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Team effectiveness in a virtual environment: the role of trust and knowledge sharing

Hodzic Naida

University of Sarajevo, School of Economics and Business, Sarajevo, Bosnia and Herzegovina
https://orcid.org/0009-0004-4158-2198

Efendic Amina

University of Sarajevo, School of Economics and Business, Sarajevo, Bosnia and Herzegovina
https://orcid.org/0009-0004-6426-941X

Kapo Amra

University of Sarajevo, School of Economics and Business, Sarajevo, Bosnia and Herzegovina
https://orcid.org/0000-0001-5066-7696

Abstract

Background: In recent years, research efforts have focused on understanding virtual environments and the importance of collaboration in such environments. The spread of remote working, exacerbated by the global pandemic and changing workforce dynamics, has meant that organizations are increasingly reliant on dispersed teams. Building trust in virtual teams is paramount to fostering effective collaboration, and achieving common goals. Trust reduces uncertainty, promotes collaboration and facilitates open communication between team members. Building trust in virtual contexts is challenging due to limited face-to-face interactions. In addition, knowledge sharing plays a crucial role in improving team effectiveness by enabling information sharing and problem solving. The lack of physical proximity in virtual environments is a barrier to spontaneous knowledge sharing and highlights the critical need for a culture that encourages knowledge sharing.

Methodology:

This study highlights the importance of cultivating a supportive virtual environment, ensuring psychological safety and utilizing technical platforms to facilitate information sharing. Quantitative data and survey methods are used to explore the integral impact of trust, knowledge sharing, collaboration, and team effectiveness.

Findings and Conclusions:

The results of this study contribute to the existing literature on virtual teamwork by highlighting techniques and practices that improve team performance. The finding that trust and information sharing play a central role in virtual teams can help organizations develop effective virtual work policies, design appropriate training programs, and select suitable collaboration platforms.

Limitations and Future Research:

While the study provides valuable insights, the generalizability of the findings to other contexts is limited by the restriction to a single sample. Replicating the study in different organizational contexts would improve the robustness of the results. Furthermore, the cross-sectional nature of the study limits the possibility of proving causality. Future research efforts could use longitudinal studies to examine the complex relationships between trust, teamwork, collaboration, and knowledge sharing over time.

Keywords

Virtual team, knowledge sharing, team effectiveness, remote work, collaboration, trust

Introduction

In a world where the business environment is already rapidly changing, COVID-19 pandemic brought new challenges for businesses worldwide. The pandemic fastened the process of migrating work to the virtual environment, affecting not just existing remote work practices but also forcing individuals and teams, with no previous experience of working this way, to work remotely (Kniffin, et

al., 2021; Gibson & Grushina 2021). Before the pandemic there were several names for remote work arrangements, including telecommuting, telework, distant work and distance work (Wyld, 2022). Chiu, et al., 2007 defined virtual communities as "online social networks in which people with common interests, goals, or practices interact to share information and knowledge, and engage in social interactions". Remote work as a broader term includes the "Work from Anywhere" concept, meaning working from different locations, not necessarily from home (Allen, et al., 2014). The definition of a remote team is also relatively new to the discipline of project management and collaboration. A virtual team is a collection of individuals who work together in cooperative projects to accomplish shared goals and objectives (Al Samman & Muttar, 2022). People in virtual teams perform tasks in a virtual work environment which is maintained by information technology. These teams use communication technologies to share information and collaborate in real-time. For many employees and employers, the combination of the COVID-19 pandemic and remote work caused numerous changes in daily business routines and activities. Managing teams in the new environment was one of the biggest impediments for organizations, especially if they had arranged their work face-to-face before the pandemic. Global Workplace Analytics published results from the largest global post-COVID employee survey, including 2865 employees from the United States of America, which concluded that 67% of surveyed participants worked from home for the first time (Newman, S. A., & Ford, R. C., 2021). This is not just the case with the USA. Working remotely was unfamiliar to the majority of information workers worldwide. In the UK, only 6% of workers had such prior experience (ONS - Office for National Statistics, 2020; Mark, et al., 2022).

