order not to break off the continuity of processes and maintain efficient employee collaboration.

This study evaluates the effectiveness of digital communication tools within Slovak enterprises by comparing the communication dynamics before and during the COVID-19 pandemic. The results of the research provide enterprises with an insight into the relevance of digital communication tools and help them realize the significance of addressing related challenges.

Effectiveness of communication tools

Effective communication has always been a critical element of business success (Gomez et al., 2023). It enables the exchange of information, ideas and feedback between employees, management and external stakeholders (Bucata and Rizeccu, 2017). In enterprises, as in many other parts of the world, the choice of communication tools has a direct impact on the efficiency, productivity and overall effectiveness of the enterprise (Holá, 2012; Szeiner et al., 2022). It is of great importance to develop and maintain appropriate communication channels in the workplace that not only increase the workplace performance but have an impact on the behaviour and well-being of employees (Bencsik et al., 2019). The greater the team is, the greater demands on communication efficiency among its members are required (Stacho et al., 2020).

The Covid-19 pandemic has significantly impacted businesses around the world, forcing them to adapt to working from home and rely heavily on technology to communicate effectively (Boyadjiev and Vaneva, 2021). Especially, small and medium-sized enterprises are struggling to cope with the business uncertainty caused by the Covid-19 pandemic (Fernando, 2023). Prior to the pandemic, businesses typically relied on a combination of traditional communication methods such as face-to-face meetings, phone calls, and emails to facilitate internal and external interactions. Erjavec (2021), Bojadjev and Vaneva (2021) in their studies emphasized the importance of face-to-face communication for building trust, fostering collaboration and effective conflict resolution. However, limitations regarding communication tools, physical presence and the need for shared space were observed. Emails used for information sharing faced problems related to congestion, misunderstandings, and delayed responses (Smolag, Slusarczyk, 2021). Telephone calls, used for instant communication, often had no permanent record and were difficult for larger enterprises to manage effectively.

Prior to the pandemic, enterprises were undergoing a gradual digital transformation (Priyono et al., 2020). This transformation was particularly evident in the way businesses used communication tools. Digital communication and media create new cultural forms while it concurrently

interacts with the conventional communication and media systems (Uçar et al, 2022). Digital communication tools including video conferencing platforms (e.g. Zoom, Microsoft Teams), instant messaging applications (e.g. WhatsApp) and collaboration software (e.g. Microsoft 365, Google Workspace) have become tools for maintaining business operations and ensuring smooth communications between remote and distributed teams (Smolag, Slusarczyk, 2021).

The outbreak of the Covid-19 pandemic required the rapid adoption of digital communication tools and the introduction of social disengagement measures in enterprises (Boyadiev and Vaneva, 2021; Sanders et al., 2020). The efforts to minimize physical contact to the lowest possible level temporarily changed how people work and their free time. In jobs that can be performed without physical presence, including education, working from home and online education came to the fore. The issue of work virtualization gained in importance. A revolution in dominant modes of communication is happening because of the rapid spread of the virus (Marjański and Sułkowski, 2021). Therefore, the IT sector, virtual devices, communication applications and online services were among those that benefited from the pandemic the most (Szeiner et al., 2023). Video conferencing platforms such as Zoom and Microsoft Teams have emerged as essential tools for remote working and virtual meetings. Neil and Bowen (2021) highlighted the effectiveness of videoconferencing tools in facilitating visual cues, nonverbal communication, and increasing team cohesion. Collaboration platforms, such as Microsoft Teams, enabled employees to communicate in real time, share files, and organize discussions effectively. These platforms have improved information sharing, reduced email overload and improved team collaboration through instant messaging and virtual workspaces. Growing collaboration on platforms creates requirements for abilities to work in teams, communication skills in virtual environment, multimedia skills, understanding and compliance with IT security and the ability to collaborate (Stacho et al., 2021). Mobile communication apps such as WhatsApp have gained popularity due to their accessibility and convenience. They offered quick updates, informal communication channels and made team building easier. In practice, cross-functional teams often fail due to misleading coordination in a competitive tension (Ton et al., 2023). These tools have been critical for keeping employees connected, informed, and productive in remote work environments (Torre, Sarti, 2020). However, privacy and security concerns have been identified as potential drawbacks (Smolag, Slusarczyk, 2021).

The Covid-19 pandemic has changed the communication environment in enterprises. It has accelerated the adoption of digital communication tools.

As stated by Obrenovic et al. (2020) and González-Tejero et al. (2022) the development of effective communi-

cation techniques during Covid-19 has led to improved performance and mental support among individuals. While this shift offers many benefits, it has also brought challenges such as communication fatigue, security concerns and the need to address work-life balance, which brings increased levels of stress. Stress on several levels consumes time, energy and individual attention, so it can hinder performance and cause increased employee turnover (Berke et al., 2021; Kórmúves, Berke, 2021; Ariani, 2021). Understanding these dynamics is critical for businesses looking to adapt and thrive in the post-pandemic era, as digital communication tools continue to shape the way businesses communicate and operate both inside and outside the country (Krchová. Hoesová, 2021). Changes in the communication environment led us to explore differences in the use of communication tools before and during the COVID-19 pandemic, as part of our research presented in the following chapter.

Aim, material, and methods of investigation

The aim of the study is to identify changes in the perception of the importance of communication tools by

employees of Slovak companies before and during the Covid-19 pandemic. The identified changes will help companies in deciding how to set up a communication system in the post-pandemic period and will provide a basis for the development of an action plan in case of similar situations in the future.

Data collection was conducted in 2023 in the form of a questionnaire survey. The electronic questionnaire was created on the Google Docs platform. Respondents were contacted in person or by email (500 people) and through the social networks Facebook and LinkedIn (3128 people). The survey sample consisted of 555 respondents who completed the entire questionnaire. The return rate of the questionnaire survey was 15.30%. The representativeness of the survey sample was verified by using the Chi-square goodness of fit test according to two classifiers - gender and age. For the identification of the basic set we used data from the Statistical Office of the Slovak Republic, namely the STATdat database with data as of 31/12/2022. We performed the testing at the significance level $\alpha = 0.05$. The results of the tests are shown in Tables 1 and 2.

Table 1: Representativeness of the survey sample by age

Age					
	Observed N	%	Expected N	Expected %	Residual
< 25	99	17.8	82.3	14.8	16.7
25 – 40	168	30.3	173.8	31.3	-5.8
40 – 55	200	36.0	192.1	34.6	7.9
> 55	88	15.9	106.8	19.3	-18.8
Total	555	100.0	555	100.0	
Null Hypothesis		Chi-Square	df	Asymp. Sig	Decision
The categories of Age occur with the specified probabilities		7.245 ^a	3	0.064	Retain the null hypothesis
a. 0 cells (0,0%) have expected frequencies less than 5. The minimum expected cell frequency is 82,3.					

Source: Own data, 2023

Table 2: Representativeness of the survey sample by gender

Gender					
	Observed N	%	Expected N	Expected %	Residual
Valid	273	49.2	271.5	48.9	1.5
Male	282	50.8	283.5	51.1	-1.5
Female	555	100.0	555	100.00	
Null Hypothesis		Chi-Square	df	Asymp. Sig	Decision
The categories of Gender occur with the specified probabilities		0.017 ^a	1	0.895	Retain the null hypothesis
a. 0 cells (0,0%) have expected frequencies less than 5. The minimum expected cell frequency is 271,5.					

Source: Own data, 2023

Before creating the questionnaire, we formulated the research questions.

RQ1: How often were different communication tools used in the companies before and during the pandemic?

RQ2: Was there a change in employees' perception of the effectiveness of the most frequently used communication tools?

RQ3: Is there a relationship between perceptions of the effectiveness of communication tools during the pandemic and respondent characteristics (gender, age)?

In the study of our research, we present an evaluation of selected questions that relate to the formulated research questions. In the first two questions, we asked respondents which tools were used in their company before and during the Covid-19 pandemic. In questions 3 and 4, we wanted to know which communication tools they considered effective before and during the pandemic.

We used the McNemar Test to assess differences in the use of communication tools, perceptions of their effectiveness, and barriers to communication before and during the pandemic. To determine the relationship of perceived importance of communication tools with gender and age, we used Pearson's Chi square test and Cramer's V. We assessed the significance of differences and relationships with different groups of respondents at $\alpha = 0.05$ level. We chose to investigate the differences between respondents' gender because it should be stressed that gender differences include important difference in needs, behaviours and attitudes and taking them into account provides new ideas and excellence, relevant for whole society (Misiak-Kwit et al., 2017). The importance of exploring age differences is justified by several authors (e.g. Reis, Braga, 2016; Hitka et al., 2021), who explain that different generations tend to have different requirements in terms of motivation, communication, work organization or perception of their own person.

Results and discussion

To evaluate the use of different communication tools before and during the pandemic, we based our findings on the questionnaire responses of the survey. Respondents had the opportunity to select any number of communication tools. We then ranked the most frequently used communication tools before and during the pandemic and used the McNemar test to determine whether there were statistically significant differences in their use (Table 3).

The null hypothesis of McNemar's test assumes that the distribution of different values across categories are equally likely. We accept the null hypothesis only when using the intranet. Thus, there was no statistically significant difference in its use before and during the pandemic. For the use of all other communication tools, we find a statistically significant change, with only chat, cloud storage, shared calendars, and video calls becoming more frequently used during the pandemic. The same results were obtained in a study by Erjavek (2021), where respondents

in companies in Slovenia preferred to use e-mail, video-conferencing, and chat during the Covid-19 pandemic. In our research, the most significant increase was recorded in the use of cloud storage, with an increase of up to 30.81 percentage points. All other communication tools were used less frequently during the pandemic. The biggest decrease in use was, understandably, in face-to-face communication (65.40 percentage points), meetings (47.03 percentage points), but also in telephone communication (46.48 percentage points). Comparable results were also reached in a study conducted in Macedonia, concluding that face-to-face communication was the most preferred communication tool before the pandemic and chats during the pandemic. Similarly, research conducted in Slovenia and Poland revealed that telephone communication was the most preferred communication tool (Erjaveka, 2021; Smulag, Slusarczyk, 2021).

The same procedure was applied to detect differences in the perceived effectiveness of individual communication tools. Respondents could express their view of effectiveness even if the tool was not used in their company. The results in Table 4 are similar in many aspects to the results in Table 3, documenting the accuracy of the actions taken by enterprises in introducing alternative communication tools in a pandemic situation.

When examining perceptions of the effectiveness of communication tools, we accept the null hypothesis that there is no statistically significant difference in the perceptions of written communication, corporate information systems, and message boxes. Thus, there is no statistically significant difference between them. Conversely, we reject the null hypothesis of equality of distribution of different values across categories for perceptions of the effectiveness of using telephone, face-to-face communication, emails, meetings, directives, chats, company periodicals, intranet, training, bulletin boards, video calls, cloud storage, and shared calendars. Of these tools, respondents considered chats (up 22.16 percentage points), shared calendars, video calls, cloud storage, and intranets to be more effective during the pandemic, while they considered in-person communications (down 59.46 percentage points), meetings, directives, phone use, emails, company periodicals, training, and bulletin boards to be less effective. Similarly, a study conducted by an international financial group operating in the Central European market confirms that one of the most effective communication tools before the pandemic was face-to-face communication and ranked video calls as one of the least effective (Jakubiec, 2019).

To explore the relationship between the perceived effectiveness of the communication tools used and gender, we tested the null hypothesis H_0 , which assumes that there is no statistically significant relationship between gender and the perceived effectiveness of communication tools, using the Pearson Chi-Square test and Cramer's V.

Table 3: Change in the use of communication tools before and during the Covid-19 pandemic

	% before	% during	Difference (perc. points)	U → N*	N → U**	Ranking before	Ranking during	Ranking difference
Telephone	93.51%	47.03%	- 46.48	47.57%	1.08%	1.	1.	0
In person	80.54%	15.14%	- 65.40	68.65%	3.24%	2.	7.	↓ 5
Email	63.78%	47.03%	- 16.75	32.43%	8.11%	3.	1.	↑ 2
Meetings	60.00%	12.97%	- 47.03	49.19%	2.16%	4.	8.	↓ 4
Directives	38.38%	15.68%	- 22.70	32.43%	7.03%	5.	6.	↓ 1
In writing	29.19%	9.19%	- 20.00	25.41%	5.41%	6.	10.	↓ 4
Magazine	24.86%	5.95%	- 18.91	20.54%	1.62%	7.	13.	↓ 6
Boards	24.86%	3.24%	- 21.62	23.78%	2.16%	8.	15.	↓ 8
Training	23.78%	4.86%	- 18.92	21.62%	2.70%	9.	14.	↓ 5
Intranet	16.22%	24.86%	+ 8.64	10.81%	10.27%	9.	5.	↑ 5
Mailboxes	16.22%	4.86%	- 11.36	15.14%	3.78%	11.	14.	↓ 3
IS	15.14%	12.97%	- 2.17	12.43%	6.49%	12.	8.	↑ 4
Chat	11.89%	25.95%	+ 14.06	6.49%	41.62%	13.	4.	↑ 9
iCloud	8.65%	39.46%	+ 30.81	4.86%	21.08%	14.	3.	↑ 11
Calendars	0.54%	7.03%	+ 6.49	0.05%	7.03%	15.	12.	↑ 3
Video	0.00%	9.19%	+ 9.19	0.00%	25.95%	16.	10.	↑ 6
McNemar Test								
	Telephone	In person	Email	Meetings	Directives	In writing	Magazine	Boards
N	555	555	555	555	555	555	555	555
Chi-Square	244.626	328.431	79.804	237.193	89.498	70.760	87.935	98.340
Asymp. Sig.	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Null hypot.	reject	reject	reject	reject	reject	reject	reject	reject
	Training	Intranet	Mailboxes	IS	Chat	Cloud	Calendars	Video
N	555	555	555	555	555	555	555	555
Chi-Square	80.119	0.034	36.610	9.752	140.959	55.007	29.147	142.007
Asymp. Sig.	0.000	0.853	0.000	0.002	0.000	0.000	0.000	0.000
Null hypot.	reject	accept	reject	reject	reject	reject	reject	reject

* Change from Using to Not using

** Change from Not using to Using

Source: Own data, 2023

For gender, we identified a statistically significant relationship for telephone, written and email communication (Table 5). Although a Cramer's V value < 0.3 suggests that this is a relatively small effect, we reject the null hypothesis based on a Pearson Chi-Square test p -value < 0.05 . Thus, looking at the relative frequencies, we can argue that men found telephone communication more effective than women during the pandemic. Conversely, women found written and email communication to be more effective

compared to men. A study conducted in an international financial group operating in the Central European market concluded that men perceived working from home to be more negative than women, citing lack of personal interaction as the reason (Jakubiec, 2019). We came to a similar conclusion in our research, as men preferred the more personally interactive mode of communication, the telephone. In the perception of the effectiveness of the other communication tools studied, we accept the null hypothesis and

argue that there is no relationship in the perception of their effectiveness and gender.

