

AGILE SOFTWARE DEVELOPMENT TEAMS: COMMUNICATION, SHARED VALUES, GROWTH AND IMPROVEMENTS THROUGH DEMOGRAPHIC AND CONTEXTUAL FACTORS

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Jelena LUKIĆ NIKOLIĆ¹, Snežana LAZAREVIĆ², Sunčica ANTIĆ³

¹Modern Business School, Terazije 27, 11000 Belgrade, Republic of Serbia

Corresponding author. E-mail: jelena.lukic@mbs.edu.rs

ORCID ID (<https://orcid.org/0000-0003-0632-8974>)

²College of Sports and Health, Toše Jovanovića 11, 11000 Belgrade, Republic of Serbia

ORCID ID (<https://orcid.org/0000-0003-2048-1684>)

³Republic of Serbia

ORCID ID (<https://orcid.org/0009-0007-5638-9712>)

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This paper investigates how demographic factors (gender and age), and contextual factors (length of team membership and work type) affect communication, shared values, collaborative growth and improvements in agile software development teams in Serbia. Empirical research was conducted using a specially designed online questionnaire which consisted of profile questions and three highly reliable scales focusing on agile software development team communication, shared values, and collaborative growth and improvements. In the period from April to October 2024, a total of 107 agile software development team members from Serbia participated in the research. Data analysis was conducted using descriptive statistics, the Mann-Whitney U-test, and the Kruskal-Wallis H-test. The findings reveal no statistically significant differences in communication, shared values, or collaborative growth based on age, length of team membership, and work type. However, a notable gender difference was observed, with female team members reporting a higher level of agreement on shared values within their teams. These results underscore the critical role of gender dynamics in fostering a cohesive team environment in agile settings. Understanding these dynamics is essential for enhancing team collaboration and performance, suggesting that organizations should consider gender inclusivity when developing agile software development teams.

Keywords: Agile software development teams; Agile methods; Communication; Shared values. Teamwork.

INTRODUCTION

Organizations are being forced to reconsider traditional work organization strategies in the face of increased uncertainty and rapid change (Brendzel, 2023; Hutter et al., 2023). A dynamic environment dramatically impacts how teams function, particularly in software development, where agility and responsiveness have become important components of company success. The early 2000s saw considerable changes in the software industry as a result of significant technology breakthroughs. This environment fostered a dynamic interchange of ideas among developers, resulting in the rapid adoption of novel technologies. As demand for consumer-oriented

software products increased, so did the need for user-friendly interfaces and the ability to quickly integrate user feedback. The “Agile Manifesto” was created in 2001 by 17 advocates of software engineering approaches with the main aim to define and explain the term agile methods. “Agile Manifesto” describes the essential ideas underlying agile software development: human collaboration, practical results, and flexibility. This emphasis on agility created a new approach to unpredictable and dynamic project requirements, requiring software engineers to adapt to an environment marked by frequent change and the need for fast time-to-market (Abdul Wahab et al., 2024; Schmidt, 2021). Agile approaches to project management have emerged as effective strategies for navigating this

complexity, allowing teams to adapt continuously through iterative processes and consistent stakeholder engagement, particularly in the software industry.

Agile software development teams are groups of developers who collaborate to create new software or modify existing software using agile approaches (Wiesche, 2021). Agile teams are characterized as collaborative groups of software development professionals with various but complementary skill sets that can interact and self-organize efficiently with the primary aim of improving processes and final products (Ciancarini et al., 2021). Agile software development teams use iterative processes that include regular testing, feedback, and modification, with the goal of consistently delivering valuable results to clients (Geffers et al., 2024). Their key activities are specification, design, implementation, software validation and release (Schmidt, 2021). In contrast to traditional processes, agile approaches emphasize experimentation, shared ownership, and continuous stakeholder interaction (Zainal et al., 2020). This approach enables frequent delivery and real-time modifications to changing needs (Tam et al., 2020). In software development teams, agility refers to preparedness for action or change, and it has two dimensions: (1) adapting to changes and (2) refining software development practices as needed (Henderson-Sellers & Serour, 2005). The essence of agile software development is the ability to enable frequent adjustment of tasks and goals, promoting a culture of continuous feedback and improvements. Agile methods that include daily meetings and planning sessions encourage constant communication among team members, which improves transparency and collaboration. Furthermore, agile methods foster innovative and efficient environments by enabling informal information exchange and collaborative problem-solving (Wiesche, 2021). They foster close engagement between clients and developers, allowing for regular updates and new feature requests (Khan et al., 2021; Rietze & Zacher, 2023). Agile teams aspire to improve their responsiveness to change, especially given the specific challenges of ensuring a stable and safe environment while iterating quickly and collaborating closely with customers (Alami et al., 2023).