One of the most affected segments of businesses worldwide is knowledge sharing. With the rapid growth of virtual teams and enterprises, controlling knowledge in organizations has become even more challenging (Huysman & Wulf, 2006; Davidavičienė et al., 2020). However, new conditions in the global market, supported by information technology development, raised the popularity of knowledge sharing. As a set up by a company to communicate information and experience, knowledge sharing was a part of business development from an agricultural society to the market as we are familiar with today (Reid, 2003). Many factors are a base for functional knowledge-sharing systems, from education, technological infrastructure, the culture of knowledge-sharing, availability of resources, etc. (Muqadas et al., 2016; Ng, et al., 2022). According to Eshak, et al., (2022), knowledge is not considered valuable, until it can be shared. Knowledge sharing includes not just sharing existing knowledge but also bringing new knowledge to the team. Establishing systems that facilitate information exchange, permit efficient operations, high-performance standards, and staff innovation is essential to achieving teams' objectives (Rosen, et al., 2007).

The knowledge-sharing process can be done through various contexts such as documenting, and organizing, in the way of written form or social context (Eshak, et al., 2022). To build up effective communication and knowledge-sharing practices at individual, group, community, and business levels, based on IT support, different tools can be used for knowledge sharing, such as blogs, social media, collaborative tools, podcasts, etc. (Panahi, et al., 2013). Knowledge-sharing systems should make sure the proper data and information are available at the right moment, taking into account the many resources that businesses have at their disposal. The role of business leaders in encouraging and rewarding knowledge-sharing behaviors is crucial for these systems to work.

1. Development of Conceptual Model and Hypotheses

1.1. Knowledge Sharing, Team Effectiveness, and Trust

Knowledge sharing is performed through "capturing, organizing, reusing, and transferring the vast and unique knowledge that resides within the organization and making that knowledge available to others in the business" (Reid, 2003). The word "sharing" implies the act of communicating one's information to others in a way that they may require some deliberate effort on the side of the knowledge bearer. Additionally, sharing suggests that the sender and the recipient share ownership of the knowledge rather than the sender giving up it entirely.

Over the past decades, an increasing amount of research has included the notion that knowledge sharing improves team performance. In 1996, Cohen, et al., proposed an approach for understanding group behavior and analyzing team effectiveness. This normative method concentrated

on the team's capacity for collaboration and the effects of group experiences on individuals. Additionally, team empowerment, which includes elements of shared experiences, and meaningful connections related to work, is significantly related to team effectiveness (Hu & Liden, 2011). Another piece of evidence that can be taken into consideration comes from the social exchange theory which presents how perceived team support was expected to predict team commitment, which results in higher job performance (Cropanzan & Mitchell, 2005).

However, to achieve knowledge management, trust is the main component for success (Ford, 2004; Castelfranchi, 2004). Forming and maintaining relationships between team members is directly impacted by trust in the team (Jarvenpaa et al., 1998; Zaheer et al., 1998; Jarvenpaa et al., 2004; Powell et al., 2004; Brahm & Kunze, 2012). In virtual teams, organizational and/or team leaders play the main role in defining and building team culture which also includes trustworthiness. As remote work has faced new challenges in recent years, building trust has become crucial in the uncertain times of the global pandemic (Aitken-Fox, 2020; Newman, & Ford, 2021). There is a lot of research that examines the positive influence of trust on knowledge sharing among team members (Kuo 2013; Chen, et al., 2014; Ouakouak & Ouedraogo, 2017). Although some of these studies included analysis of various additional factors, they showed that professional trust within the workplace has a mediating effect on knowledge-sharing in organizations. In organizations in which team members tend to share knowledge, people have built trust between each other and the organization (Hinds & Pfeffer, 2003). As one of the suggested approaches in empirical studies for differentiating trust, Cook and Wall (1980) emphasized the importance of creating situations in which trust is developed to support task performance, which can be related to the level of team effectiveness. It is important to distinguish the type of trust that is a significant predictor when it comes to team effectiveness in virtual environment settings, and that is a cognitive-based trust (Kanawattanachai & Yoo, 2007). However, there is a lack of studies that examine the inverse link that exists between trust, knowledge sharing, and team performance. Hence, it is one of the topics we aimed to address in this study. For virtual team members to collaborate effectively, team members have to establish open communication and work on effective knowledge management in the team. Since those who work remotely often miss the regular social interactions that foster team cohesion, we think that knowledge-sharing activities can have a positive effect on trust and the efficacy of virtual teams. Therefore, we hypothesize as follows:

H1. Knowledge sharing positively influences team effectiveness in a virtual environment.
H2. Knowledge sharing positively influences trust in teams working in a virtual environment.
H3. Trust positively influences team effectiveness in a virtual environment.