The results of testing the relationship between the perceived effectiveness of the communication tools used and the age categories of the respondents, we used Pearson Chi-Square test and Cramer's V to test the null hypothesis H0, which assumes that there is no statistically significant relationship between the age categories of the respondents and the perceived effectiveness of the communication

tools (Table 6).

In identifying a statistically significant relationship between perceptions of the effectiveness of communication tools during a pandemic and age categories, we can respond positively for telephone and written communication, the use of meetings, video calls and intranet. Like previous testing, Cramer's V values are < 0.3, indicating a relatively small effect. However, the calculated p-values of the Pearson Chi-Square test < 0.05 for the above-men-

Table 4: Change in perceptions of the effectiveness of communication tools before and during the Covid-19 pandemic

	% before	% during	Difference (perc. points)	E → I*	I → E**	Ranking before	Ranking during	Ranking difference
Telephone	84.86%	69.19%	- 15.68	24.32%	8.65%	1.	1.	0
In person	74.59%	15.14%	- 59.46	61.08%	1.62%	2.	6.	↓ 4
Email	51.35%	44.86%	- 6.49	18.38%	11.89%	3.	2.	↓ 1
Meetings	48.65%	12.43%	- 36.22	39.46%	3.24%	4.	7.	↓ 3
Directives	23.78%	5.41%	- 18.38	20.54%	2.16%	5.	12.	↓ 7
In writing	11.89%	10.27%	- 1.62	8.11%	6.49%	6.	10.	↓ 4
Chat	10.81%	32.97%	+ 22.16	5.41%	27.57%	7.	3.	↑ 4
Magazine	9.19%	3.24%	- 5.95	7.03%	1.08%	8.	13.	↓ 5
IS	8.11%	7.03%	- 1.08	5.41%	4.32%	9.	11.	↓ 2
Intranet	8.11%	11.35%	+ 3.24	4.86%	8.11%	9.	9.	0
Training	7.03%	1.62%	- 5.41	6.49%	1.08%	11.	16.	↓ 5
Boards	6.49%	3.24%	- 3.24	5.95%	2.70%	12.	13.	↓ 1
Video	5.41%	21.08%	+ 15.68	1.62%	17.30%	13.	4.	↑ 9
iCloud	4.86%	18.38%	+ 13.51	3.78%	17.30%	14.	5.	↑ 9
Mailboxes	1.08%	2.70%	+ 1.62	1.08%	2.70%	15.	15.	0
Calendars	0.54%	12.43%	+ 11.89	0.54%	12.43%	16.	7.	↑ 9
McNemar Test								
	Telephone	In person	Email	Meetings	Directives	In writing	Chat	Magazine
N	555	555	555	555	555	555	555	555
Chi-Square	40.415	311.037	7.292	168.776	80.960	0.790	81.333	22.756
Asymp. Sig.	0.000	0.000	0.007	0.000	0.000	0.374	0.000	0.000
Null hypot.	reject	reject	reject	reject	reject	accept	reject	reject
	IS	Intranet	Training	Boards	Video	Cloud	Calendars	Mailboxes
N	555	555	555	555	555	555	555	555
Chi-Square	0.463	4.014	20.024	6.021	70.438	46.803	58.681	3.052
Asymp. Sig.	0.496	0.045	0.000	0.014	0.000	0.000	0.000	0.078
Null hypot.	accept	reject	reject	reject	reject	reject	reject	accept

* Change from Effective to Ineffective

** Change from Ineffective to Effective

Source: Own data, 2023

tioned communication tools force us to reject the null hypothesis. By looking at the relative frequencies, we can assess for which age group a given communication tool appears to be more or less effective during a pandemic. In the perceived effectiveness of the other communication tools studied, we accept the null hypothesis and argue that there is no relationship in the perception of their effectiveness and age categories.

We were then interested to find out how many respondents perceived the effectiveness of the tools during their actual use during the pandemic. Thus, for each communication tool, we considered only the replies of respondents who had practical experience with each tool during the pandemic.

In Figure 1, the communication tools are grouped in a matrix according to the frequency of their use in the companies and how effective they were considered by the

employees who actually used them during the pandemic. Employees considered the telephone to be the most effective communication tool (90.80% of users), yet it was only used to communicate during the pandemic in 47.03% of businesses. Even lower proportions of tool use were identified for emails (47.03%), face-to-face communication (15.14%), meetings (12.97%), and shared calendars (7.03%). On the contrary, more than half of their users found them to be effective. These communication tools, given their effectiveness, are the ones that should be developed and promoted in companies. Smolag and Slusarczyk (2021) also consider e-mail, telephone, and MS Teams to be effective distance communication tools. In the case of face-to-face communication and meetings, there may be complications during pandemic situations, but when safety regulations are followed, employees still find them more effective than some other communication tools.

Table 5: Relationship of perceived effectiveness of communication tools during a pandemic with gender

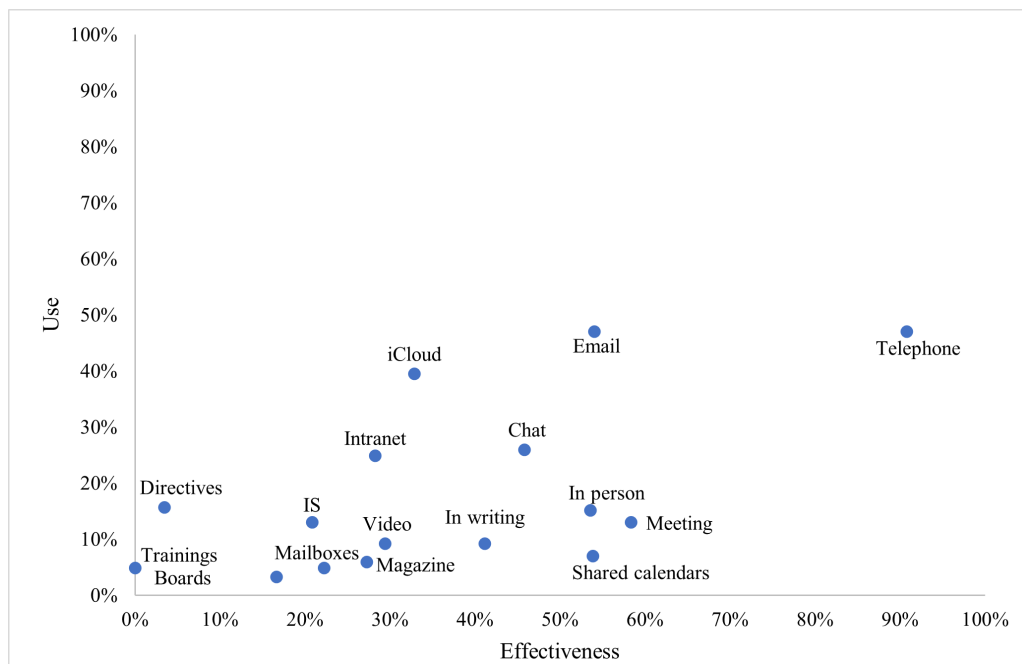
	Telephone	In writing	E-mail
Male	80.20%	7.70%	40.70%
Female	58.50%	12.80%	48.90%
Together	69.20%	10.30%	44.90%
Pearson Chi-Square	30.666	3.875	3.842
Phi	-0.235	0.084	0.083
Cramer's V (df = 1)	0.235	0.084	0.083
Asymp. Sig. (2 sided)	0.000	0.049	0.049
Null hypot.	reject	reject	reject

Source: Own data, 2023

Table 6: Relationship of perceived effectiveness of communication tools during a pandemic with age categories

	Telephone	Meeting	In writing	Video	Intranet
< 25	71.70%	10.10%	18.20%	31.3%	5.1%
25 – 40	59.50%	8.90%	4.80%	26.2%	9.5%
41 – 55	76.00%	19.50%	10.50%	13.0%	16.5%
> 55	69.30%	5.70%	11.40%	18.2%	10.2%
Alltogether	69.20%	12.40%	10.30%	21.1%	11.4%
Pearson Chi-Square	12.012	15.249	12.381	17.161	9.843
Phi	0.147	0.166	0.149	0.176	0.133
Cramer's V (df = 1)	0.147	0.166	0.149	0.176	0.133
Asymp. Sig. (2 sided)	0.007	0.002	0.006	0.001	0.020
Null hypot.	reject	reject	reject	reject	reject

Source: Own data, 2023



Source: Own data, 2023

Figure 1: Perceptions of the effectiveness of communication tools in actual use

Active contact among employees has a significant impact on the efficiency of the company and the effectiveness of individual employees' task performance, as well as on their loyalty and motivation. During the COVID-19 pandemic, the level of employee motivation, needs and demands in almost all motivational factors changed significantly, not excluding the communication environment (Hitka et al., 2022). Effective communication is crucial for the success of an enterprise in the marketplace. If employees provide information ineffectively, it exposes the enterprise to not only loss of time but also money. Investing in modern communication tools in an enterprise has a positive impact on their resilience in times of various crises, such as the COVID-19 pandemic, as the breakdown of communication between employees was one of the first impacts of the pandemic (Roffia, Dabic, 2023).

Practical implications

This study on the adoption and effectiveness of digital communication tools in Slovak enterprises has several practical implications that enable the enterprises to operate in the post-pandemic environment.

Adoption of digital technologies results in the enhanced operational resilience, which can be described as the enhancement of the enterprise's resilience against future disruptions. This ensures continuous communication and collaboration regardless of external conditions. By investing in digital infrastructure and training employees in

their use, the enterprise can reduce potential risks associated with the shift to remote work. The other advancement brought in the enterprise is optimization of communication strategies. Development of hybrid communication strategies utilizes the strengths of both traditional and digital approaches. While face-to-face meetings or phone calls may be preferable for certain interactions, digital tools offer more flexibility. Clear guidelines on using each method can improve the overall enterprise efficiency. Employee training and development is another implication that may tackle the gap in digital literacy among different generations of employees. Investing in training programs leads to the enhancement of employee digital skills and reduces resistance to change. One of the implications for potential further research is the advantage gained from informed decision-making should enterprises decide to evaluate their own communication practices by similar analysis. This, naturally, leads to enhanced collaboration and innovation, mainly due to the fact that digital communication tools simplify collaboration and information sharing, and thus support innovation. Promoting a culture that encourages the use of digital tools may strengthen teamwork and problem-solving processes. The transition to digital communication tools can also result in cost savings as the need for physical meeting spaces, travel expenses, and/or printed materials may reduce significantly. All this enables an enterprise to maintain its competitive advantage in the

increasingly digital world. In conclusion, the practical implications of this study emphasize the critical role of digital communication tools in modern business operations. By adopting the suggested approach to communication, investing in employee development, and taking advantage of the relevant information, Slovak enterprises, as well as global ones, can optimize their communication practices and enhance their overall effectiveness in the post-pandemic era.

Limitations and future research

The article focuses on the effectiveness of communication tools in Slovak companies before and during the covid-19 pandemic. Although it brought valuable knowledge, it revealed several limitations that must be mentioned. We consider the implementation of the research in Slovakia as one of the limits, which limits the possibility of generalizing its conclusions to other countries and regions. Among other limitations, we perceive the use of questionnaires as a method of data collection, which may be influenced by the subjective opinions of the respondents. However, in order to obtain a quantitative overview, we stand behind the selection of the mentioned method and its validity. The article also focused only on selected communication tools, not on all possible tools used by businesses. This fact also emerged from the available secondary literary sources. Furthermore, it only examined the employees' perspective, not that of management or other stakeholders.

At the same time, these limits open several possible directions for future research. First, the implementation of similar studies in other countries and regions would allow international comparison and identification of cultural differences in access to communication tools. Supplementing the quantitative data with qualitative methods, such as in-depth interviews or case studies, provided a deeper understanding of the issue. It would also be interesting to investigate the long-term effects of the use of digital communication tools on the performance, motivation and well-being of employees.

Another option is to analyse the perspective of management and identify the challenges associated with the implementation and management of digital communication tools in the enterprise. Focusing on specific factors such as company size, industry or generational differences and their impact on the effectiveness of communication tools could yield useful insights. Exploring potential risks and challenges related to digital tools, e.g. cyber security, privacy or excessive workload is also an important topic.

The article could also benefit from a deeper analysis of the cultural and behavioural changes that influence communication tool effectiveness. This includes examining how organisational culture and employee attitudes toward technology influence the adoption and perceived effectiveness of new communication tools

Last but not least, future research could develop and test best practices and models for integrating traditional

and digital communication approaches in the post-pandemic work environment. These proposed focuses can not only deepen theoretical knowledge, but also provide practical knowledge for businesses on how to effectively use communication tools and manage related challenges.

Conclusion

Teleworking and social distancing measures have made communication tools essential to keep employees engaged, informed and productive. The adoption of digital tools has been positively correlated with the ability of businesses to adapt quickly to teleworking, ensuring minimal disruption to their operations. The study highlights the importance of digital communication tools in maintaining business continuity and employee engagement in times of crisis. Understanding the evolution of communication tools in this context is vital for businesses seeking to adapt and thrive in an ever-changing business environment.

The findings presented in this study show that the effectiveness of the work depends on the appropriate choice of communication tools. They also reveal that teleworking poses new challenges in internal communication with employees in order to strengthen their bonds and relationships.

To provide effective implementation of these tools in the Slovak business environment, it is necessary to address constraints such as technological differences, information overload and potential privacy/security threats. Further research is needed to explore the long-term effects of using these communication tools and to identify best practices for the post-pandemic work environment.

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Učinkovitost komunikacijskih orodij v slovaških podjetjih pred in med pandemijo Covid-19

Ozadje in namen: Pandemija Covid-19 je prinesla spremembo v načinu poslovanja podjetij, kar je pospešilo sprejetje digitalnih komunikacijskih orodij. Študija preučuje učinkovitost komunikacijskih orodij v slovaških podjetjih in primerja dinamiko pred in med pandemijo. Poudarja potrebo po reševanju komunikacijskih izzivov v podjetjih.

Metodologija: Podatke smo zbrali s pomočjo elektronskega vprašalnika, pri čemer je reprezentativni vzorec obsegal 555 anketirancev. Rezultate raziskave smo obdelali s statističnimi orodji, kot so McNemarjev test, Pearsonov test hi-kvadrat in Cramerjev V.

Rezultati: Pred pandemijo so slovaška podjetja uporabljala tradicionalne komunikacijske metode, kot so osebna srečanja, telefonski klici in e-pošta. Vendar je med pandemijo odvisnost od digitalnih komunikacijskih orodij, kot so video konference in platforme za sodelovanje, močno narasla.