Key aspects for the success of agile software development teams include communication, shared values, a commitment to growth, and an emphasis on continuous improvement (Strode et al., 2022).

These characteristics not only help the team manage uncertainty but also improve overall performance and satisfaction with work (Carroll et al., 2023; Kennedy et al., 2024; Kude et al., 2023; Uraon et al., 2024). Other studies have shown that human variables, such as individual behaviour, significantly influence the success of agile software development teams (Geffers et al., 2024; Lukić Nikolić et al., 2024).

This paper aims to examine how demographic factors (gender and age), and contextual factors (length of team membership and work type) affect communication, shared values, collaborative growth, and improvement in agile software development teams in Serbia. Understanding these factors can help organizations implement agile practices more effectively, ensuring that teams are aligned and responsive to the changing needs of the environment. Several studies have demonstrated that personal characteristics play a crucial role in shaping the perception of team climate. These studies suggest that the personal characteristics of team members significantly and positively impact how they perceive the overall atmosphere and collaboration within the team (Patrício & Franco, 2022; Vishnubhotla & Mendes, 2024; Vishnubhotla et al., 2020). This underscores the importance of understanding personal characteristics as key factors influencing the effectiveness and cohesion of agile software development teams. The research topic is significant not only for its theoretical contributions but also for its practical implications in real-world organizational settings. By focusing on communication, shared values, collaborative growth, and improvements, this research can lead to enhanced team effectiveness and adaptability, which are essential in a fast-paced business environment. Understanding the interplay between these elements is crucial for organizations seeking to maximize the potential of their agile software development teams.

LITERATURE REVIEW

Agile software development team communication. Successful teamwork, as well as the building and maintenance of relationships, requires strong communication skills. The communication system connects the entire organization and its teams (Lukić Nikolić, 2024a). Agile methods are based on the concept that effective product delivery and increased project productivity arise from the quality of interactions among team members rather than rigid processes and plans (Ciancarini et al.,

2021). Dühring and Zerfass (2021) identified several crucial components of the communication mechanism in agile teams. First, they underlined the importance of communication departments adopting agile-based structures and processes to enable more responsive and efficient communication practices. This adaptability allows communication teams to better support and enable other departments within the organization while establishing an agile culture throughout. Furthermore, the results emphasized the significance of effectively communicating the agile change both internally and externally. Communication teams can assist in managing stakeholder expectations and improving knowledge within the organization by clearly communicating the changes and benefits of agility. Agile team communication is distinguished by its flexibility, responsiveness, and proactive approach to building collaboration and understanding within the organization, all of which contribute to overall business agility. Effective communication is essential for clear requirements articulation, which helps teams understand what needs to be developed. It ensures that team members understand the project's aims and how their actions contribute to meeting these objectives. This enhances teamwork, motivation, productivity, sales, and profitability. Furthermore, communication facilitates the management of technical interdependencies, enabling teams to collaborate on activities that require input from multiple professionals, thereby increasing overall project efficiency (Bjarnason et al., 2022).

Agile software development team shared values. Values define a team's identity and cohesiveness. When team members share common values, they build stronger relationships and adhere to team rules. Shared values can enhance a team's connection and effectiveness (Maxwell, 2013). In software development teams, shared values are crucial for promoting successful teamwork and project success. They encourage cooperative learning, aligning team members' efforts and fostering a supportive environment for open knowledge exchange and information sharing (Strode et al., 2022). Team members must be willing to adhere to team norms, beliefs, and standards, accept appropriate responsibilities, adapt to new practices, and align their goals with team requirements (Lazarević & Lukić Nikolić, 2024). A strong sense of shared values promotes team cohesion by fostering mutual support and trust, both of which are essential for effective collaboration.