1.2. The Impact of Collaboration on Knowledge Sharing, Team Effectiveness, and Trust

To build organizational knowledge, employees have to be willing to share and contribute with individual knowledge (Alavi & Leidner 2001; Bock et al., 2005). When this isn't the case and staff members are reluctant to share their expertise, collaboration will suffer and goals will be missed (Van den Bosch et al., 1999). Collaboration "enables teams to effectively leverage their team knowledge, skills, abilities, and resources towards the pursuit and completion of team goals" (Behfar et al. 2008; DeChurch et al., 2013).

Knowledge exchange can be better understood through Social Exchange Theory, as in this theory human behavior takes place in a social exchange (Blau, 1964; Alsharo et al., 2017). If we consider social exchange as a form of collaboration, it can have an impact on knowledge sharing in a virtual environment too. Additionally, Social Exchange Theory explains how people will behave in a certain way if they believe it will maximize their benefits, which can have the potential to positively influence the team's effectiveness too. Another theory supports this view: according to the Interdependence theory, team members will collaborate to achieve set goals, and that will affect team effectiveness too (DeOrtentiis et al., 2013, Alsharo et al., 2017). Virtual teams can face different challenges related to the lack of face-to-face interaction, working in different time zones, common understanding of specific topics due to speaking different languages, etc. Although teams working in a virtual environment sometimes need more time to set the common ground and make their collaboration effective, once they do, the benefits of collaboration take place (DeOrtentiis et al., 2013; Alsharo et al. 2017). What helps in this process is the willingness of team members to

share their thoughts, and discuss openly, hence they will naturally come to the process of collaboration.

Kanawattanachai and Yoo (2007) emphasized that task-knowledge coordination is the most important variable that influences the performance and effectiveness of virtual teams. Additionally, communication that is task-oriented is especially important for building trust in the team (Kanawattanachai & Yoo, 2007, Pangil & Moi Chan, 2014). In order to be effective, teams must be formed of individuals who will be able to work together and share their knowledge. Through collaboration, teams can build their own knowledge base and information resources that can become necessary for completing assigned tasks on their work. After analyzing previous research findings, we present the following hypotheses:

H4. Collaboration positively influences knowledge sharing within teams in a virtual environment.
H5. Collaboration positively influences team effectiveness in a virtual environment.
H6. Collaboration positively influences trust among teams in a virtual environment.

When members of a team trust each other, they are more likely to find knowledge-sharing trustworthy and valuable, which leads to increased use of shared knowledge and improved team performance. This is why knowledge sharing has a higher impact on team effectiveness (Alsharo et al., 2017). When trust is low, team members may be hesitant to freely share their knowledge for fear of exploitation, loss of recognition, or reputational damage. This lack of information sharing might reduce team effectiveness since essential ideas and skills may not be exploited or integrated into team processes and decision-making. As a result, trust acts as a moderator, changing the strength and direction of the association between knowledge sharing and team success, as expected. When trust is strong, information sharing is more likely to benefit team effectiveness; when trust is low, information sharing is less likely to benefit team effectiveness.

H7. Trust moderates the relationship between knowledge sharing and team effectiveness.

Figure 1 shows the conceptual research model in accordance with the stated and described research hypotheses:

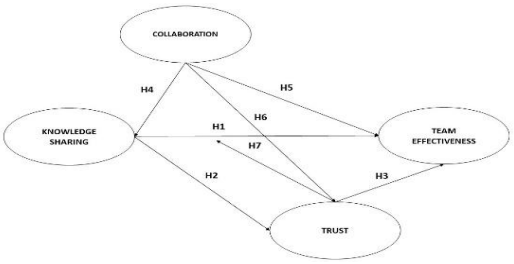

Figure 1 The conceptual research model
Source: the authors

2. Methodology

2.1. Sample Characteristics

The study's goal is to investigate how trust and expertise contribute to virtual teams' success. Professionals with jobs who resided in Bosnia and Herzegovina were given the questionnaire. The questionnaire consisted of 40 questions. The respondent characteristics—sex, age, education level, industry of the company they work for, and length of employment—are listed in the first section. The second section includes questions related to the employees' role in the virtual team and characteristics of the team, while the third section consists of questions about knowledge sharing and trust in virtual teams. The survey questions came from previously released studies. Knowledge sharing, trust, cooperation, and team effectiveness are the relevant variables. Appendix A contains the survey questions.