Zaključek: Raziskava kaže, da so podjetja med pandemijo prepoznala pomembnost digitalnih komunikacijskih orodij za ohranjanje poslovnih operacij in sodelovanje zaposlenih. Covid-19 je deloval kot katalizator za preoblikovanje komunikacijskih praks v slovaških podjetjih. Ugotovitve poudarjajo nenehno pomembnost digitalnih komunikacijskih orodij v povojnem obdobju ter potrebo po uravnoveženem pristopu med tradicionalnimi in digitalnimi metodami komunikacije za optimizacijo celotne učinkovitosti.

Ključne besede: *Komunikacija, komunikacijska orodja, učinkovitost, slovaška podjetja, Covid-19*

Introducing the Intensity of Influence in Decision-Making Style Analysis

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Background/Purpose: The examination of decision-making styles (DMS) is crucial for understanding how individuals approach choices and form preferences. Two influential frameworks in the DMS discourse, proposed by Scott & Bruce, and Rowe, provide insightful lenses for correlating dominant styles with an array of personal characteristics.

Methods: This comprehensive study delves into questionnaire results obtained in 2020 and 2022, employing methodologies aligned with Scott & Bruce, and Rowe. The survey targeted cohorts of business and military students, capturing nuanced aspects of decision-making. Introducing innovative concepts, namely submissive DMS and intensity of influence, expanded the analytical framework and facilitated a deeper understanding of decision-making dynamics.

Results: The analysis revealed substantial variations in decision-making styles within student populations, elucidating correlations with distinct personal characteristics. The incorporation of the intensity of dominance concept allowed for nuanced interpretations, particularly during the challenging COVID-19 period and the subsequent return to normalcy.

Conclusion: The integration of proposed concepts represents a significant enrichment for future research in the field of DMS. This study underscores the critical role of evolving methodologies in elucidating the intricacies of decision-making processes. The ongoing refinement of these methodologies promises a more nuanced understanding of how individuals navigate complex decision-making scenarios.

Keywords: *Decision-making style, Dominant, Submissive, Intensity of dominance, Students; Business, Army*

1 Introduction

Decision-making styles (DMSs) are the ways how people make decisions. Certain DMS can be observed through several aspects: the number of participants involved in the decision-making process, the duration of the decision-making process, tolerating uncertainty and risks in decision-making problems, the way of thinking (is it analytic, intuitive, or combined), and others. In literature, different researchers mostly focused on the way of thinking and the way of thinking. In our paper, the focus is on DMS

with respect to the way of thinking. More precisely, we are focused on decision-making by Rowe (Rowe & Mason, 1987) and Scott & Bruce (Scott & Bruce, 1995). There are instruments developed for each of them that are used to determine the dominant DMS of individuals. When we know the dominant DMS of an individual, we can better understand their behaviour in certain situations:

- knowing our dominant DMS can help us in a way that we change our behaviour in situations when acting upon our dominant DMS will result in bad consequences for us. For example, if students' dominant DMS is dependent and they must make

important decisions for their future, the result of applying dependent DMS in this situation might not be the best for them. But, knowing the fact that they are characterized by dependent dominant DMS can guide them to rethink the situation, and insist on making personal decisions by themselves, or at least to consult the right people for the decision, and then decide alone.

- Or, on the other hand, if students know the dominant DMS of other students they live or work with, they can predict the behaviour of students they live or work with. For example, if students must work together on a group project, and they know that one of the team members is characterized by delaying dominant DMS, which can result in the team not submitting the project on time, the team members can agree on setting up an earlier deadline for individual contributions.
- This paper's contribution is widening the analysis of the results of two instruments in two ways: analysing the submissive DMS and analysing the intensity of the dominant style over other styles in the instrument. Those two concepts are not investigated so far in the literature, and we believe that investigating those two components can be useful in scientific research and practical implications.
- The submissive DMS is the opposite term of the dominant DMS, it relates to the style an individual uses in less often situations. Like the benefits of knowing the dominant DMS, there are benefits of knowing which DMS we or someone else uses the least. We can have additional knowledge about ourselves and work on ourselves to make better decisions. On the other hand, if someone never uses a certain DMS, we can know how they will not act in certain situations. For example: if some students are characterized by a delaying style as submissive, other students will find them desirable in their teams.
- The intensity of dominance relates to the probability that someone will use their dominant DMS. Some individuals apply their dominant DMS in most cases, but others in just the relative majority of situations. Consequently, there is a need to measure how much a dominant style is dominant over other styles.

With this paper, we are upgrading the theoretical background of two DMS approaches and applying them in the case of the student population in Croatia trying to identify the differences in DMS profiles of students with respect to different characteristics that are related to demographic data (gender, age), type of student (business or army), the type of high school education and year when the questionnaire was filled out. So, the research questions related to our student sample are:

1. Is there a difference in the results obtained with DMS types by Scott & Bruce?
2. Is there a difference in the results obtained with DMS types by Rowe?
3. Is there a difference in the distribution of dominant DMS types by Scott & Bruce?
4. Is there a difference in the distribution of dominant DMS types by Rowe?
5. Is there a difference in the distribution of submissive DMS types by Scott & Bruce?
6. Is there a difference in the distribution of submissive DMS types by Rowe?
7. Is there a difference in the achieved results of the intensity of domination of the most dominant DMS over other styles by Scott & Bruce?
8. Is there a difference in the achieved results of the intensity of domination of the most dominant DMS over other styles by Rowe?

Introducing new concepts into the DMS theory enables us to analyse the data from new perspectives. In addition, this paper discusses the results of two different instrument applications in the student population. The new concepts introduced in this paper can be used in other types of respondents (managers, employees, volunteers, and others).

This paper is organized as follows: Section 2 briefly presents the most often analysed DMS with respect to the number of participants involved in the process and the way of thinking. Section 3 combines the previous research where different authors analysed the DMS of Rowe or Scott & Bruce. Section 4 presents new concepts in DMS theory (submissive style and intensity of dominance). In Section 5, we describe the methodology that was applied to answer the research questions. In Section 6, we present the results with a discussion and in Section 7 we conclude the research.

2 The DMS Approaches

2.1 DMS Concerning the number of participants

When discussing the number of people included in decision making, democratic and autocratic styles are two end-point styles. Between them, we can observe several different DMS that are sometimes closer to authoritarian styles and sometimes closer to democratic styles. Those styles can be graphically presented using Figure 1.

The figure aggregates the different DMS by Likert, Heller, Vroom, Yetton, Jago, Bass, Valenzi, Muna, and Ali (Ali, 1993; Kostanjevac et al., 2021; Lührs et al., 2018). SQ (status quo) represents the style where the decision is not made. In the autocratic I. style, one person makes the decision. In the delegation style, the making decision is forwarded to someone else. In autocratic II. style, the de-

cision maker asks for specific information and then makes the decision alone. In consultative I. and II. styles, decision-makers ask for the opinions of other members, and they help make decisions. In the pseudo-consultative style, the decision has already been made by the decision maker. Still, the decision maker includes other participants and guides them to the same decision so that they feel like they influenced the decision. A similar situation is in the case of the pseudo-participative DMS. In democratic styles, all participants influence the final decision.

2.2 DMS concerning the way of thinking

When considering DMS with respect to the way of thinking, which is the focus of this paper, there are also several approaches.

The first approach is related to differing analytic, conceptual, behavioural, and directive styles. Initially, those styles were proposed by Rowe and Boulgarides and further investigated by Rowe, Mason, Robbins, Coulter, and others. They are in detail explained in the literature (Abdel-salam et al., 2013; Kostanjevac et al., 2021; Martinsons & Davison, 2007; Robbins et al., 2016). According to them, there are four types of DMS: direct, analytical, behavioural, and conceptual DMS (Rowe & Mason, 1987).

The direct DMS is characterized by a low tolerance for ambiguity and is task-oriented. The decision-making process is quick, with few alternatives and sufficient information (Pennino, 2002). In this style, individuals tend to direct others (Boulgarides, 1984). They are often authoritarian and somewhat aggressive but very effective at achieving results.

Unlike the direct style, the analytical DMS has a high tolerance for ambiguity, and each decision-making process involves an individual being conscientious. For their satisfaction, they enjoy challenges and are often in important positions within the company (Rowe & Mason, 1987). Analytical individuals are prone to logical and somewhat abstract thinking, which enables them to innovate in solving

problems (Boulgarides, 1984). An analytical approach to decision-making enables decision-makers to look at problems from many perspectives (Pennino, 2002).

The conceptual style is human-oriented and implies high cognitive complexity. Many alternatives are considered when making decisions. Because of their orientation towards the future, they value quality and create common goals with their associates. They are very organised, independent, and actively involved in interacting with others, but they reject the pressure imposed (Rowe & Mason, 1987). They often initiate ethics and values and solve problems using intuition (Pennino, 2002). Behavioural DMS is characteristic of individuals who are empathetic and sympathetic to collaborators (Boulgarides, 1984). They develop listening skills, accept suggestions, and communicate easily with their interlocutors. When making decisions, they do not use data or analytics but are based on conversations and meetings with associates with a short-term orientation toward goals (Rowe & Mason, 1987).

There is an instrument, the Decision Style Inventory (DSI) by Alan Rowe which was designed to determine the decision style based on given answers in the test. The DSI test is used in the research part of this paper.

The second approach is related to DMS by Scott & Bruce. They identified five types of DMS: rational, intuitive, dependent, avoiding, and spontaneous. Each of these styles has typical characteristics.

A person with a rational DMS, as the name itself, tells each decision-making process of access in a reasonable manner, accompanied by a thorough analysis and logical evaluation of the alternative. There is also a commitment to research and finding quality information to understand the actual situation (Scott & Bruce, 1995).

The intuitive DMS follows the internal sentiment of a decision-maker. When making decisions, an intuitive person is devoted to analysing details based on his premonitions and feelings (Öngen, 2014).

The dependent style is characterized by the fact that it relies heavily on others. The advice, thinking, and experience of others make it possible to make a decision

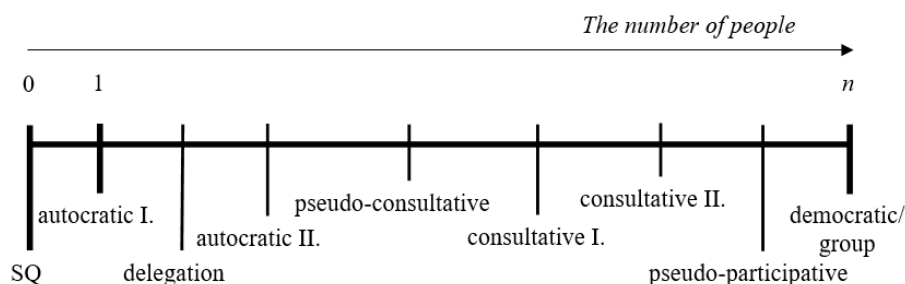


Figure 1: Systematization of the most common DMS with respect to the number of participants that are involved in the decision-making process (authors)

(Scott & Bruce, 1995). The dependent style indicates a lack of intellectual and practical independence (Varzaneh & Aliahmadi, 2015). Avoiding style tries to avoid making decisions. In addition to delays, the style is characteristic of last-minute decision-making (del Campo et al., 2016). The fifth style is the spontaneous style. In a spontaneous style, decision-makers tend to make hasty decisions with the desire to keep the decision process as short as possible (Parker et al., 2007).

To identify the dominant DMS of an individual, a validated instrument was created, i.e. the General Decision-Making style (GDMS) test. The GDMS was also used in this paper.

3 Previous Research

DMS are the subject of numerous studies, and their wide application can be seen in different research domains. Except in education, the decision-making instrument is applied in medicine, management, investment, and public administration services. Below we present an overview of the scientific contribution of both mentioned instruments.

By analysing the results of testing Turkish youth, Öngen (2014.) estimates the relationship between Vocational identity status, perfectionism, and decision-making style. The study was conducted on 317 Turkish university students and university graduates. The rational style was found to be a positive predictor of both career exploration and commitment. The dependent style is a positive predictor of career exploration, while the intuitive DMS is a positive predictor of commitment. It was confirmed that the intuitive style is a negative predictor of review, while the avoiding style is a positive predictor of reconsideration (Öngen, 2014).

A similar study was conducted at the University of Split. Students' demographic and psychological characteristics and DMS were considered. The questionnaire by Scott & Bruce was used during the study, and 77 students were examined. As in the previous study, the results show that women are more prone to intuitive and spontaneous decision-making than men. Given work experience, students with work experience are more inclined to the rational, intuitive, and evasive way of making decisions. Students who are more prone to achievement prefer a spontaneous DMS. When you look at the outcome of decisions and DMS, the most satisfied students are those who use a rational DMS (Bulog et al., 2017). To assess the psychometric properties of the Italian GDMS test, a study was conducted on 422 students at the University of Bologna. On the same occasion, 230 students completed the Italian variant of the SOLAT test, which assesses the style of learning and thinking. Based on the completed questionnaires, the data shows the reliability of the Italian variant of the GDMS test, and the correlations with the

SOLAT questionnaire confirm this (Gambetti et al., 2008). The GDMS test was used to investigate the relationship between decision-making and cognitive styles measured by the Cognitive Style Inventory. The study involved 162 Iranian students. The study's main conclusion is that cognitive styles positively impact DMS (Motvaseli & Lotfizadeh, 2016).

The study's authors, which aim to understand the relationship between divergent thinking and DMS, found that a rational DMS plays a crucial role in divergent thinking. In addition, the hypothesis that the intuitive DMS is essential for divergent thinking has yet to be confirmed. The hypothesis that addicted and evasive styles are not involved in divergent thinking has been confirmed. The authors draw these conclusions based on data from 186 subjects and students of psychology in Italy (Palmiero et al., 2020). The effect of experiential learning on managers' strategic competencies and decision style was tested using Rowe's instrument. According to data from 22 surveyed executive MBA students, it was concluded that knowledge and strategic competencies could be improved through simulations of business strategies. However, practice only partially influences decision-making (Torres & Augusto, 2017). The GDMS test was also suitable for analysing the relationship between decision styles, the degree of self-judgment and working conditions among police investigators, and the stress, inclination to burn out, and quality of sleep. The survey included 203 police investigators from Sweden. The results suggest that avoiding and dependent DMS are related to higher self-esteem, burning-out tendencies, and poor sleep quality. Gender analysis has shown that men are more prone to rational decision-making and women to dependent decision-making (Salo & Allwood, 2011).

The scope of application of the GDMS test is shown by research on the relationship between DMS and emotional intelligence among police negotiators in crises, police officers and students. The survey is based on a sample of 438 participants, out of which 117 are hostage and crisis negotiators (HCNs), 118 are police officers and 203 are post-graduate students. The analysis results show that all police officers have a lower tendency to avoid decisions and a higher level of emotional intelligence than students. For all three groups of respondents, the rational style is their primary and secondary intuitive DMS (Grubb et al., 2018). The relationship between emotional intelligence (EQ) and DMS was observed in an Iranian survey involving 96 investors on the stock exchange. EQ and GDMS test results showed an association between EQ and rational and intuitive style, while no significant association was found between EQ and dependent, avoidance, and spontaneous style (Varzaneh & Aliahmadi, 2015).