This cohesion enables teams to overcome challenges more successfully while staying focused on their common goals. When team members share values, they are more likely to develop shared mental models, fostering a common understanding of tasks, objectives, and procedures. This alignment helps avoid misconceptions and enhances team effectiveness. Furthermore, shared values act as guiding principles for team decision-making and behaviour, leading to a cohesive approach to work and a collective commitment to project goals. The presence of shared values has a significant impact on the overall culture of both the team and the organization, influencing how team members interact with one another and engage with stakeholders. Agile teams, which rely heavily on cooperation and interpersonal communication, benefit significantly from a strong culture that fosters trust and connection among team members. In a virtual environment, where in-person interactions are limited, shared values act as a crucial substitute for face-to-face communication, which typically maintains team cohesion. These principles promote a sense of belonging and alignment, allowing team members to feel connected even when physically separated. A well-defined set of shared values can catalyze effective team communication, keeping everyone engaged and focused on common goals despite the challenges of remote work (Newman & Ford, 2021).

Agile software development team collaborative growth and improvements. Collaboration refers to the level of cooperation among team members in completing a common task. It is a condition in which team members work together to accomplish team goals (Lazarević & Lukić Nikolić, 2024). The agile mindset fosters a culture of customer engagement, where teams actively collaborate with customers to understand and respond to their evolving demands, thus facilitating adaptation and responsiveness to change (Natarajan & Pichai, 2024). Team members work closely together to create a collaborative environment that enhances communication and coordination. Agile software development teams embrace change, particularly in large-scale environments where dynamic factors such as client requirements, technical dependencies, team composition, and tool usage are constantly evolving (Berntzen et al., 2023). Agile methodologies enable organizations to quickly adapt to market trends and customer demands, leading to faster delivery of valuable products and services. Additionally, agile teams promote cross-

functional collaboration and cultivate an environment of continuous improvement through daily stand-up meetings, sprint planning, and retrospectives (Popoola et al., 2024). In practice, agile teams benefit from a wide range of advice and best practices available within the agile community and academic research, which help them enhance their performance and address challenges such as communication, collaboration, and task prioritization (Strode et al., 2022). Consequently, agile teams are crucial for maintaining development processes that are fluid and responsive. For example, studies have shown that even after a product department had released a product, the agile team was still actively developing new features and making ongoing improvements to the previous version (Karlsen et al., 2022). High-performing agile software development teams recognize that prioritizing customer satisfaction is key to their success. They emphasize rapid and effective problem-solving, which is essential for responding to evolving customer needs and delivering high-quality products (Lukić Nikolić, 2024b).

RESEARCH METHODS

The agile software development environment thrives on effective communication, shared values, and collaborative growth and improvement, which are crucial for enhancing team performance and achieving successful project outcomes. Given the dynamic nature of software development, it is essential to understand how various demographic and contextual factors influence these dynamics. This research investigates four key hypotheses based on the diversity and composition of agile teams:

H1: Communication, shared values, collaborative growth and improvements differ depending on the gender of agile software development team members.

Gender diversity has a significant impact on team dynamics, such as communication styles, decision-making processes, and collaborative approaches. Exploring this hypothesis offers a deeper understanding of how gender influences team relationships and shared values, which is particularly important in an industry that has traditionally been male-dominated. By examining this issue within the Serbian context, the research seeks to provide valuable insights into fostering inclusive workplaces that embrace gender diversity.

H2: Communication, shared values, collaborative growth and improvements differ depending on the age of agile software development team members.

Age diversity within teams can lead to varying approaches to communication and collaboration. Younger team members may bring fresh insights and technological expertise, while older members offer valuable experience and a deeper understanding of industry processes. Investigating how age influences these dynamics can provide recommendations for optimizing team composition and enhancing the success of agile software development teams.

H3: Communication, shared values, collaborative growth and improvements differ depending on the length of agile software development team membership.

The length of team membership can influence members' familiarity with agile principles and their ability to collaborate effectively. Long-term team members may have developed stronger interpersonal relationships and a shared understanding of principles, while newer members may bring fresh ideas but struggle with integration. Analyzing this hypothesis can help to clarify how team tenure impacts communication and collaboration.

H4: Communication, shared values, collaborative growth and improvements differ depending on how agile software development team members work.

Work arrangements (whether remote, office-based, or hybrid) can have a significant impact on communication styles and collaboration dynamics. Different work formats can lead to varying levels of interaction and involvement, which in turn influence team cohesion and shared values. By exploring this hypothesis, the research seeks to identify best practices for supporting effective collaboration across diverse work environments, particularly within the Serbian context.