Table 1 Demographic characteristics of respondents

Characteristics	n	%
Gender		
Female	112	45%
Male	139	55%
Age		
18-29	130	52%
30-39	103	41%
40-49	12	5%
50-59	3	1%
60+	3	1%
Level of education		
Secondary education	22	9%
College education	111	44%
Bachelor	19	8%
Master	91	36%
PhD	8	3%
Industry		
Finance	21	8%
IT	120	48%
Marketing and Sales	33	13%
NGO	50	20%
Education	10	4%
Other	17	7%

Source: the authors

2.2. Measures

The majority of the indicators used in measuring scales come from earlier publications. The proposed research model was based on a total of 15 indicators. These indicators made an effort to quantify collaboration, trust, team effectiveness, and knowledge sharing. The questions were scored using a seven-point Likert scale with anchors that went from 1 for "strongly disagree" to 7 for "strongly agree." The indications were translated from their original English to the native language for better understanding. The questionnaire adaptation method involved two academic specialists. The construct collaboration that contains five indicators was adopted from Aram and Morgan (1976) and Alsharo et al., (2017).

Construct trust was measured by Mayer et al., (1995). In order to achieve knowledge management, trust is the main component for success (Ford, 2004; Castelfranchi, 2004). Trust is defined as "the willingness of a party to be vulnerable to the actions of another party based on the expectation that the other will perform a particular action important to the trustor, irrespective of the ability to monitor or control that other party" (Mayer, et al., 1995; Ford, 2004). Forming and maintaining relationships between team members is directly impacted by trust in the team (Zaheer et al., 1998; Jarvenpaa et al., 2004; Powell et al., 2004; Brahm & Kunze, 2012). In virtual teams, organizational and/or team leaders are playing the main role in defining and building team culture which also includes trustworthiness. As remote work brought new challenges, building trust became crucial in the uncertain times of the global pandemic (Newman & Ford, 2021; Aitken-Fox et al., 2020). Mayer et al., (1995), a frequently quoted and referenced study on the subject, provided the measures for trust (e.g. Jarvenpaa & Leidner 1998; Jarvenpaa et al. 1998; Dirks & Ferrin, 2001; Alsharo et al., 2017). The measures for knowledge sharing are adopted by Phang et al., (2009) and Alsharo et al. (2017).

Ipe (2003) defines knowledge sharing as "the process by which knowledge held by individuals, teams or organizations is converted into a form that can be understood, absorbed, and used by others." When the word "sharing" is employed, it is implied that the knowledge-holder must consciously take some action to offer their information to others in a way that they can use. Additionally, sharing suggests that the sender and the recipient share ownership of the knowledge rather than the sender giving up it entirely. The knowledge-sharing policies are derived from Phang et al., (2009) and Alsharo et al., (2017).

Team effectiveness is the capacity of the group or organization to produce goods and services that meet quality standards (Lindsjørn et al., 2016; Zaimovic et al., 2021). Achieving the expected level of quality obviously cannot be done without the effort of people who are part of the organization. Members of a virtual team must develop open lines of communication and focus on efficient knowledge management to collaborate well. The efficacy of a team is directly impacted by its various phases of development (Wheelan, 2005). The measures used to assess team effectiveness were taken from Alsharo et al., (2017) and Lurey and Raisinghani (2001).