Considering the DMS according to Scott & Bruce and the locus control, surveys were conducted on a sample of 365 Turkish managers. According to respondents' responses, the manager has a dominant rational DMS. It was noted

that the internal control locus does not affect dependent and spontaneous DMS, has a positive impact on rational and intuitive style, and has a negative impact on avoiding DMS. The external locus of the controller does not affect the rational and dependent style, but it has a positive effect on the intuitive, avoiding, and spontaneous DMS (Akyürek & Guney, 2018). Pennino's research shows how 270 managers in the United States make decisions and how much they relate to their moral development. The Alan Rowe Decision style intervention (DSI) instrument was used to determine DMS. The study concludes that people using a direct style have less moral judgment (Pennino, 2002). The same tool was used in a study that looked at the DMS of the Dean in four higher education institutions in Malaysia. A total of 60 deans participated, and it was found that more than half of the deans received behavioural DMS, while analytical and conceptual styles were supportive (Jamian et al., 2013). Another example of using this instrument is how the hemisphere of the manager's brain influences decision-making. Based on a sample of 694 managers from three Malaysian universities, the results show that the first university is dominated by behavioural decision-makers who use the brain's right hemisphere when making decisions. The second university is dominated by analytical decision-makers using the brain's left hemisphere, and the third university is dominated by conceptual decision-makers using the brain's right hemisphere (Amzat, 2011). Investigating the connection between personality, DMS, and problematic smartphone use (PSU), based on three completed questionnaires (ZKA-PQ/SF, GDMS, and ATeMo) filled in by 1,562 research participants, it was found that avoiding, dependent, and spontaneous styles are positively correlated with PSU, the negative relationship is in case of rational style and null in the case of intuitive. In addition to the problematic use of smartphones, they are connected mainly by avoiding and spontaneous style (Urieta et al., 2023).

4 Submissive DMS and Intensity of Dominance

Previous research related to the application of Rowe and Scott & Bruce's DMS (using GDMS and DSI or upgraded instruments) was mostly related to identifying the dominant DMS per each approach. Additionally, researchers analysed connections and correlations between dominant DMS and other personal characteristics such as career prediction, position, emotional intelligence, or some behaviour.

In this paper, we are expanding the analysis of GDMS/DSI instruments results to the submissive style and the intensity of dominance of the dominant style. We describe those two concepts using the example in Figure 2, which presents the results of GDMS instrument application by

two persons, A and B.

The submissive style is the opposite term of the dominant style. In GDMS and DSI results, an individual's submissive DMS is the style that is less characteristic of an individual, and the lowest result is achieved in that style. Analysing Figure 2, we can conclude that the dominant DMS of both A and B, using the Scott & Bruce approach, is rational style. In addition, the submissive style in both cases is the avoidant style. Defining the submissive style opens a whole new space for analysis of connections between the submissive style and different personal characteristics, like in the previous research. There are several benefits of analysing submissive styles. Here are some examples:

- Having the information that a specific submissive style characterizes an individual and that there is a positive correlation between a specific submissive style and some personal characteristics (ex. PSU) can motivate someone to take actions that will decrease PSU.
- If an individual knows that they are characterized by a specific submissive style (ex. spontaneous), but for their job is important to apply different practices in decision-making (ex. rational), it can motivate that person to change the behaviour and consequently DMS.
- Suppose two people are on opposite sides in the negotiation process, knowing that the opponent is characterized by a specific submissive DMS (ex., rational). In that case, an individual can plan their behaviour (use negotiation strategy or technique) that will request a rational approach from the opponent and, consequently, confuse the opponent and win the conflict.

The intensity of dominance (ID) is a measure of the dominance of the dominant DMS over others. In our example (Figure 2), both persons have the same dominant and submissive DMS. However, it does not mean that they apply the same decision-making strategies. It is important to observe the whole profile of GDMS results. In the case of person A, all styles are highly presented in behaviour (all results between 19 and 23). In person B's case, some styles are more often applied, and some less. The domination of rational style in A is lower than the domination of rational style in B. To quantify the ID, we can apply several approaches. Here, we will calculate it as the sum of differences between dominant decision style results ($\max_j DS$) and results of other decision styles (DS_i).

$$ID_j = \sum_{i=1}^5 (\max_j DS - DS_i)$$



Figure 2: GDMS results of persons A and B

Table 1: Statistical methods applied per research questions

Research question	Statistical methods
Is there a difference in achieved results in DMS types by Scott & Bruce?	t-test, one-way ANOVA
Is there a difference in achieved results in DMS types by Rowe?	t-test, one-way ANOVA
Is there a difference in the distribution of dominant DMS types by Scott & Bruce?	χ^2 test
Is there a difference in the distribution of dominant DMS types by Rowe?	χ^2 test
Is there a difference in the distribution of submissive DMS types by Scott & Bruce?	χ^2 test
Is there a difference in the distribution of submissive DMS types by Rowe?	χ^2 test
Is there a difference in the achieved results of the intensity of domination of the most dominant DMS over other styles by Scott & Bruce?	t-test, one-way ANOVA
Is there a difference in the achieved results of the intensity of domination of the most dominant DMS over other styles by Rowe?	t-test, one-way ANOVA

If we apply the formula to the data in Figure 2, the results are: $ID_A=10$ and $ID_B=26$. Now, we can easily see the differences between persons A and B and see that the dominance of the dominant style is high, medium, or low. Higher ID means higher dominance of dominant style over others. Low ID can lead us to the conclusion that a person with low ID is characterized by no significant dominance of one style (with no dominant style) and can be the basis for introducing the hybrid DMS as a new possibility in the DMS divisions (both, Rowe, and Scot & Bruce). Here are some other thoughts regarding the ID and possible future research:

- It will be possible to seek the correlation between ID and other personal characteristics and create new knowledge,
- New knowledge about the individuals can be extracted by applying statistical tests to identify significant differences between subsets in different populations,
- It will be possible to evaluate the success of individuals' decision-making by connecting the ID and success, ex., if managers at the highest level in the organization have low ID, it means that they apply all DMS almost equally; however, it is not recommended that they often apply the avoidant

or spontaneous style.

The DSI (Rowe styles) results for both concepts are similar to GDMS's interpretation. The formula of ID will count variable i from 1 to 4 since there are four DMS by Rowe.

5 Methodology of Research

After we explained the DMS and related instruments, previous research that applied those instruments, and after we defined new concepts (submissive DMS and the intensity of dominance), we will present the methodology that was applied to answer the research questions set up in the introduction. The research sample is related to undergraduate students: we have army students and business students from Croatia. The dataset consists of 263 students. Among them, some students filled out both questionnaires in 2020, and some filled out the questionnaires in 2022, and this will enable us to interpret the results in light of COVID-19.

The statistical methods that are applied in this research are presented in Table 1. In addition, descriptive statistics were used to describe the datasets and to present summative results related to achieved scores for both instruments, the distribution of dominant and submissive styles for both

Table 2: Datasets

Dataset	Description	Size	Dataset	Description	Size	Dataset	Description	Size
S1	joint 2020&2022 dataset	263	S4	Male subset of S1	85	S7	Army subset of S1	105
S2	2020 subset	138	S5	Female subset of S1	178			
S3	2022 subset	125	S6	Business subset of S1	158			

Table 4: Averaged scores per DMS (Bruce & Scott)

Scott & Bruce	S1	S2	S3	S4	S5	S6	S7
R - rational	19,859	19,594	20,152	19,365	20,096	20,032	19,600
I - intuitive	19,293	19,058	19,552	18,859	19,500	19,304	19,276
D- dependent	17,498	17,217	17,808	16,212	18,112	18,070	16,638
A – avoidant	12,817	12,529	13,136	12,318	13,056	13,671	11,533
S - spontaneous	14,734	14,717	14,752	14,941	14,635	14,342	15,324

Table 5: Averaged scores per DMS (Rowe)

Rowe	S1	S2	S3	S4	S5	S6	S7
D – directive	73,738	71,616	76,080	75,106	73,084	73,924	73,457
A – analytic	79,289	80,768	77,656	83,153	77,444	77,468	82,029
C – conceptual	75,243	76,130	74,264	74,129	75,775	76,316	73,629
B - behavioral	71,730	71,486	72,000	67,612	73,697	72,291	70,886

instruments and averaged values for the intensity of dominance for both instruments. The collected data were further analysed using MS Excel and Medcalc.

The research questions were analysed from the position of the described dataset and different subsets of the main dataset. They are presented in Table 2.

The data were collected through a survey that included two instruments GDMS (Scott & Bruce) instrument, the DSI (Rowe) instrument, and general questions about demographic and personal data: gender, age, the type of high school education, the type of student (army or economy) and year (when the data were collected).

6 Results with the Discussion

6.1 Demographic data about the respondents

The respondents' profile with respect to demographic and personal data is given in Appendix A. The number of

female students is twice as high as the number of male students. The reason for that is the fact that the business study program is mostly enrolled by female students. Only a few male students enroll in business programs. In the case of army students, the situation is not the same in favour of male students. The respondents were mostly 20 to 24 years old at the time of data collection. About half of them finished the vocational high school program, and the other half are related to the gymnasium (grammar school). These results follow the census of the student population in the academic year 23/24 in Croatia. 151,827 students are studying in Croatia, almost 60% of whom are female. (Državni zavod za statistiku, 2023)

6.2 Analysis of DMS using the descriptive statistics

GDMS (Scott & Bruce) instrument consists of 25 questions. Five questions are related to different DMS. Here, respondents have to evaluate each question on a scale of 1 to 5 evaluating the level of agreement on how much some-

thing is related to them. Consequently, achieving up to 25 points for each DMS is possible. The dominant DMS is the one with the highest score.

DSI (Rowe) instrument consists of 20 instances with four possible answers for each (each is associated with one DMS). For each instance, respondents have to give 8 points to the answer that is mostly related to them, 4 points to their second choice, 2 points to the third choice, and 1 point to the last choice. Consequently, it is possible to achieve between 20 and 160 points per style (the sum of all responses is always 300).

Tables 4 and 5 present achieved averaged scores in both instruments and for all datasets.

As can be seen from the tables, the highest scores are achieved by rational and analytic styles, which is not surprising for a higher-education population. The lowest scores are achieved by avoidant style and behavioural style. The surprising result is related to behavioural style. Even in S6, business students, who have to work a lot in teams, apply this style (which is related to group decision making) the least. Since the study was conducted during the COVID-19 pandemic and general isolation, the lack of social activities may have an impact on behavioural style.

Tables 6 and 7 present distributions of the number of students per dominant DMS. Tables 8 and 9 present distributions of the number of students per submissive DMS.

Table 6: The distribution of students per dominant DMS (Bruce & Scott)

Scott & Bruce	S1		S2		S3		S4		S5		S6		S7	
	No	%	No	%	No	%	No	%	No	%	No	%	No	%
R	99	37,64	56	40,58	43	34,40	32	37,65	67	37,64	60	37,98	39	37,14
I	61	23,19	29	21,01	32	25,60	25	29,41	36	20,23	35	22,15	26	24,76
D	40	15,21	15	10,87	25	20,00	9	10,59	31	17,42	26	16,46	14	13,33
A	11	4,18	7	5,07	4	3,20	5	5,88	6	3,37	10	6,33	1	0,95
S	6	2,28	6	4,35	0	0,00	3	3,53	3	1,69	3	1,90	3	2,86
m	46	17,49	25	18,12	21	16,80	11	12,94	35	19,66	24	15,19	22	20,95

Table 7: The distribution of students per dominant DMS (Rowe)

Rowe	S1		S2		S3		S4		S5		S6		S7	
	No	%	No	%	No	%	No	%	No	%	No	%	No	%
D	47	17,87	17	12,32	30	24,00	14	16,47	33	18,54	34	21,52	13	12,38
A	93	35,36	55	39,86	38	30,40	36	42,35	57	32,02	52	32,91	41	39,05
C	62	23,57	39	28,26	23	18,40	22	25,88	40	22,47	36	22,79	26	24,76
B	58	22,05	26	18,84	32	25,60	12	14,12	46	25,84	35	22,15	23	21,91
m	3	1,14	1	0,73	2	1,60	1	1,18	2	1,12	1	0,63	2	1,91

Table 8: The distribution of students per submissive DMS (Bruce & Scott)

Scott & Bruce	S1		S2		S3		S4		S5		S6		S7	
	No	%	No	%	No	%	No	%	No	%	No	%	No	%
R	11	4,18	6	4,35	5	4,00	4	4,71	7	3,93	6	3,80	5	4,76
I	2	0,76	0	0,00	2	1,60	0	0,00	2	1,12	2	1,27	0	0,00
D	18	6,84	8	5,80	10	8,00	10	11,77	8	4,49	8	5,06	10	9,52
A	145	55,13	77	55,80	68	54,40	49	57,65	96	53,93	78	49,37	67	63,81
S	58	22,05	29	21,01	29	23,20	13	15,29	45	25,28	44	27,85	14	13,33
m	29	11,03	18	13,04	11	8,80	9	10,59	20	11,24	20	12,66	9	8,57

Table 9: The distribution of students per submissive DMS (Rowe)

Rowe	S1		S2		S3		S4		S5		S6		S7	
	No	%	No	%	No	%	No	%	No	%	No	%	No	%
D	70	26,66	42	30,44	28	22,40	18	21,18	52	29,21	46	29,11	24	22,86
A	45	17,11	18	13,04	27	21,60	8	9,41	37	20,79	32	20,25	13	12,38
C	46	17,49	24	17,39	22	17,60	17	20,00	29	16,29	21	13,29	25	23,81
B	95	36,12	51	36,96	44	35,20	40	47,06	55	30,90	55	34,81	40	38,10
m	7	2,62	3	2,17	4	3,20	2	2,35	5	2,81	4	2,53	3	2,86

Table 10: Analysis of averaged intensity of dominance

ID	Range	S1	S2	S3	S4	S5	S6	S7
Scott & Bruce	0-80	23,403	22,862	24,000	24,188	23,028	22,778	24,343
Rowe	0-340	91,992	106,188	76,320	94,600	90,747	89,601	95,590

Those results complement the previous conclusion: most students have rational and analytic styles as dominant and avoidant and spontaneous styles as submissive which is in line with the earlier study by Grubb et al. (2018). In this study, respondents were drawn from a group of people working in crisis management, police officers, and PhD students, i.e. members of a regulated profession and the business environment. Decision style with label m in both approaches indicates multiple dominant or submissive styles.

Table 10 presents achieved averaged results related to the intensity of dominance.