In addition to desk research, the paper also employed empirical research through a specially designed questionnaire. The first part of the questionnaire included profile questions related to the respondent's gender, age, length of team membership and way of working. The second part of the questionnaire included a set of statements that were classified into three scales: Scale 1 "Agile Team Communication", Scale 2 "Agile Team Shared Values", and Scale 3

“Agile Team Collaborative Growth and Improvements”. The statements, which were developed using a five-point Likert scale (1 being absolutely disagreed and 5 being completely agreed), were based on previous literature that examined team dynamics and agile approaches (Lazarević & Lukić Nikolić, 2024). The statements for each of the scales are presented in Tables 3, 4, and 5, respectively. Pilot testing was carried out to ensure the questionnaire's reliability and validity. The pilot test included 30 participants from agile teams in Serbian software development companies. Cronbach's alpha coefficients for the scales were greater than 0.7, indicating that the measurement scales were reliable.

The final questionnaire was conducted online in the period from April to October 2024. The sample was gathered using snowball sampling, a non-probability sampling technique. This involved sending a link to the questionnaire to Serbian IT managers and members of agile software development teams. They were politely asked to forward the link to their agile software development team members. Furthermore, a link was shared along with an invitation to participate in the research on professional and social networking platforms. A total of 107 respondents answered the questionnaire.

The collected data were analysed by Statistical Software for Social Sciences, version 21.0. The Kolmogorov-Smirnov test, histograms, skewness, kurtosis, the normal probability curve, and the boxplot were used to assess the data distribution's normality. The results for all the scales, with a significance (Sig.) of 0.000, indicated that the assumption of normal data distribution was not met. As a result, non-parametric statistical techniques were used for statistical analysis within the measurement scales. The Mann-Whitney U-test was used to compare differences between two groups, while the Kruskal-Wallis H-test was used to compare differences among three or more groups with a 95% confidence interval. Levene's test for equality of variances was applied in all tests comparing differences between groups, meeting the assumption of variance homogeneity in all cases ($p > 0.05$).

RESEARCH RESULTS

Table 1 shows the Cronbach's alpha coefficient results for all three measurement scales. The values of this coefficient ranged from 0.788 to 0.861, indicating that the scales used in this research were reliable (Taber, 2018).

Table 1: Cronbach's alpha coefficient for scales

Scale	N	Cronbach's alpha coefficient
Scale 1: Agile Software Development Team Communication	5	0.861
Scale 2: Agile Software Development Team Shared Values	5	0.788
Scale 3: Agile Software Development Team Collaborative Growth and Improvements	4	0.856

Table 2 shows key details regarding agile software development team members. Most respondents were men (63.6%). In terms of agile software development team membership length, the largest group of respondents (41.1%) have been members for more than 5 years, while 40.2% have been members for 1 to 5 years. Almost 80% of respondents worked in a hybrid form (remote and from the office).

Table 2: Key information about agile software development team members

	N	%
Gender		
Male	68	63.6
Female	39	36.4
Age		
Up to 30	54	50.5
From 30 to 50	42	39.2
Above 50	11	10.3
Length of agile software development team membership		
Less than 1 year	20	18.7
From 1 to 5 years	43	40.2
More than 5 years	44	41.1
The way of working		
Completely from office	17	15.9
Completely remote	12	11.2
Hybrid	78	72.9

Table 3 shows the results of descriptive statistics for statements on Scale 1: Agile Software Development Team Communication. The mean values for all statements were greater than 3.50, indicating that agile software development team communication was well-established and nurtured. The highest mean value was given to the statement that all team members communicate openly and transparently (3.95). Answers from a five-point Likert scale were summarized into three groups for easier understanding and discussion: disagree (answers 1

and 2), neutral (answer 3), and agree (answers 4 and 5). Most respondents agreed that team members are familiar with the tasks of their fellow team members (54.2%), that all team members actively participate

in communication (57.9%), that all team members have access to all information (57.0%), and that team members willingly give and receive feedback (58.9%).