Table 2 Constructs

Construct	Item	Source
Collaboration	Team members were asked for their suggestions when the team was originally formed.	Aram & Morgan (1976); Alsharo, et al. (2017).
	Careful consideration was given to the team's objectives during the design of this team.	
	I received sufficient information to understand the team's purpose when I was notified that I will be part of this team.	
	My role in the team was clearly explained to me.	
	I have received training focused on becoming more effective in the virtual team setting.	
Trust	If I had my way, I wouldn't let the other team members have any influence over issues that are important to the project.	Mayer et al., (1995)
	I really wish I had a good way to oversee the work of the other team members on the project.	
Team effectiveness	My team has been effective in reaching its goals.	Lurey & Raisinghani (2001); Alsharo, et al. (2017).
	My team is meeting its business objectives.	
	My input is valued by my team members.	
	My team members and I respect each other.	
	In my team, members' morale is high.	
Knowledge sharing	I routinely share my knowledge with my team members.	Phang et al., (2009); Alsharo, et al. (2017).
	I routinely seek out knowledge from other team members.	
	When several team members are discussing an issue, I can ask questions about anything I do not understand.	

Source: the authors

3. Data Analysis

3.1. Measurement Model

3.1.1. Validity and Reliability

The method of data analysis proposed by Anderson and Gerbing (1988), involving a two-step process, was employed. The first phase involved assessing the reliability, convergent validity, and discriminant validity of the measurement models. The procedure of adopting items from the available literature while taking the definitions of constructs into consideration validated the content validity. In addition, by checking standardized factor loadings we confirmed convergent validity. Hair et al., (2010) stated that the value of the Cronbach's Alpha coefficient, a common parameter used in reliability testing, should be greater than 0.5 (>0.5) (Bollen & Long, 2003; Garson, 2015). In our case, factor loading values ranging from 0.808 to 0.946, which are shown in Table 3, demonstrate the internal consistency and reliability of the measures as they exceed the 0.70 cut-off point. After confirmatory factor analysis, the final results are displayed in Table 3. In addition, the table below also demonstrate the results of internal consistency and reliability.

Table 3 Loadings reliability and validity

Item	st. loadings	Cronbach's Alpha	CR	AVE
COL1	0.870	0.868	0.905	0.656
COL2	0.870			
COL3	0.868			
COL4	0.885			
COL5	0.808			
TRUST1	0.867	0.721	0.877	0.781
TRUST2	0.900			
KS1	0.817	0.786	0.872	0.695
KS2	0.854			
KS3	0.830			
TEAMEF1	0.870	0.912	0.935	0.741
TEAMEF2	0.870			
TEAMEF3	0.868			
TEAMEF4	0.885			
TEAMEF5	0.808			

Source: the authors

A composite reliability (CR) measure is used to quantify reliability, and values above 0.7 are considered to be satisfactory. The CR measure's value ought to exceed 0.6. (Hair et al., 2010). The fact that all measurement model CR values are more than 0.8, as shown in the table above, attests to the measurement model's dependability. In addition, the examination of convergent and discriminant validity was conducted concerning the validity of measurement models.

Convergent validity examines the connection between a latent construct and the manifest variables. The average derived variance (AVE) and factor loadings as the most popular indicators of convergent validity were used in the testing. An AVE exceeding 0.5 and standardized factor loadings greater than 0.50 (Hair et al., 2010) indicate adequate convergence. As a result, we can observe in the table above that all the average variance extracted (AVE) values and all standardized factor loadings are more than 0.50. This confirms that model convergent validity meets the recommended threshold.

The measure of discriminant validity assesses the variety of constructs contained within a model. The comparison of the square root of the AVE value and the correlation coefficients between that construct and other constructs serves as the verification method in this study. According to Fornell and Larcker (1981), the square root of the average variance extracted should exceed the correlations between constructs. Table 4 displays the square root AVE values on the diagonal and the correlation matrix below the diagonal. The aforementioned indicates that all conceptions satisfy the requirement of discriminatory validity.

Table 4 Correlation matrix for discriminant validity

	KS	TEAMEF	COL	TRUST
Knowledge sharing	0.834			
Team effectiveness	0.698	0.861		
Collaboration	0.660	0.708	0.810	
Trust	0.391	0.476	0.428	0.884

Note: Bold values represent Square-root of AVE **Source:** the authors

Heterotrait-monotrait ratio (HTMT ratio) correlations were additionally employed to assess discriminant validity. Henseler et al., (2015) state that all values must fall within the 0.9 acceptable criterion. This further demonstrates that we have no issues with discriminant validity (Table 5).