In the second column, we can see the theoretical range of DI in both instruments. In the case of GDMS (Scott & Bruce), the highest DI is achieved when one style is evaluated with a maximum of 25 points and all other (4) styles with a minimum of 5 points. The lowest DI is achieved when all styles are evaluated with an equal number of points. In the case of DSI (Rowe), the highest DI is achieved when one style is evaluated with the highest number of points (20 instances, 8 points – 160 points), the second style is evaluated with 4 points on all 20 instances (80 points in total), the third style is evaluated with 2 points on all 20 instances (20 points in total), and the last style is evaluated with 1 point on all 20 instances (20 points in total). ID, in this case, is 340. The lowest ID is achieved when each style achieved 8 points in five instances, 4 points in five instances, 2 points in five instances, and 1 point in five instances.

However, the presented cases when maximum DI values will be achieved are almost impossible in practice. In our study, the average DI in GDMS is around 23, and in the case of Rowe is around 90. In addition, we can see differences among subsets, ex., in the case of DSI (Rowe),

DI(S2)=106 and DI(S3)=76. Data from S2 were collected at the beginning of the COVID-19 pandemic, and really, we can interpret this situation as the situation when people had to adjust to the new reality and strict rules. Adjusting and DI are very connected. Higher DI means having domination of DMS. And in the pandemic, there was a lot of need for adjustment to new situations and students applied their dominant decision-making styles in which they felt the most comfortable. In 2022, the situation was calmed, and there was no more need for adjustments than it was in 2020. DI is significantly decreased, which means that students can take some risks and apply different styles. So, we can conclude, that if there is a high need for adjustment to new conditions, students do not take risks in using all decision-making styles, but play safe with the style they feel the most comfortable.

6.3 Responding to research questions

1. Is there a difference in the results obtained with DMS types by Scott & Bruce?

To respond to the first research question data analysis according to the criteria of gender, high school, type of student, and year was performed with the t-test and according to the criteria of age with the one-way ANOVA. Due to the size of the summary matrix, we will not present all results of t-tests and one-way ANOVA but will present the results when statistically significant results are achieved, Table 11.

To conclude, there are some significant differences identified in the dataset. Mostly they are related to gender (female students achieve statistically significant higher scores than male students on rational and dependent

styles), high school education (students who finished vocational high school programs achieve higher scores on rational and intuitive styles), and type of student (business students achieved higher scores on avoidant and dependent styles than army students).

2. Is there a difference in the results obtained with DMS types by Rowe?

To respond to the second research question, we applied t-tests and one-way ANOVA. Due to the size of the summary matrix, we will not present all results of tests but will present the results when statistically significant results are achieved, Table 12.

To conclude, there are some significant differences identified in the dataset. Mostly, they are related to gender (female students achieved significantly higher scores in behavioural and conceptual styles, and males in analytic style) which is in line with previous research by the author Bulog et al., 2017, conducted specifically with the student population and, type of students (army students achieved significantly higher scores in analytic style, and business students in conceptual and behavioural styles) which is expected because of the type of work the student is expected to do in the future, and year (students who filled the

questionnaire in 2022 achieved significantly higher scores in directive style). The year 2022 is the year in which the pandemic was over, we returned to normal activities and social contacts, so a direct style is expected.

3. Is there a difference in the distribution of dominant DMS types by Scott & Bruce?

To answer the third question, χ^2 tests are implemented. The full results are presented in Table 13.

We identified eight statistically significant differences in the distribution of dominant DMS by Scott & Bruce with respect to four personal characteristics (gender, high school education, type of student, and year when the data were collected):

1. The distribution of dominant styles of male students is significantly different from that of female students when datasets for 2020 and 2022 are observed separately.
2. The distribution of dominant styles of students who finished vocational is significantly different from those of students who finished grammar school.
3. The distribution of dominant styles of business students is significantly different from that of army students in 2020 and in a set of male students.

Table 11: Statistically significant differences (Scott & Bruce)

Criteria	Gender						Age	Highschool education								Type of student							
Dataset	S1	S1	S2	S2	S3	S6	S4	S1	S1	S3	S3	S5	S6	S6	S1	S1	S1	S2	S3	S4	S5		
Style	R	D	R	D	D	D	A	R	I	R	I	I	R	I	D	A	S	A	D	A	A		
Value	f	f	f	f	f	f	23y	v	v	v	v	v	v	v	b	b	a	b	b	b	b		
p-value	0,03	0,00	0,02	0,04	0,00	0,01	0,03	0,01	0,01	0,01	0,01	0,02	0,00	0,00	0,00	0,00	0,02	0,00	0,00	0,00	0,03		

m-male; f-female; a-army; b-business; v-vocational

Table 12: Statistically significant differences (Rowe)

Criteria	Gender						Age	Type of student					Year						
Dataset	S1	S1	S3	S3	S3	S7	S1	S1	S3	S3	S3	S1	S4	S4	S5	S6	S7	S7	
Style	A	B	A	C	B	B	A	A	A	C	B	D	D	C	A	B	D	B	
Value	m	f	f	f	f	f	29 years	a	a	b	b	2022	2020	2022	2020				
p-value	0,00	0,00	0,00	0,01	0,01	0,02	0,02	0,01	0,00	0,04	0,01	0,01	0,04	0,00	0,01	0,03	0,00	0,01	

m-male; f-female; a-army; b-business

Table 13: The distribution of dominant DMS by Scott & Bruce

	C	V	S1	S2	S3	S4	S5	S6	S7
Gender	χ^2	0,2156	0,0391	0,0147				0,037	0,2019
Age	χ^2	0,5364	0,6032			0,3117	0,3174	0,0881	0,7289
HSE	χ^2	0,0455	0,1958			0,481	0,1187	0,3367	0,0669
Type	χ^2	0,2681	0,0043	0,1483	0,0314	0,2583			
Year	χ^2	0,0533				0,1163	0,0011	0,0009	0,1209

4. The distribution of dominant styles of students who filled out the questionnaire in 2020 (during the COVID-19 pandemic) is significantly different from those of students who filled out the questionnaire in 2022, in the case of female and business students.

4. Is there a difference in the distribution of dominant DMS types by Rowe?

To answer the fourth question, χ^2 tests are implemented. The full results are presented in Table 14.

Here, we identified four statistically significant differences in the distribution of dominant DMS by Rowe with respect to two personal characteristics (age and year when the data were collected):

1. The distribution of dominant styles is significantly different among students with respect to their age in 2020.
2. The distribution of dominant styles of students who filled out the questionnaire in 2020 (during the COVID-19 pandemic) is significantly different from the distribution of students who filled out the questionnaire in 2022 in the case of all students, female students, and army students.

5. Is there a difference in the distribution of submissive DMS types by Scott & Bruce?

To answer the fifth question, χ^2 tests are implemented. The full results are presented in Table 15.

We identified four statistically significant differences in the distribution of submissive DMS by Rowe with respect to three personal characteristics (age, high school education, type of student):

1. The distribution of submissive styles is significantly different among students with respect to their age in the case of male students.
2. The distribution of submissive styles of students who finished vocational is significantly different from the distribution of submissive styles of students who finished grammar school in the case of students who filled out the questionnaire in 2022 and in the case of business students.
3. The distribution of submissive styles of business students is significantly different than the distribution of dominant styles of army students.

Table 14: The distribution of dominant DMS by Rowe

C	V	S1	S2	S3	S4	S5	S6	S7
Gender	χ^2	0,219	0,448	0,062			0,6683	0,0876
Age	χ^2	0,4365	0,0312	0,7111	0,4775	0,4519	0,7768	0,1175
HSE	χ^2	0,2803	0,344	0,7054	0,323	0,5899	0,2366	0,5442
Type	χ^2	0,3285	0,1327	0,2853	0,7804	0,1506		
Year	χ^2	0,0247			0,2138	0,0226	0,067	0,046

Table 15: The distribution of submissive DMS by Scott & Bruce

C	V	S1	S2	S3	S4	S5	S6	S7
Gender	χ^2	0,1431	0,1686	0,3279			0,344	0,8495
Age	χ^2	0,4244	0,0667	0,5649	0,0071	0,5478	0,8216	0,1552
HSE	χ^2	0,132	0,8537	0,0286	0,6764	0,3262	0,0342	0,8113
Type	χ^2	0,0267	0,0749	0,053	0,5054	0,2226		
Year	χ^2	0,5598			0,2841	0,7485	0,5711	0,181

Table 16: The distribution of submissive DMS by Rowe

C	V	S1	S2	S3	S4	S5	S6	S7
Gender	χ^2	0,0342	0,7724	0,0042			0,0735	0,5046
Age	χ^2	0,4209	0,6624	0,0275	0,1502	0,8889	0,8369	0,20650,
HSE	χ^2	0,046	0,1929	0,3051	0,3903	0,131	0,2368	0,5009
Type	χ^2	0,1155	0,1904	0,0009	0,7389	0,0954		
Year	χ^2	0,3179			0,1972	0,1933	0,0899	0,0075

Table 17: The analysis of intensities of dominance for Scott & Bruce and Rowe decision styles

C	Values	S1		S2		S3		S4		S5		S6		S7	
		ID (SB)	ID (R)	ID (SB)	ID (R)	ID (SB)	ID (R)	ID (SB)	ID (R)	ID (SB)	ID (R)	ID (SB)	ID (R)	ID (SB)	ID (R)
Gender	p	0,392	0,531	0,357	0,969	0,720	0,781					0,775	0,994	0,923	0,894
Age		0,7716	0,344	0,589	0,2656	0,8512	0,97	0,28	0,79	0,69	0,24	0,82	0,78	0,67	0,34
HSE		0,019	0,365	0,286	0,083	0,027	0,460	0,253	0,3508	0,023	0,758	0,010	0,709	0,276	0,489
Type		0,22	0,30	0,51	0,26	0,179	0,490	0,68	0,615	0,42	0,528				
Year		0,3701	<,0001					0,804	0,010	0,31	<,0001	0,573	0,0009	0,315	<,0001

6. Is there a difference in the distribution of submissive DMS types by Rowe?

To answer the sixth question, χ^2 tests are implemented. The results are presented in Table 16.

Here, we identified six statistically significant differences in the distribution of submissive DMS by Rowe with respect to five personal characteristics (gender, age, high school education, type of student, and year when the data were collected): the distribution of submissive styles of male students is significantly different than the distribution of dominant styles of female students; the distribution of submissive styles is significant among students with respect to their age in 2022.; the distribution of submissive styles of students who finished vocational is significantly different than the distribution of dominant styles of students who finished grammar school; the distribution of dominant styles of business students is significantly different than that of army students in the case of 2022.; the distribution of dominant styles of students who filled out the questionnaire in 2020 (during the COVID-19 pandemic) is significantly different than those of students who filled out the questionnaire in 2022 in the case of army students.

7. Is there a difference in the achieved results of the intensity of domination of the most dominant DMS over other styles by Scott & Bruce?

8. Is there a difference in the achieved results of the intensity of domination of the most dominant DMS over other styles by Rowe?

Research questions 7 and 8 will be analysed together. Table 17 presents the results of t-tests and one-way ANOVA that were implemented to respond to those two research questions.

The results show that there are significant differences in ID with respect to two personal characteristics (high school education and year when the data were collected): Students who finished vocational high school achieved statistically significantly higher intensities of dominance than students who finished grammar school. It means students who finished vocational high school have significantly higher dominance of their dominant style over other styles. This is only true in the case of the Scott & Bruce instrument; Students who filled the DSI (Rowe) questionnaire in

2020 achieved statistically significantly higher intensities than students who filled the same questionnaire in 2022. This result additionally confirms previous discussions related to Table 10: in the COVID-19 period, students had to adjust their behaviour in terms of making decisions to new challenges that they suddenly faced.

7 Conclusion

In this paper, we gave the theoretical background of DMS and presented some previous research related to DMS defined by Scott & Bruce, and Rowe. So far, researchers were mostly oriented to the application of one instrument, and authors analysed dominant DMS. Additionally, they analysed connections (correlations) between decision styles and some personal characteristics of individuals. In our study, we deal with two instruments at the same time. Besides analysing dominant DMS, we proposed two new concepts in analysing DMS that were not analysed in the literature so far. They are submissive DMS and the intensity of dominance of dominant style(s) over others. The submissive DMS is the least often used decision style. Intensity of dominance is the level of dominance of the most often used DMS(s) over others. Both concepts can be included in future research in this field because their inclusion can contribute to discovering new knowledge and open new perspectives in concrete situations.

In the research part, we analysed the DMS of students that study in two fields: army and business. The data were collected in 2020 and 2022, which enabled us to interpret the results from the position of COVID-19 influence. The living and studying conditions in 2020 when the data were collected were very strict, so students had to adjust to strong rules which resulted in higher dominance of their dominant DMS over others.

Related to future research, having results of DMS per two instruments enables us to analyse the correlation among different variables:

1. Quantitative variables – we can calculate correlation coefficients among achieved scores per two instruments (R, I, D, A, S; D, A, C, B) and intensities of dom-

inance in both instruments. It means that we can make a square multivariate correlation matrix of all variables and see which constructs are correlated and which are not. It will be interesting to see if there are correlations among scores of DMS in the same instrument but also between the instruments, especially because the definitions of some DMS from different approaches are similar. Ex., are rational style scores (from Scott & Bruce's approach) correlated with analytic style scores (from Rowe's approach), or are two intensities of dominance in two instruments in correlation?

2. Quantitative variables – we can apply the if-then rules approach to see if there is: (1) the connection between dominant and submissive DMS in the same approach, (2) the connection between dominant styles respecting both approaches, (3) the connection between submissive styles respecting both approaches, (4) the connection between dominant and submissive styles respecting both approaches.

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Predstavitev intenzivnosti vpliva v analizi stila odločanja

Ozadje in namen: Preučevanje slogov odločanja (DMS) je ključno za razumevanje, kako posamezniki pristopajo k izbiri in oblikujejo preference. Dva vplivna okvira v razpravi o DMS, ki sta ju predlagala Scott & Bruce ter Rowe, nudita vpogled v povezave med prevladujočimi slogi in različnimi osebnimi značilnostmi.

Metodologija: Celovita študija se poglobi v rezultate vprašalnikov, pridobljenih leta 2020 in 2022, pri čemer uporablja metodologije, usklajene s Scott & Bruce ter Rowe. Anketa je zajela skupine študentov poslovnih in vojaških ved, pri čemer so zajeti niansirani vidiki odločanja. Uvedba inovativnih konceptov, kot sta podrejeni DMS in intenzivnost vpliva, je razširila analitični okvir in omogočila globlje razumevanje dinamike odločanja.

Rezultati: Analiza je razkrila pomembne variacije slogov odločanja med populacijo študentov, pri čemer so poudarjene povezave z različnimi osebnimi značilnostmi. Vključitev koncepta intenzivnosti prevlade je omogočila niansirane interpretacije, zlasti v zahtevnem obdobju COVID-19 in kasnejšem vračanju v normalnost.