Table 3: Descriptive statistics for statements on the Scale 1: Agile Software Development Team Communication

Statements	Answers	N	%	M	SD
All team members are familiar with the tasks of their fellow team members.	Agree	58	54.2	3.50	1.067
	Neutral	29	27.1		
	Disagree	20	18.7		
All team members actively participate in communication.	Agree	62	57.9	3.78	1.031
	Neutral	35	32.7		
	Disagree	10	9.4		
Team members communicate openly and transparently about the project's progress and challenges.	Agree	74	69.2	3.95	1.013
	Neutral	24	22.4		
	Disagree	9	8.4		
All team members consistently have access to all information regarding the project's status and the current phase.	Agree	61	57.0	3.57	1.029
	Neutral	29	27.1		
	Disagree	17	15.9		
Team members willingly give and receive feedback on the quality of the work performed.	Agree	63	58.9	3.82	1.089
	Neutral	32	29.9		
	Disagree	12	11.2		

Table 4 shows the results of descriptive statistics for statements on Scale 2: Agile Software Development Team Shared Values. The highest mean value was given for the statement that agile software development team members actively collaborate and assist each other (4.01). The largest group of respondents agreed with the statement that all members have a unified perspective on project tasks

(43.0%), that all team members agree on what needs to be completed before a task is considered finished (63.5%), that all members share a similar vision for how the final product can be further developed (52.4%), that all members have a comparable understanding of the business needs of the end users of the product (48.6%), and that team members actively collaborate and assist each other (71.1%).

Table 4: Descriptive statistics for statements on the Scale 2: Agile Software Development Team Shared Values

Statements	Answers	N	%	M	SD
All team members have a unified perspective on project tasks.	Agree	46	43.0	3.32	0.987
	Neutral	41	38.3		
	Disagree	20	18.7		
All team members agree on what needs to be completed before a task is considered finished.	Agree	68	63.5	3.82	0.963
	Neutral	31	29.0		
	Disagree	8	7.5		
All team members share a similar vision for how the final product can be further developed.	Agree	56	52.4	3.50	0.915
	Neutral	39	36.4		
	Disagree	12	11.2		
All team members have a comparable understanding of the business needs of the end users of the product.	Agree	52	48.6	3.45	1.066
	Neutral	34	31.8		
	Disagree	21	19.6		
Team members actively collaborate and assist each other.	Agree	76	71.1	4.01	1.014
	Neutral	24	22.4		
	Disagree	7	6.5		

Table 5 shows the results of descriptive statistics for statements on Scale 3: Agile Software Development Team Collaborative Growth and Improvements. The highest mean value was given for the statement

that suggestions from every software development team member are welcomed and encouraged (4.22). The majority of respondents agreed that all team members actively participate in the ongoing

enhancement of the final product (58.0%), that suggestions from every team member are welcomed and encouraged (73.8%), that the team celebrates successes and learns from mistakes without judgment or criticism (64.5%), and that team actively seeks opportunities for innovation and the application of new approaches and methods (67.3%).

Table 6 shows the results of the Mann-Whitney U-test regarding the gender of agile software

development team members. This test did not reveal a statistically significant differences on Scale 1 (Agile Software Development Team Communication) and Scale 3 (Agile Software Development Team Collaborative Growth and Improvements), but there was a statistically significant difference regarding Scale 2 (Agile Software Development Team Shared Values) between men (Md=3.60, N=68) and women (Md=3.80, N=39), $U=1023.500$, $Z=-1.968$, $p=0.049$.

Table 5: Descriptive statistics for statements on the Scale 3: Agile Software Development Team Collaborative Growth and Improvements

Statements	Answers	N	%	M	SD
All team members actively participate in ongoing enhancements of the final product.	Agree	62	58.0	3.67	0.909
	Neutral	37	34.6		
	Disagree	8	7.4		
Suggestions from every team member are welcomed and encouraged.	Agree	79	73.8	4.22	0.965
	Neutral	22	20.6		
	Disagree	6	5.6		
The team celebrates successes and learns from mistakes without judgment or criticism.	Agree	69	64.5	3.94	0.998
	Neutral	29	27.1		
	Disagree	9	8.4		
The team actively seeks opportunities for innovation and the application of new approaches and methods.	Agree	72	67.3	3.90	0.971
	Neutral	26	24.3		
	Disagree	9	8.4		

Table 6: The Mann-Whitney U-test results regarding the gender of agile software development team members

Answers		N	Mean	Md	U	z	p
Scale 1: Agile Team Communication	Men	68	53.23	3.80	1273.500	-0.341	0.733
	Women	39	55.35	3.80			
Scale 2: Agile Team Shared Values	Men	68	49.55	3.60	1023.500	-1.968	0.049*
	Women	39	61.76	3.80			
Scale 3: Agile Team Collaborative Growth and Improvements	Men	68	52.33	4.00	1212.500	-0.741	0.459
	Women	39	56.91	4.25			

Table 7 shows the results of the Kruskal-Wallis H-test regarding the age of agile software development team members. The results revealed no statistically significant differences on Scale 1 (Agile Software Development Team Communication), Scale 2 (Agile Software Development Team Shared Values), and Scale 3 (Agile Software Development Team Collaborative Growth and Improvements) when comparing participants based on their age. The lack of statistically significant differences indicates that team members' impressions of communication, shared values, and collaborative progress are consistent, regardless of age. This suggests that younger and older team members have similar perspectives on these characteristics, demonstrating that these factors are experienced consistently inside the agile software development team.