Table 5 HTMT Ratio

	KS	TEAMEF	COL	TRUST
Knowledge sharing				
Team effectiveness	0.796			
Collaboration	0.780	0.788		
Trust	0.487	0.584	0.533	

Source: the authors

3.2. Structural Model

The Structural Equation Modeling (SEM) approach was used to test the structural model that was utilized in this paper. This multivariate method simultaneously examines the links between manifest variables and latent constructs as well as among different latent constructs by combining factor analysis and multiple regression. Its key

characteristic is the ability to evaluate several interdependent interactions simultaneously (Hair et al., 2010). Before to anything else, the model's constituent constructs and their relationships are specified. After doing the research and gathering enough data, the reliability and validity of the measurement models were examined.

Based on the findings and recommendations of prior research and studies, a structural research model has been established. Based on R^2 and Q^2 as well as the importance of the pathways, the structural model is evaluated. R^2 should be equal to or exceed 0.1 (Falk & Miller, 1992). The findings in Table 5 show that all R^2 values are over 0.1, confirming the validity of the demonstrated predictive capability. Additionally, the fact that the values of Q^2 are above zero further supports the significance of construct prediction.

Table 6 Hypothesis testing

	Hypothesis	β	ST DEV	T Stat.	P Values	f²
H1	Knowledge sharing -> Team effectiveness	0.906	0.210	4.324	0.000	0.141
H2	Knowledge sharing -> Trust	0.193	0.083	2.325	0.020	0.026
H3	Trust -> Team effectiveness	0.898	0.269	3.338	0.001	0.077
H7	Moderating effect -> Trust	-0.089	0.031	2.891	0.004	0.054
H4	Collaboration -> Knowledge Sharing	0.660	0.051	12.918	0.000	0.772
H5	Collaboration -> Team effectiveness	0.358	0.069	5.213	0.000	0.182
H6	Collaboration -> Trust	0.300	0.090	3.337	0.001	0.064
		R²	Q²			
	Knowledge sharing	0.433	0.292			
	Team effectiveness	0.628	0.449			
	Trust	0.196	0.148			

Source: the authors

In this part of the paper, an analysis of the relationships presented by the hypotheses is performed. Table 5 presents a standardized rating parameter that illustrates how the dependent variable changes concerning the standard deviation change in the independent variable. Additionally, it includes a t-value indicating whether a specific parameter significantly deviates from zero in a population. According to the data analysis, knowledge sharing has a positive significant impact on team effectiveness ($\beta = 0.906$, $t = 4.324$, $p = 0.000$). Knowledge sharing has a positive impact on trust ($\beta = 0193$, $t = 4.727$, $p = 0.020$). Trust as a moderator variable has a negative impact on knowledge sharing and team effectiveness ($\beta = -0.089$, $t = 12.918$, $p = 0.000$). Additionally, collaboration has a positive significant effect on knowledge sharing ($\beta = 0.660$, $t = 5.213$, $p = 0.000$). Collaboration has a positive effect on team effectiveness ($\beta = 0.358$, $t = 6.690$, $p = 0.000$). Collaboration has positive effect on trust ($\beta = 0.300$, $t = 3.337$, $p = 0.001$). Trust has a significant and positive effect on team effectiveness ($\beta = 0.898$, $t = 3.338$, $p = 0.001$).

4. Discussion and Conclusion

The results of this study suggest that knowledge sharing positively and significantly impacts the team's effectiveness and trust. Knowledge sharing, team effectiveness, and trust were all found to be positively correlated with collaboration. The study also indicates that trust has a negative moderating effect on the relationship between knowledge sharing and team effectiveness. Therefore, the research emphasizes the need for efforts in processes of building trust in virtual teams, that can be supported through clear communication, openness, and regular feedback.

To support collective learning, it is crucial for knowledge management initiatives to recognize that knowledge is embedded within social contexts and cannot be uncoupled from the social community (Huysman & Wulf, 2006).

Given that COVID-19 has expedited the growth of virtual teams, it will be beneficial for researchers to monitor and investigate innovations that could enable such teams to function optimally and reach their full potential (Kniffin et al., 2021).