Zaključek: Integracija predlaganih konceptov predstavlja pomembno obogatitev za prihodnje raziskave na področju DMS. Študija poudarja ključno vlogo razvijajočih se metodologij pri razjasnjevanju zapletenosti procesov odločanja. Nenehno izpopolnjevanje teh metodologij obeta bolj niansirano razumevanje, kako posamezniki premagujejo kompleksne scenarije odločanja.

Ključne besede: *Slog odločanja, Prevladujoč slog odločanja, Podrejen slog odločanja, Intenzivnost prevlade slogov odločanja, Študenti poslovnih in vojaških ved*

Appendix A

Table appendix: Datasets description with respect to demographic and personal data

Criteria	Values	S1		S2		S3		S4		S5		S6		S7	
		No	%	No	%	No	%	No	%	No	%	No	%	No	%
Gender	Male	85	32,3	50	36,2	35	28,0					19	12,0	66	62,9
	Female	178	67,7	88	63,8	90	72,0					139	88,0	39	37,1
Age	20	31	11,8	26	18,8	5	4,0	19	22,4	12	6,7	1	0,6	30	28,6
	21	132	50,2	68	49,3	64	51,2	40	47,1	92	51,7	77	48,7	55	52,4
	22	69	26,2	30	21,7	39	31,2	13	15,3	56	31,5	57	36,1	12	11,4
	23	24	9,1	9	6,5	15	12,0	9	10,6	15	8,4	19	12,0	5	4,8
	24	6	2,3	4	2,9	2	1,6	3	3,5	3	1,7	3	1,9	3	2,9
	29	1	0,4	1	0,7	5	4,0	1	1,2	12	6,7	1	0,6	0	0
HSE	vocational	135	51,3	73	52,9	85	68,0	33	38,8	102	57,3	93	58,9	42	40,0
	gr. school	128	48,7	65	47,1	40	32,0	52	61,2	76	42,7	65	41,1	63	60,0
TSO	business	158	60,1	73	52,9	85	68,0	19	22,4	139	78,1				
	army	105	39,9	65	47,1	40	32,0	66	77,6	39	21,9				
Year	2020	138	52,5					50	58,8	88	49,4	73	46,2	65	61,9
	2022	125	47,5					35	41,2	90	50,6	85	53,8	40	38,1

HSE-high school education; TOS-Type of student

Analysis of Project Success Factors and Project Success Criteria in Micro and Small Firms: Evidence from Slovenia

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Background/Purpose: The aim of this paper is to examine the use of project management practices in Slovenian micro and small firms (MSFs) and to identify project success factors (SF) and project success criteria (SC).

Methods: Research was conducted on a sample of 51 micro and 41 small firms in Slovenia. Data about project SF, SC, most influential decision makers on projects, to which extent selected project management tools are used, and about employment of full-time project managers in MSFs was gathered. Descriptive statistics was used for questionnaire survey data analysis. Similarities and differences between project management practices of micro and small firms were studied.

Results: Results show that 'Clearly defined project objectives' is the most important project SF, and 'Customer satisfaction' is the most important project SC in MSFs. The owner/director of the firm has been identified as the most influential decision maker on projects. Results reveal that 'Clearly defined project objectives' are identified as the most important for project success in MSFs.

Conclusion: Understanding project SF and SC in MSFs and the involvement of project SF and SC in decision making can improve project management practices in MSFs. Based on the results of this study and other similar studies, it can be summarised that managers and decision makers can improve project success by focusing on a narrow area which is defined as project SF. A focus on clearly defined project objectives in the project planning phase is identified as the most important project SF in MSFs. Results also show that customer satisfaction regarding projects is the most important project SC and impacts project success in MSFs.

Keywords: Project, Success, Factor, Micro, Small, Firm, Slovenia

1 Introduction

Companies across various industries are using project management to improve company performance. Project management is defined as planning, organising, directing, and controlling of company resources to complete specific goals and objectives within deadline, within cost, and within performance (Kerzner 2009). Successful project completion can contribute to company performance as re-

vealed in the latest research in the field (Kärnä & Junnonen 2016; Almarri & Boussabaine 2017; Bjelica et al. 2023; Kudyba & Cruz 2023; Aramali et al. 2024, Tabassum et al. 2024). Kerzner (2009) defines project success as the completion of a project within constraints such as time, cost, and performance. According to Kärnä & Junnonen (2016), project participant satisfaction has been identified as one of the key factors affecting project success. Bjelica et al. (2023) also suggest that client consultation on projects

is a key project success factor in small and middle-sized firms (SMEs). Almarri & Boussabaine (2017), on the other hand, highlight the importance of feasibility studies before the project start and reveal that a project technical feasibility study significantly contributes to project performance, especially in completing a project within time constraints. According to Aramali et al. (2024) meeting project objectives and achieving customer satisfaction are the key project success factors that impact company performance. Similarly, Tabassum et al. (2024) report that customer participation on projects positively impacts project success and organisational performance. Kudyba & Cruz (2023) highlight the importance of human intellectual capital for project success. In summation, project success is impacted by many different factors. Some of these are related to the specific type of organisation, such as SMEs (Bjelica et al. 2023), large firms (Mathar et al. 2020; Kiani Mavi et al. 2024; Sońta-Drączkowska & Krogulec 2024; Giorgino & Barnabè 2024), or to other criteria, such as specific type or industry, as demonstrated by the study of Murphy & Ledwith (2007).

However, there is a lack of studies about project success in micro and small firms (MSFs). MSFs are not miniature version of large firms. MSFs operate on a smaller scale of the market and have limited financial and manpower resources (Comeig et al. 2014; Sommerville 2011; Ferreira de Araújo Lima et al. 2021; Nalweyiso et al. 2023). This results in limited capabilities of MSFs to adopt changes, utilise project management practices and improve operational performance compared to middle and large firms (Inan et al. 2022). Due to these differences between firms, it is not appropriate to generalise the results from project management success studies of large firms and apply them to MSFs. Specific research is required to identify which are the key project success factors that support the project success and performance of MSFs.

A lack of research into project management practices in MSFs with an emphasis on the study of key project SF and SC was identified as a research gap and attracted our attention. In this research we address the specific problem of how to increase project success in MSFs based on project SF and SC and improve the related performance of MSFs. The main research question in this research examines which are the key project SF and project SC in MSFs.

The aim of this study is to analyse the latest project management practices and identify key project SF and SC specifically in MSFs, to identify differences between micro and small firms and previous research in this field. This problem hasn't yet been addressed in the latest research in relation to MSFs. The final goal of this research is to suggest how managers can improve project success in MSFs. This study focuses on a population of micro and small firms in Slovenia. The latest data from AJPES, which is public agency for business entities in the Republic of Slovenia, reveals that MSFs present 93% of all reg-

istered firms in Slovenia; 89.7% of them are micro firms, and 8.9% of them are small firms. Data also reveals that 42% of micro firms and 51% of small firms in Slovenia are defined as fast-growing firms (AJPES 2024). Rotar et al. (2019) also reveal that micro firms contribute around 30%, and small firms together with middle-sized firms contribute approximately 20% of the total employment in the EU.

All these perspectives give additional weight and importance to a study of project management practices in MSFs with special attention paid to project SF and SC to improve the project success and performance of MSFs.

2 Theoretical background

Project success is impacted by many factors, such as: completing a project within the planned time, quality and performance (Kerzner 2009), fulfilling client expectations (Kärnä & Junnonen 2016), carrying out detailed technical studies before the project start (Almarri & Boussabaine 2017), involving client consultation on projects (Bjelica et al. 2023), meeting project objectives (Aramali et al. 2024), and customer participation (Tabassum et al. 2024).

Based on the previous research and findings of Kärnä & Junnonen 2016; Almarri & Boussabaine 2017; Mathar et al. 2020; Bjelica et al. 2023; Kudyba & Cruz 2023; Aramali et al. 2024, Tabassum et al. 2024; Tabassum et al. 2024; Kiani Mavi et al. 2024; Sońta-Drączkowska & Krogulec 2024; Giorgino & Barnabè 2024 about the importance of knowing which are the success factors for project success and the related performance of firms, because of a lack of studies that specifically address MSFs and the importance of MSFs in Slovenia and in EU, as discussed in the Introduction chapter, we have focused on a study of project SF and SC in MSFs. It is not feasible to include all of the latter in one research project, so we have focused on an analysis of the key project SF and SC which were identified as the key ones in the literature and specifically related them to MSFs, as this was identified as a research gap.

The goal of this study is to identify which are the key project SF and SC for project success and the related improved performance of MSFs. The literature distinguishes between project success factors (SF) and project success criteria (SC) (Müller & Judgev 2012).

2.1 Project success factors

Success factors can be defined as narrow areas that are vital for success and answer questions about what needs to be done specifically to achieve success. Project SF increase the probability of project success, such as completing a project within budget, estimated time, performance and fulfilling and exceeding company management and customer expectations (Müller & Judgev 2012). Identifi-

cation of project SF enables managers to impact them and improve project success. Identification of project success factors can improve a firm's overall performance (Murphy & Ledwith 2007; Mathar et al. 2020; Kiani Mavi et al. 2024; Sońta-Drączkowska & Krogulec 2024; Giorgino & Barnabè 2024). Kerzner (2009) claims, that top management support is required for project success. Ayat et al. (2021) argues that user participation, stakeholder relationship, project manager leadership skills and top management support are the most important project SF, especially on ICT projects. The study of Correia & Martens (2013) also reveals that the support of senior management is a key to project SF for project success. Interactions and efficient communications between project team members impacts the success of firms, claim Müller & Judgev (2012). On the other hand, Zuo et al. (2018) confirm the previous findings and suggest that the soft skills of project managers are one of the key project SF. On the other hand, Gunasekera & Chong (2018) reveal that the capabilities of a project manager, such as transformational leadership, are significantly and positively related to project success. The results of Bjelica et al. (2023) indicate that client involvement on projects oriented in fulfilment of client expectations is a key project SF. The study of Wang et al. (2023) confirms similar indications and suggests adequate resource availability, partnering/relationships with key stakeholders and adequate communication as key project SF.

As discussed in recent studies, there are many different project SF that vary by project type, industries and the life cycles of firms (Müller & Judgev 2012). Project success must be measured from different perspectives. Project SF analysis should consider perspectives such as project manager, project team, customer and their interests, as well as project managers' human skills, capability for adopting changes, authority of the project manager and the commitment of the project team (Murphy et al., 2007; Kerzner 2009; Müller & Judgev 2012).

2.2 Project success criteria

Success criteria (SC) measure success and are used to judge the success or failure of a project after project closure (Murphy et al., 2007; Müller & Judgev 2012). Cost and project performance has been frequently identified as key project SC (Kerzner 2009; Almarri & Boussabaine 2017). Furthermore, Bayiley & Teklu (2016) recommend that project success be measured by SC such as fulfilment of a firm's strategic organisational objectives and goals, fulfilment of project user satisfaction, and the level of key project stakeholder satisfaction. Also, Wuni et al. (2021) suggest client and owner satisfaction, adherence to project schedules, meeting project quality specification and profitability as key project SC. A recent study by Bjelica et al. (2023) suggests that fulfilment of project goals is a key

project SC for project success, especially in SMEs. Different project types, a firm's industrial sector and other variables make each project unique. So, it is not easy to define general project SC for all types of firms and projects and to consider all of them.

Therefore, the authors in this study have focused on the study of key project SC and project management practices and related them to MSFs. Key project SC based on a literature review have been included in our research. The study focuses on project SC related to project success specifically in MSFs as this has been identified as a less researched area. It was also identified as a research gap and is examined further on in this study.

3 Methodology

This research was carried out in the following steps: literature review and research gap definition, theory background research, research question development, quantitative data gathering, data analysis and discussion.

Our research answers the following research questions (RQ):

RQ (1): Which are the key project success factors (SF) in MSFs?

RQ (2): Which are the key project success criteria (SC) in MSFs?

RQ (3): Which are the most influential decision makers on projects in MSFs?

RQ (4): Which project management tools are used in MSFs?

RQ (5): To what extent do MSFs employ full-time project managers?

RQ (6): Based on RQ1-5, what are the differences between micro and small firms?

Based on a literature review and the identified research gap, our target population was micro and small firms in Slovenia. The criteria for micro and small firms are in this research defined based on criteria such as number of employees. The number of employees in firms is one of the key differences between micro, small, middle and large firms. Availability of resources in firms is related to how projects are managed, i.e. planned and executed. Kirmizi & Kocaoglu (2021) define availability of resources in firms as one of the key project success factors. For the purpose of our research, for the definition of micro and small firms we considered the definition of ZGD-1 (2006), in which micro firms are defined as firms that employ up to 10 employees and small firms as firms that employ up to 49 employees.

A quantitative method of data gathering with a questionnaire as a measuring instrument was used in an approach that is similar to that of Murphy & Ledwith (2007) and of Bjelica et al. (2023). The use of a similar measuring instrument to that used in previous research enables us to

compare results with similar previous research in the field of study and for similar future comparison studies in this field. The online questionnaire contained closed type of questions. Questions used in the survey included selected aspects of project management practices in MSFs such as firm industry, project types, most influential decision makers with special emphasis on project SF and SC, measurements of project success and general data about MSFs and survey participants. A Likert scale of 1-4 was used to evaluate each factor included in the research questions. Participation in the research was voluntarily and anonymous. The data for small firms were obtained from AJPES. A link to the online questionnaire was sent to the public e-mail addresses of the firms. For micro firms a snowball sampling was used. A total sample of 92 MSFs was gathered (Tables 1-4). The sample includes 51 micro firms and 41 small firms and is well balanced. From the industry point of view, the sample includes 35% of MSFs from the non-economy sector, 31% of MSFs from the economy-production sector, and 34% of MSFs from the economy-service sector. For the purpose of this study, from our gathered database we extracted only properly completed questionnaires for micro and small firms. The criteria for the extraction of micro and small firms (MSFs) was the number of employees, such as 1-9 employees for micro firms and 10-49 employees for small firms. Data about the number of employees in firms was requested in our questionnaire.

Data was analysed with the descriptive statistics method, analysing average values and standard deviations, similarities and differences between micro firms, small firms and MSFs in total (Tables 1-9 and Figures 1-3).

4 Results

The sample of firms in this study includes 51 micro firms and 41 small firms, as can be seen in Table 1. Table 1 and all subsequent tables show separate data for micro firms and separate data for small firms as well as the

data in total (MSFs together). The sample of MSFs in total is well balanced and contains the non-economy sector (35%), such as public and non-governmental organisations (NGO), societies and institutes, the economy sector with production firms (31%), and service firms (34%).

For a better understanding of the overall study results, data about the most common project types in MSFs were gathered, as shown in Table 2. The most common project in the sample of MSFs was identified as technical projects (27% of MSFs), followed by organisational projects such as organised education (18% of MSFs) and other technical projects (14% of MSFs). On the other hand, only 9% of the MSFs deal with service projects for other firms and only 7% of the MSFs perform ICT projects. Analysis shows some differences between most common project types in micro and small firms. In micro firms was identified as being the most common type of projects organisational projects (27% of micro firms) but in small firms technical projects prevail (37% of small firms). Table 2.