Table 8 shows the results of the Kruskal-Wallis H-test regarding the length of agile software development team membership. The results revealed no statistically significant differences on Scale 1 (Agile Software Development Team Communication), Scale 2 (Agile Software Development Team Shared Values), and Scale 3 (Agile Software Development Team Collaborative Growth and Improvements) when comparing participants based on their length of membership in agile software development teams. This implies that regardless of how long a team member has been part of an agile software development team, their impressions of communication, shared values, and collaborative growth are similar.

Table 7: The Kruskal-Wallis H-test results regarding the age of agile software development team members

Answers		N	M	Md	χ^2	df	p
Age of agile software development team members							
Scale 1: Agile Team Communication	Up to 30	54	56.11	3.88	2.667	2	0.264
	From 30 to 50	42	48.65	2.72			
	Above 50	11	64.05	4.30			
Scale 2: Agile Team Shared Values	Up to 30	54	57.19	3.76	1.266	2	0.531
	From 30 to 50	42	50.05	3.63			
	Above 50	11	53.45	3.67			
Scale 3: Agile Team Collaborative Growth and Improvements	Up to 30	54	56.94	4.15	1.691	2	0.429
	From 30 to 50	42	49.20	3.94			
	Above 50	11	57.86	4.21			

Table 8: The Kruskal-Wallis H-test results regarding the length of agile software development team membership

Length of agile software development team membership							
		N	M	Md	χ^2	df	p
Scale 1: Agile Team Communication	Less than 1 year	20	47.85	3.65	1.414	2	0.493
	From 1 to 5 years	43	53.19	3.73			
	More than 5 years	44	57.59	3.98			
Scale 2: Agile Team Shared Values	Less than 1 year	20	54.90	3.72	0.258	2	0.879
	From 1 to 5 years	43	52.16	3.57			
	More than 5 years	44	55.39	3.80			
Scale 3: Agile Team Collaborative Growth and Improvements	Less than 1 year	20	49.58	4.08	0.622	2	0.733
	From 1 to 5 years	43	53.90	4.08			
	More than 5 years	44	56.11	4.12			

Table 9 shows the results of the Kruskal-Wallis H-test regarding the way of working. The results revealed no statistically significant differences on Scale 1 (Agile Software Development Team Communication), Scale 2 (Agile Software Development Team Shared Values), and Scale 3 (Agile Software Development Team Collaborative Growth and Improvements) when comparing the way of working of agile software development team members. This means that, independent of the precise working type (e.g., remote, in-office, hybrid, etc.), team members' perceptions of communication, shared values, collaborative growth, and improvements were consistent.

DISCUSSION OF RESEARCH FINDINGS

Research results, summarized in Table 10, showed that communication, shared values, collaborative growth and improvements do not differ regarding the age of team members, length of team membership, and work type. The results imply that the age of agile software development team members does not play a crucial role in shaping the team dynamics concerning observed scales. This

can be particularly important in agile environments where diverse age groups may collaborate. The findings suggest that the principles of agile teamwork, such as open communication, shared values, and a focus on continuous improvement, are effective across different age cohorts. The lack of significant differences across the three scales concerning the length of agile software development team membership suggests that communication, shared values, and collaborative growth are integral to the agile team experience. These findings reinforce the notion that a strong, consistent team culture can effectively align all members, facilitating successful functioning within agile frameworks. The lack of statistically significant differences regarding the work type among agile software development team members indicates that effective communication, shared values, and collaborative growth are maintained across various working styles. This consistency reinforces the importance of cultivating a robust team culture and agile practices that can adapt to different working arrangements, ultimately supporting successful team functioning.