The result that collaboration is positively correlated with knowledge sharing, team effectiveness, and trust emphasizes the significance of creating a supportive and cooperative team environment. Team effectiveness and trust may increase when members are motivated and engaged, which increases their propensity to work together and share knowledge. To reach these goals, it is important to establish processes and tools that will support the knowledge-sharing process. Organizations, process facilitators, and leaders have to be open when it comes to ways and tools that can be used for knowledge sharing so this practice can become engaging to their teams and different individuals.

Regardless of processes and tools, the main element that determines success in this kind of process is trust, and this is crucial to acknowledge when it comes to remote work settings. These results imply that team leaders ought to place a high priority on developing a team culture that encourages participation and knowledge sharing to improve team performance.

This study's conclusions have significant ramifications for organizations looking to boost trust and team success. There are numerous ways this study can be beneficial to organizations and leaders. Organizations may foster a more supportive and collaborative team environment that improves performance and fosters trust among team members by encouraging knowledge sharing and team involvement. Understanding how trust and knowledge sharing impact team effectiveness in virtual environments can provide valuable insights into how to structure and manage virtual teams for optimal performance. Also, organizations can use information from this study as a basis for creating strategic plans related to building activities that will enable a collaborative team environment that will be organized around knowledge-sharing efforts. Following that, research in this area can lead to the development of targeted training programs for both virtual team members and leaders. Training can focus on developing trust-building skills, effective communication strategies, and techniques for sharing knowledge across geographical boundaries. This can result in more competent virtual teams capable of navigating the unique challenges of remote work. The study's findings can influence the development of new or better usage of existing virtual collaboration tools and platforms that emphasize trust-building features and seamless knowledge-sharing mechanisms. As effective decision-making is crucial in virtual teams, understanding the role of trust and knowledge sharing can lead to the development of frameworks that guide decision-making processes in remote settings. Also, it is expected that traditional performance evaluation metrics might not fully capture the nuances of virtual team performance. Our study could contribute to the development of new metrics that account for factors such as trust-building efforts and knowledge-sharing contributions. This can lead to fairer and more accurate performance evaluations for virtual team members. Overall, this study can help in initiating discussions around practical implementation related to leading virtual teams in a way that can improve overall organization performance in the ever-evolving landscape of remote work.

The results of this study align with previous research emphasizing the importance of information sharing in enhancing team performance. Sharing knowledge allows team members to benefit from one another's knowledge and experiences, which can ultimately result in better decision-making and problem-solving. Since the sharing of knowledge is positively correlated with trust, it is anticipated that team members who share their knowledge will create stronger connections based on trust and respect. Some organizations have successfully built a knowledge-sharing culture that became their crucial business imperative even before the global pandemic hit. Similarly, those businesses that adjusted their knowledge-sharing mechanisms during the pandemic and transformed challenges into opportunities will achieve their organization's visions and navigate future changes in the market. For successful knowledge management, the initiative must be advantageous for both the organization and the knowledge worker (Huysman & Wulf, 2006).

4.1. Limitations and Future Research

Although this study offers many insightful conclusions, there are several limitations that need to be acknowledged. First, the fact that the study was carried out on one sample restricts the applicability of the findings to other situations. This study could be repeated in different organizational contexts in future research to see how generalizable the results are. Additionally, the study's cross-sectional design hinders our capacity to prove causality. Future studies could employ longitudinal designs to investigate the links between trust, teamwork, collaboration, and knowledge sharing.

Future research could delve into the influence of leadership on promoting knowledge sharing and teamwork. Studies could focus on the leadership styles and behaviors that promote knowledge sharing and collaboration in the work environments. Second, future research might investigate the effect of various forms of knowledge on team effectiveness and trust. For example, studies could assess the effects of tacit knowledge (hard to articulate knowledge) versus explicit knowledge (easy to articulate knowledge) on team effectiveness and trust. Finally, future

study might look into how cultural characteristics affect knowledge sharing, team involvement, team performance, and trust. Studies could explore how cultural differences in attitudes toward knowledge sharing and teamwork affect team performance and trust in various contexts.

Declarations

Availability of data and materials

The datasets used and/or analyzed during the current study are available from the corresponding author on reasonable request.

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✉ **Correspondence**

Amra Kapo

University of Sarajevo, School of Economics and Business, Trg Oslobodjenja – Alije Izetbegovic 1, 71000 Sarajevo, Bosnia and Herzegovina

E-mail: amra.kapo@efsa.unsa.ba