Table 3 shows more detailed data about the sample of MSFs included in our research. Data shows that 47% of MSFs practice no special project management organisational structure on projects and only 12% of MSFs practice a project matrix structure. Similar is the separate data analysis for micro firms (57%) and small firms (34%), which is expected based on further data about the number of project team members included on projects. The results in Table 3 also show that the typical project duration in MSFs is under 3 months (28% of MSFs). Analysis shows the differences between micro firms, as 35% of them practice project duration of more than 12 months, while 39% of small firms practice 3-6 months project duration.

Analysis shows that 96% of micro firms and 93% of small firms employ 1-10 project team members per project. MSFs are characterised by a smaller number of employees (in comparison to middle size or large firms), so this result can be explained from this perspective. Table 4 shows additional data about the respondent profile.

Table 1: Sample of firms

Firm industry	Micro firms (n=51) No. of firms / (%)	Small firms (n=41) No. of firms / (%)	Micro and Small firms (n=92) No. of firms / (%)
Non-economy sector	24 (47%)	8 (20%)	32 (35%)
Economy sector-production firms	9 (18%)	20 (49%)	29 (31%)
Economy sector-service firms	18 (35%)	13 (31%)	33 (34%)

Note. n - sample, % - percentage of firms in the sample

Table 2: Sample of firms and project types

Project type	Micro firms (n=51) No. of firms / (%)	Small firms (n=41) No. of firms / (%)	Micro and Small firms (n=92) No. of firms / (%)
Technical, Technological projects (i.e. New Product Development)	10 (20%)	15 (37%)	25 (27%)
Organised education (seminars, workshops)	14 (27%)	3 (7%)	17 (18%)
Other technical projects (i.e. construction)	5 (10%)	8 (20%)	13 (14%)
Public sector projects (public tenders, public orders)	9 (18%)	2 (5%)	11 (12%)
Event projects (i.e. tourism)	6 (12%)	3 (7%)	9 (10%)
Service projects for other firms (i.e. logistics, promotion)	3 (6%)	5 (12%)	8 (9%)
ICT projects (i.e. SW development)	2 (4%)	4 (10%)	6 (7%)
Other projects	2 (4%)	1 (2%)	3 (3%)

Note. n - sample, % - percentage of firms in the sample

Table 3: Sample of firms and project characteristics

Project characteristic	Micro firms (n=51) No. of firms / (%)	Small firms (n=41) No. of firms / (%)	Micro and Small firms (n=92) No. of firms / (%)
Project organisational structure			
Function (no special structure for projects)	29 (57%)	14 (34%)	43 (47%)
PMO-Project Management Office	9 (18%)	11 (27%)	20 (22%)
Projectized (full project)	10 (20%)	8 (19%)	18 (20%)
Project matrix	3 (6%)	8 (19%)	11 (12%)
Project duration			
Under 3 months	15 (29%)	11 (27%)	26 (28%)
3-6 months	7 (14%)	16 (39%)	23 (25%)
6-12 months	11 (22%)	6 (15%)	17 (18%)
More than 12 months	18 (35%)	8 (20%)	26 (28%)
Number of project team members			
1-10 team members	49 (96%)	38 (93%)	87 (95%)
11-30 team members	2 (4%)	3 (7%)	5 (5%)
More than 30 team members	0 (0%)	0 (0%)	0 (0%)

Note. n - sample, % - percentage of firms in the sample

Table 4: Data on respondents

	Micro firms (n=51) No. of firms / (%)	Small firms (n=41) No. of firms / (%)	Micro and Small firms (n=92) No. of firms / (%)
Education of respondent			
Graduate (B1)	10 (20%)	7 (17%)	17 (18%)
Postgraduate (B2)	29 (57%)	19 (46%)	48 (52%)
M.Sc. (Scientific)	10 (20%)	14 (34%)	24 (26%)
PhD.	2 (4%)	1 (2%)	3 (3%)
Position of respondent in the firm			
Firm owner / general director	12 (24%)	8 (20%)	20 (22%)
Technical director	0 (0%)	1 (2%)	1 (1%)
Business unit/department manager	5 (10%)	9 (22%)	14 (15%)
Process owner/manager	1 (2%)	3 (7%)	4 (4%)
Project manager	17 (33%)	8 (20%)	25 (27%)
Project team member	12 (24%)	7 (17%)	19 (21%)
Other	4 (8%)	5 (12%)	9 (10%)

Note. n - sample, % - percentage of firms in the sample

Table 5: Project success factors (SF)

Project SF	Micro firms (n=51)		Small firms (n=41)		Micro and Small firms (n=92)	
	Avg.	St.Dev.	Avg.	St.Dev.	Avg.	St.Dev.
Clearly defined project objectives	3.37	0.85	3.56	0.63	3.46	0.76
Availability of resources/team members	3.20	0.83	3.39	0.70	3.28	0.77
Top management support	3.22	0.83	3.32	0.61	3.26	0.74
Customer involvement/consultations	3.02	0.81	3.34	0.66	3.26	0.76
Proper project planning & control	3.22	0.78	3.24	0.77	3.23	0.77
Employing project risk management	2.78	0.86	3.07	0.72	2.91	0.81

Note. n - sample, Likert scale (1-4): 1-rarely used, 2...,3..., 4-very frequently used criteria, Avg.-Average Value, St.Dev.-Standard Deviation

The respondents in our survey were project managers (27%), followed by firm's directors (22%) and project team members (21%). 52% of respondents have a postgraduate level of education (Bologna B2), 26% are MSc, and 18% of respondents have graduated at the B1-Bologna level. Our main research question about the most important project SF and SC in MSFs results are presented in Tables 5 and 6 and Figures 1 and 2. Respondents were asked to rank each project success factor (SF) and project success criteria (SC) on a Likert scale of 1-4, where score 4 shows the highest importance of each factor. Average values and Standard deviation values are shown separately for micro and small firms and total scores for MSFs in to-

tal are presented. Table 5 presents an analysis of the most important project SF in MSFs. Analysis of the results show that clearly defined project objectives (scored 3.46 out of 4), availability of resources for project (score 3.28 out of 4) and top management support (score 3.26 out of 4) are identified as the most important project SF in MSFs. Table 5.

As shown in Figure 1, a comparison study between micro and small firms also shows the same top project SF, such as; 'Clearly defined project objectives' in both micro and small firms. Employment of risk management on projects has been identified as a relatively less important project SF, scoring 2.78 out of 4 in micro firms, scoring 2.92 out of 4 in small firms and scoring 2.91 out of 4 on the

sample of 92 MSFs in total. Figure 1.

Table 6 presents an analysis of the most important project SC in MSFs. Analysis of the results show that customer satisfaction (scored 3.51 out of 4), project completion within planned time (scored 3.18 out of 4) and meeting project specifications (scored 3.15 out of 4) are identified as the most important project SF in MSFs. Table 6.

As shown in Figure 2, a comparison study between micro and small firms also shows the same top project SC such as ‘Customer satisfaction’ in both micro and small firms. The main difference between micro and small firms can be seen in SC such as ‘Customer satisfaction’. The average score for micro firms shows the result 3.45 out of 4 and the average score for small firms shows the result 3.59 out of 4. Figure 2.

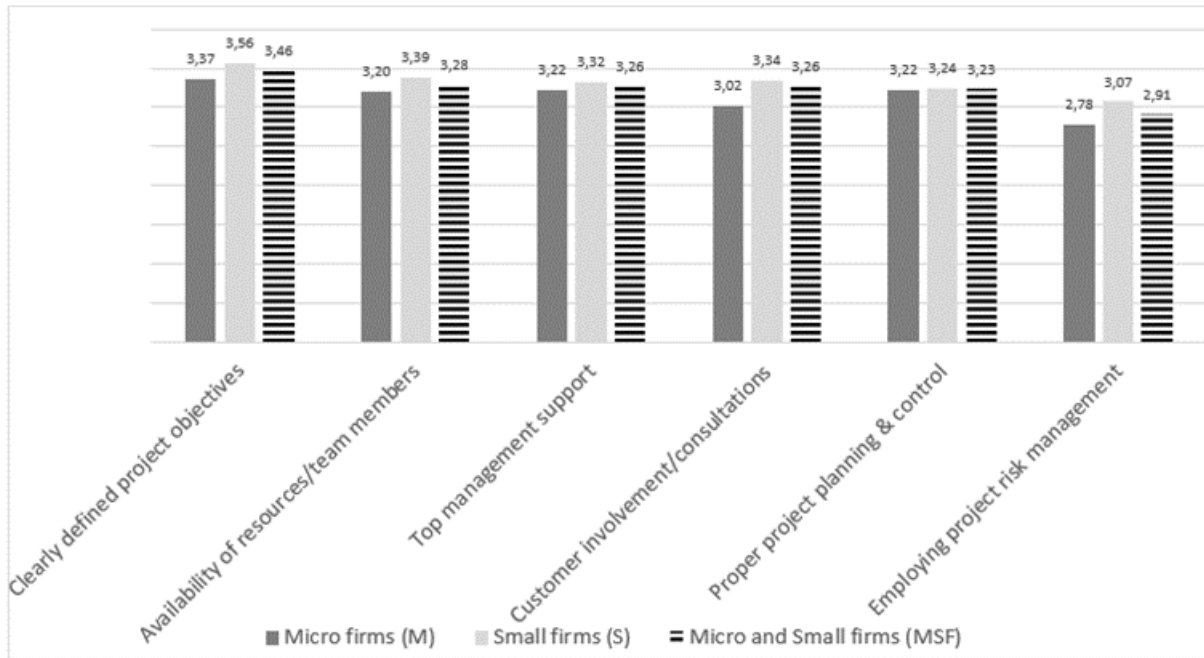


Figure 1: Comparison of project SF in micro and small firms

Table 6: Project success criteria (SC)

Project SC	Micro firms (n=51)		Small firms (n=41)		Micro and Small firms (n=92)	
	Avg.	St.Dev.	Avg.	St.Dev.	Avg.	St.Dev.
Customer satisfaction	3.45	0.73	3.59	0.55	3.51	0.65
Project completed within planned time	3.24	0.81	3.12	0.71	3.18	0.77
Meets required project specifications	3.22	0.83	3.29	0.64	3.15	0.75
Project team member satisfaction	3.20	0.83	3.10	0.66	3.15	0.75
Project completed within planned budget	3.14	0.85	3.10	0.66	3.12	0.77

Note. n - sample, Likert scale (1-4): 1-rarely used, 2...,3..., 4-very frequently used criteria, Avg.-Average Value, St.Dev.-Standard Deviation

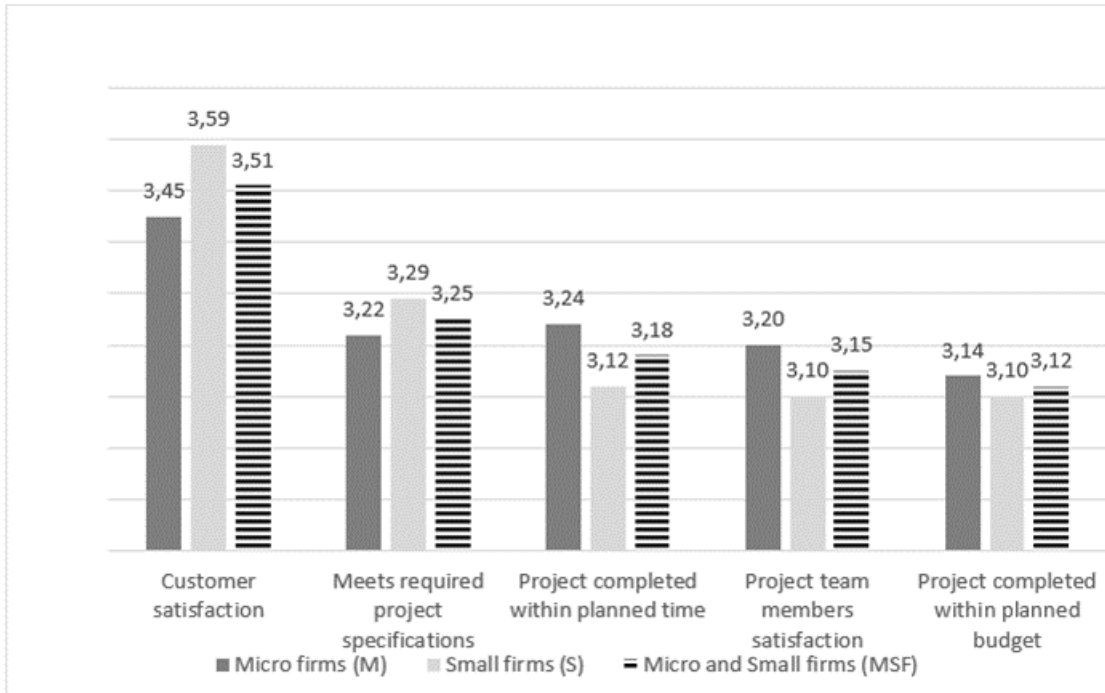


Figure 2: Comparison of project SC in micro and small firms

Table 7: Decision makers on the projects

Decision maker	Micro firms (n=51)		Small firms (n=41)		Micro and Small firms (n=92)	
	Avg.	St.Dev.	Avg.	St.Dev.	Avg.	St.Dev.
Firm owner / director	3.41	0.83	3.46	0.67	3.43	0.76
Project manager	3.29	0.78	3.54	0.60	3.40	0.71
Department manager	2.53	0.76	2.80	0.78	2.65	0.78
Project council	2.25	0.87	2.40	0.93	2.36	0.90
Board of directors	2.16	1.08	2.39	1.07	2.26	1.08

Note. n - sample, 1-is not influential at all, 2..., 3..., 4-is very influential decision maker, Avg.-Average Value, St.Dev.-Standard Deviation

Our research question results about the most influential decision makers on project in MSFs are shown in Table 7. The firm owner/director has been identified as the most influential decision maker on projects (3.43 out of 4), followed by the project manager (3.40 out of 4) in MSFs in total. The results also show differences between micro and small firms. In small firms it has been determined that the project manager is the most important decision maker (3.54 out of 4). On the other hand, in small firms the firm owner/director is identified as the most important decision maker (3.41 out of 4). Table 7.

Table 8 presents participant responses about what impacts project success in firms the most. Statements (factors) were developed based on a literature review including Murphy & Ledwith (2007) and Bjelica et al. (2023). Each statement was evaluated on a Likert scale of 1-4, where score 4 shows the highest importance of each factor. Average values and Standard deviation values are shown separately for micro and small firms and total scores for MSFs are presented. The results show that ‘Clearly defined project objectives’ are identified as the most important for project success in MSFs, scoring 3.39 out of 4, fol-

lowed by ‘Intense cooperation with project client’, scoring 3.24 out of 4 and ‘Skills of project manager’, scoring 3.23 on a scale of 1-4. A detailed view also shows very small differences between micro and small firms. Both prioritise the same mentioned top 3 statements (factors) as the most important for project success. Table 8.