Table 9: The Kruskal-Wallis H-test results regarding the way of working

The way of working							
		N	M	Md	χ^2	df	p
Scale 1: Agile Team Communication	Completely from office	17	56.56	4.05	1.079	2	0.583
	Completely remote	12	45.46	3.53			
	Hybrid	78	54.76	3.82			
Scale 2: Agile Team Shared Values	Completely from office	17	61.53	3.90	1.376	2	0.502
	Completely remote	12	56.04	3.80			
	Hybrid	78	52.04	3.64			
Scale 3: Agile Team Collaborative Growth and Improvements	Completely from office	17	54.97	4.13	0.154	2	0.926
	Completely remote	12	50.79	4.06			
	Hybrid	78	54.28	4.06			

Results only showed statistically significant differences regarding the gender of agile software development team members and shared values in agile teams. Women team members expressed higher agreement on statements about shared values in teams. Those results are not surprising. The research by Saeter et al. (2024) indicates that teams with more women exhibit better teamwork quality, particularly those that are female-dominated. Other studies suggest that women often adopt more collaborative and inclusive communication styles (Bear & Woolley, 2011). This tendency may foster a stronger sense of shared values within teams, as women may prioritize consensus and team cohesion over individual achievement (Kozlowski & Ilgen, 2006). Women are frequently associated with

higher emotional intelligence, which encompasses empathy, social awareness, and interpersonal skills (Franczak & Margolis, 2022). This emotional acuity can lead to a greater ability to understand and align with the values and perspectives of others in the team, resulting in a higher reported agreement on shared values. Furthermore, women often place a greater emphasis on relationship-building within teams (Heijdens, 2022). This focus helps cultivate trust and mutual respect, two components that are important for establishing shared values. When team members have strong interpersonal relationships, they are more likely to engage in discussions about values and ensure that everyone agrees.

Table 10: Results of hypotheses testing

Hypothesis	p values			Decision
Hypothesis 1: Communication, shared values, collaborative growth and improvements differ depending on the gender of agile software development team members.	Scale 1 p=0.733	Scale 2 p=0.049*	Scale 3 p=0.459	Supported
Hypothesis 2: Communication, shared values, collaborative growth and improvements differ depending on the age of agile software development team members.	Scale 1 p=0.264	Scale 2 p=0.531	Scale 3 p=0.429	Not supported
Hypothesis 3: Communication, shared values, collaborative growth and improvements differ depending on the length of agile team membership.	Scale 1 p=0.493	Scale 2 p=0.879	Scale 3 p=0.733	Not supported
Hypothesis 4: Communication, shared values, collaborative growth and improvements differ depending on how agile software development team members work.	Scale 1 p=0.583	Scale 2 p=0.502	Scale 3 p=0.926	Not supported

Obtained results are important for several activities regarding human resource management and team functioning, especially keeping in mind that women have a positive influence on other team members, and consequently on the entire team (Lee et al., 2018; Nicholls et al., 2007). First, team leaders should facilitate discussions to articulate and define the team's shared values. This can involve collaborative workshops or sessions where team

members, especially women, can share their insights and expectations. Second, team leaders should create an atmosphere that encourages open and inclusive communication. This can be achieved by promoting practices that value every team member's input, thereby leveraging the collaborative communication styles often exhibited by women. Leaders can facilitate discussions that ensure all voices are heard, leading to a more

cohesive team environment. Third, to capitalize on the strengths of women in the team, leaders should implement mentorship programs that support women's professional development. This can enhance their leadership roles and ensure that their collaborative skills contribute to team success.

By adopting these activities, team leaders can create a more inclusive and value-driven environment that leverages the strengths of all team members. This approach not only enhances communication and shared values but also fosters a culture of team learning and collaboration essential for the success of agile software development teams.

CONCLUSION

This paper examined how gender, age, length of membership, and work type affect communication, shared values, collaborative growth and improvements, which are essential for the effective functioning of agile software development teams. Empirical research was carried out using an online questionnaire which included profile questions, and three highly reliable scales related to communication, shared values, collaborative growth and improvements in agile software development teams. From April to October 2024, 107 agile software development team members from Serbia participated in the research. Data analysis utilized descriptive statistics, the Mann-Whitney U-test, and the Kruskal-Wallis H-test.

The results showed that there were no statistically significant differences in communication, shared values, collaborative growth and improvements based on age, length of membership, and work type. The lack of statistically significant differences indicates that team members' impressions of communication, shared values, and collaborative progress are consistent, regardless of age. This suggests that younger and older team members have similar perspectives on these characteristics, demonstrating that these factors are experienced consistently inside the agile software development team. Furthermore, regardless of how long team members have been part of an agile software development team, their impressions of communication, shared values, and collaborative growth are similar. This is also evident for the work type - independent of the precise work type (e.g., remote, in-office, hybrid, etc.), team members' perceptions of communication, shared values, collaborative growth, and improvements were consistent. Results only showed statistically

significant differences regarding the gender of agile software development team members and shared values in agile teams. Women team members expressed higher agreement on statements about shared values in teams.

Theoretical implications of this research include identifying a statistically significant difference in shared values based on gender. This emphasizes the importance of gender dynamics in team performance. The research contributes to the growing body of research on diversity and inclusion in organizational settings, highlighting how gender can influence team values in diverse ways. It provides possibilities for investigating how these dynamics might be used to improve team performance and cohesion. Furthermore, the research findings are consistent with current discussions regarding the significance of social aspects in agile practices, giving empirical proof that can inform both theoretical frameworks and practical applications of agile project management. The findings have significant practical implications for organizations that rely on agile teams. Understanding that women may be more likely to agree on shared values might help guide team composition and leadership choices. This understanding can assist organizations in creating cultures that promote inclusion resulting in more effective and harmonious teams.

The research conducted has several limitations. First, the use of snowball sampling has inherent limitations. Since this method relies on participants referring others, it may lead to a biased sample that does not adequately reflect the larger population of agile software development team members. Second, only 107 respondents participated in the research, which can reduce the reliability of the conclusions, especially when considering subgroup differences based on gender, age, membership length, the work type. Third, the research is based on self-reported data collected through a questionnaire. Respondents may give socially preferred answers rather than truthful ones, potentially skewing the results. Finally, only two demographic factors (gender and age) and two contextual factors (length of team membership and work type) were examined, despite the possibility that other key factors influence team dynamics.

Future research should aim for a larger sample size to improve statistical power and reliability. This could include collaborating with several organizations or using platforms to reach a larger

audience of agile software development team members. Incorporating qualitative methods, such as interviews or focus groups, with quantitative questionnaires could offer deeper insights into the complexities of communication, shared values, collaborative growth and improvements within agile software development teams. Future research could benefit from longitudinal studies that track changes in communication, shared values, growth, and improvements over time. By collecting data at multiple stages, researchers can gain a deeper understanding of how these factors evolve and assess the impact of specific interventions or changes in team composition.

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AGILNI TIMOVI ZA RAZVOJ SOFTVERA: KOMUNIKACIJA, ZAJEDNIČKE VREDNOSTI, RAST I UNAPREĐENJA IZ PRIZME DEMOGRAFSKIH I KONTEKSTUALNIH FAKTORA

Ovaj rad istražuje uticaj pola, starosti, dužine članstva u timu i načina rada na komunikaciju, zajedničke vrednosti, kolaborativni rast i unapređenja kao ključne faktore uspešnog funkcionisanja agilnih timova za razvoj softvera. Empirijsko istraživanje je sprovedeno korišćenjem posebno kreiranog onlajn upitnika koji je obuhvatio profilna pitanja i tri pouzdane i validirane skale fokusirane na komunikaciju u agilnim timovima za razvoj softvera, zajedničke vrednosti i kolaborativni rast i unapređenja. U periodu od aprila do oktobra 2024. godine, u istraživanju je učestvovalo ukupno 107 članova agilnih timova za razvoj softvera iz Srbije. Analiza podataka sprovedena je primenom deskriptivne statistike, kao i neparametarskih testova - *Mann-Whitney U-test* i *Kruskal-Wallis H-test*. Rezultati su pokazali da ne postoje statistički značajne razlike u komunikaciji, zajedničkim vrednostima, kolaborativnom rastu i unapređenjima u odnosu na starost, dužinu članstva u timu i načinu rada članova tima. Međutim, statistički značajna razlika je identifikovana u pogledu polne strukture ispitanika, pri čemu su osobe ženskog pola iskazale veću saglasnost za zajedničke vrednosti u agilnim timovima za razvoj softvera. Dobijeni rezultati ističu ulogu rodne dinamike u unapređenju kohezivnosti timova u agilnim uslovima rada. Razumevanje ovih odnosa je od ključnog značaja za unapređenje timske saradnje i rezultata, uz uvažavanje rodne inkluzije u procesu formiranja agilnih timova za razvoj softvera.

Ključne reči: Agilni timovi za razvoj softvera; Agilne metode; Komunikacija; Zajedničke vrednosti; Timski rad.