Furthermore, Table 8 shows the less important factors that impact project success in MSFs. ‘Impact of external factors on project success’ scoring 2.80 out of 4, ‘Carrying out detailed analysis before project start’ scoring 2.59 out of 4, and ‘Senior management mistakes’ scoring 2.58 out

of 4 are identified as the least important factors for project success in MSFs. No significant differences between micro and small firms have been identified.

As shown in Table 9, employment of a full-time project manager in MSFs has been analysed. Detailed data show that 51% of micro firms and 46% of small firms in our sample employ at least one full-time project manager. Of all MSFs included in our sample, results show that 49% of MSFs have at least 1 full-time project manager. Further analysis shows that 33% of micro firms and 49% of small firms have project guidelines. Table 9.

Table 8: Participants perception about project success in micro and small firms

Statement	Micro firms (n=51)		Small firms (n=41)		Micro and Small firms (n=92)	
	Avg.	St.Dev.	Avg.	St.Dev.	Avg.	St.Dev.
Clearly defined project plan is crucial for successful completion of the project.	3.31	0.81	3.49	0.51	3.39	0.69
Projects in our organisation require intense cooperation with the project client.	3.14	0.80	3.37	0.62	3.24	0.73
Project success depends on the skills of project manager.	3.22	0.76	3.24	0.58	3.23	0.68
Past experiences are crucial for project success.	3.06	0.81	3.20	0.68	3.12	0.75
Project organisational structure affects successful completion of the project.	3.10	0.73	3.12	0.60	3.11	0.67
Project SC in our organisation support project success.	2.90	0.73	2.83	0.59	2.87	0.67
Projects we carry out are very complex.	2.63	0.80	3.07	0.47	2.83	0.70
Project success in our firm depends on external factors (market, legislation, changes & requirements from the client).	2.78	0.83	2.83	0.63	2.80	0.74
Before starting a project, we carry out detailed analyses and research.	2.55	0.81	2.63	0.73	2.59	0.77
Projects in our firm are successful despite mistakes made by our senior management.	2.49	0.78	2.68	0.57	2.58	0.70

Note. n – sample, Likert scale (1-4): 1-strongly disagree, 2..., 3..., 4 -very strongly agree, Avg.-Average Value, St.Dev.-Standard Deviation

Table 9: Employment of full-time project manager on the projects

Statement	Micro firms (n=51) Yes		Small firms (n=41) Yes		Micro and Small firms (n=92) Yes	
	No. of firms	(%)	No. of firms	(%)	No. of firms	(%)
We have at least one full-time project manager in the organisation.	26	51%	19	46%	45	49%
In the organisation, we have clearly defined process guidelines & rules for projects.	17	33%	20	49%	37	40%

Note. n – sample, % - percentage of the firms in the sample

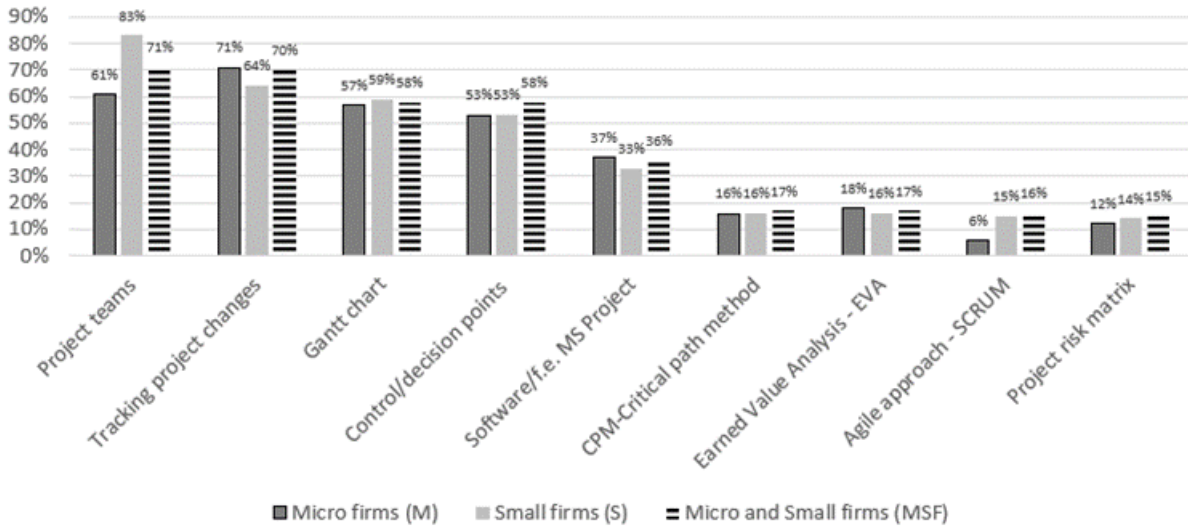


Figure 3: The use of project management tools in micro and small firms

Figure 3 shows the results of our research question about which project management tools are most frequently used in MSFs. The use of project teams has been identified as the most frequently used approach in MSFs (71% of MSFs), followed by managing project changes (70% of MSFs) and Gantt chart (58% of MSFs). Less frequently used project management tools in MSFs have been identified as the use of EVA (17% of MSFs), SCRUM (16% of MSFs) and Risk matrix (15% of MSFs). Figure 3.

A comparison of results between micro and small firms shows very small differences. The biggest difference is in the use of project teams, as micro firms use them only in 61% and small firms use them in 83%. Also, SCRUM is identified as being employed on projects in only 6% of micro firms and 15% of small firms.

5 Discussion

The study relates earlier understandings of project SF and SC to project success and resonate with some previous findings on this field such as those of Bjelica et al. 2023; Kudyba & Cruz 2023; Aramali et al. 2024, Tabassum et al. 2024; Tabassum et al. 2024; Kiani Mavi et al. 2024; Sońta-Drączkowska & Krogulec 2024; Giorgino & Barnabè 2024. However, the results of our study highlight some differences between MSFs and large firms as well as some differences between micro and small firms, too.

The results of the key project SF analysis for MSFs show that 'Clearly defined project objectives' is the most important project SF (Table 5). This is supported by the findings of Aramali et al. (2024), which report similar results. Analysis also reveals that 'Customer satisfaction' is

the most important project SF in MSFs. Our results show the same priorities in this field in micro and small firms as well as for MSFs in total, where this factor was identified as a key factor in both type of firms (Table 5 and Figure 1). The second top key project SF was identified as availability of resources/team members. The results of this study support some findings of Bjelica et al. (2023) that 'Setting clear project goals and objectives' is the most important project SF. This finding is in line with the basic characteristic and problem of MSFs, such as a lack of human resources for project work. Poor availability of project team members for project work affects project success and limits the performance of MSFs.

Analysis of the results show that customer satisfaction is identified as the most important project SC in MSFs (Table 6 and Figure 2). The results show the same key project SC for micro and small firms (Figure 2). Some difference has been detected between micro and small firms. It was noticed that small firms prioritise the importance of customer satisfaction more in comparison to micro firms (Figure 2). This can be seen in SC such as project SC. This is supported by the results of similar research by Bjelica et al. (2023) that 'Appreciation by users' is the most important project SC.

Our research question about the most influential decision makers on project in MSFs results reveals that the firm owner/director has been identified as the most influential decision maker on projects (Table 7). The firm owner/director has been identified as the most influential decision maker on projects (3.43 out of 4), followed by the project manager (3.40 out of 4) in MSFs in total. The results also show differences between micro and small firms. In small firms, it has been identified that the project manager is the

most important decision maker (3.54 out of 4). On the other hand, in small firms, the firm owner/director is identified as the most important decision maker (3.41 out of 4). This resonates with data from Table 9, in which only 51% of micro firms and only 46% of small firms employ at least one full-time project manager. From this perspective it is expected that a firm's owners make the majority of decisions on projects as well as in MSFs in general.

As shown on Figure 3, the results of our research question about the use of a project management tool on projects in MSFs show that the use of project teams has been identified as the most frequently used approach in MSFs (71% of MSFs), followed by managing project changes (70% of MSFs) and Gantt chart (58% of MSFs). Less frequently used project management tools in MSFs have been identified as the use of EVA (17% of MSFs), SCRUM (16% of MSFs) and Risk matrix (15% of MSFs). This can be explained by the fact that MSFs have limited human resources, so it is expected that the majority of all employees will be involved in projects.

It can be concluded that project SF and SC for MSFs differ from project SF and SC as revealed in studies for large firms (Murphy & Ledwith 2007; Mathar et al. 2020; Kiani Mavi et al. 2024; Sońta-Drączkowska & Krogulec 2024; Giorgino & Barnabè 2024). According to the basic characteristics of MSFs, in comparison to large firms, MSFs operate on a smaller scale of the market, have limited financial and manpower resources, limited capabilities to adopt changes, and limited capacity for executing many projects at the same time. Project SFs in larger firms are, according to Murphy & Ledwith (2007), more oriented towards meeting quality standards, while MSFs are identified as being more focused on customer satisfaction key project SF. On the other hand, key project SC in large firms has been identified as clear project goals/objectives (Murphy & Ledwith (2007), but customer satisfaction was identified as the key project SC for MSFs.

The results of this study strongly depend on the sample of MSFs and basic characteristics of MSFs and projects performed in MSFs (Tables 1-4) such as: the majority of the projects in MSFs are performed in under 3 months, no special organisation project structure is used in 47% of MSFs, and 95% of MSFs perform projects with fewer than 10 project team members (Table 3).

This study contributes to an understanding of the role of project SF and SC for project success, creates a background for improvement of decision making in MSFs and can help managers, project managers, practitioners and researchers in the field of project management. Some practical and theoretical implications of this study can be discussed, such as follows.

Practical and theoretical implications

The results of this study provide us with some practical and theoretical applications. A practical application is the empirical study of project SF and SC in MSFs that helps

managers in MSFs to better understand how to achieve project success. Our findings suggest project management practitioners, managers and decision makers in MSFs that are based on project SC and SF set the right priorities and improve decision making to achieve better project success. Managers in MSFs should prioritise project SF and SC that can improve project success such as: defining clear project objectives and ensuring the availability of resources as these were identified as the most important project SF in MSFs. The results also direct decision makers in MSFs to focus more on customer satisfaction and completing projects within the planned time as these were identified as the most important project SC in MSFs.

From a theoretical perspective, a key contribution of this research is the latest literature review in the field of selected project management researches, such as the study of project SF and SC in MSFs, the use of a scientific approach that studies project SF and SC in MSFs, the application of the research in the field of project management in MSFs, providing better understanding of relations between project SC and SF and project success and establishing a basis for similar future research in this field.

However, it is important to consider the limitations of this study.

Limitations

This study is, from the content point of view, limited to selected aspects of project management practices such as project SF and SC and project success in MSFs. Project success is impacted by many factors, all of which cannot be included in one research project. We have studied only a limited number of selected factors based on the literature review. This research is limited to MSFs in, and includes 92 MSFs from, Slovenia. The authors believe that a larger sample may impact the results of this study. However, the sample used in our research into micro and small firms is well balanced and includes 51 micro and 41 small firms from Slovenia. Also, from the industry point of view, the sample of MSFs in total is well balanced and includes 35% MSFs from the non-economy sector, 31% MSFs from the economy-production sector and 34% MSFs from the economy-service sector. A methodological limitation is the use of a survey as a measuring instrument. The quantitative method of data collection was used and an online questionnaire with closed questions was employed. Data was analysed using the descriptive statistics method, analysing average values and standard deviations, similarities and differences between micro firms, small firms and MSFs in total for each factor included in the research.

Further research

Our study provides us an overview of selected aspects of project management practices in MSFs. However, there are numerous possibilities for further studies, such as including a larger sample of MSFs, studies specific to a particular industry, and conducting comparison studies in Slovenia in time. Also, comparison studies between MSFs,

SMEs and large firms, studies of project management practices in similar economies in the region such as Croatia, Serbia, and Hungary, which have a similar political and economic background and can be considered as transitional economies, can be carried out. Further research into what project SF and SC contribute to project success in MSFs can also include the use of a more varied research methodology.

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Analiza dejavnikov uspeha projekta in merila uspešnosti projekta v mikro in malih podjetjih: Dokazi iz Slovenije

Ozadje in namen: Namen raziskave je preučiti uporabo praks managementa projektov v slovenskih mikro in malih podjetjih (angl. micro, small firms - MSF) ter opredeliti dejavnike uspešnosti projekta (angl. project success factors - SF) in merila uspešnosti projekta (angl. project success criteria - SC).

Metodologija: Raziskava je bila izvedena na vzorcu 51 mikro in 41 malih podjetij v Sloveniji. Zbrani so bili podatki o dejavniki uspešnosti (SF) in merilih uspešnosti na projektih (SC), najvplivnejših odločevalcih na projektih, v kolikšni meri se uporabljajo izbrana orodja managementa projektov in o praksi zaposlovanja vodij projektov s polnim delovnim časom v slovenskih mikro in malih podjetjih (MSF). Za analizo podatkov zbranih z vprašalnikom je bila uporabljena deskriptivna statistika. Proučili in prikazali smo podobnosti in razlike med praksami managementa projektov v mikro in malih podjetjih.

Rezultati: Rezultati kažejo, da je »jasno opredeljen cilj projekta« najpomembnejši dejavnik uspešnosti projektov (SF), »zadovoljstvo uporabnika rezultatov projekta« pa je najpomembnejši kriterij uspešnosti projektov (SC) v mikro in malih podjetjih. Lastnik/direktor podjetja je bil zaznan kot najvplivnejši odločevalec na projektih v mikro in malih podjetjih.

Zaključek: Razumevanje ključnih dejavnikov uspešnosti projektov (SF) in meril uspešnosti projektov (SC) ter vključevanje teh spoznanj v odločanje lahko izboljša prakse managementa projektov v mikro in malih podjetjih. Na podlagi rezultatov te študije in drugih podobnih študij lahko managerji in odločevalci v podjetjih izboljšajo uspešnost projekta z osredotočanjem na ozko področje dejavnikov uspeha projektov (SF). Osredotočenost na jasno opredeljene cilje projekta v fazi načrtovanja projekta je bil zaznan kot najpomembnejši dejavnik uspešnosti projektov v mikro in malih podjetjih. Rezultati tudi kažejo, da je zadovoljstvo uporabnika rezultatov projekta najpomembnejši kriterij uspešnosti projektov v mikro in malih podjetjih.

Ključne besede: *Projekt, Uspeh, Faktor, Mikro, Malo, Podjetje, Slovenija*

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