



Exploring the Key Factors Influencing Trust-Building and Their Impact on Enhancing the Performance of Global Virtual Teams (GVTs) in the Digital Age

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ABSTRACT

Companies rely heavily on Global Virtual Teams (GVTs) to work on challenges and remain competitive in this globalised world. GVTs use the internet, multimedia, collaborative software environments, and so on. A global team is made up of employees who work from different countries and time zones. When you are a member of this type of team, the virtual space serves as your common meeting place. The purpose of this study is to look into the factors that influence building trust in virtual teams. The research also looked at the influence of trust on individual and team performance in virtual teams. Trust is primarily formed through interpersonal interactions and communication, which allows individuals to get to know and trust one another in the workplace. Establishing trust in virtual teams can be difficult. Members may never have met in the past and have no chance of meeting in the future. This can lead to quick but fragile trust among the team members. To that end, understanding how trust affects virtual team performance and how it can help managers and team leaders facilitate and improve team success is critical.

A questionnaire survey was conducted to collect primary data among Bangalore IT sector employees. The study employed exploratory factor analysis to investigate trust factors, as well as descriptive and correlation analysis to examine the factors that lead to trust building in a virtual team. Furthermore, SEM (Structural Equation Model) analysis was performed to examine the interrelationship between factors influencing virtual team trust and virtual team performance.

The study explored the major factors to develop trust among virtual team members. The study's findings also revealed the strong link between trust and team performance. The findings will aid researchers, managers, and team members in better understanding the relationship between trust and team performance in Bangalore's IT sectors. The recommendations for increasing trust in virtual teams include re-emphasizing open and honest communication, recurring face-to-face meetings, and demonstrated work performance from participants.

Keywords: Global Virtual Team, Team Performance, Building Trust, IT Sector, Training and Development

Introduction

Global virtual teams (GVTs) are made up of culturally diverse members who are geographically separated and communicate using electronic means (Adamovic et al., 2021). Furthermore, they are frequently multinational and multicultural (Shaik et al., 2021). Members of the team can work from a variety of locations, including their homes, client sites, community work centres, and while travelling (Adamovic, 2021). Such teams are not limited to large organisations, but can be found in a variety of sizes across industries, consisting of full or part-time employees, freelancers, or others who collaborate to achieve the project or organization's goals (Shaik et al., 2021).

Since the early 1990s, organisations with a national or international reach have used virtual teams to reduce geographic distance and improve integration (Fang et al., 2022; Monday, 2022; Presbitero, 2021). GVTs rely on communication, collaboration, and the exchange of information. Despite technological advancements, the managers of these teams continue to face numerous challenges in effectively communicating with their teams (Paul et al., 2016; Gheni, Yousif and Jusoh, 2021). Virtual teams are used in all sectors of the economy (Smith and Ruiz, 2020). Academic research has attempted to keep up with virtual teams and their use. However, it has primarily focused on the IT industry, comparing and contrasting virtual teams with traditional face-to-face teams, and on improving trust and efficiency in Global Virtual Teams (GVTs).

The use of GVTs is increasing, and implementing a GVT raises difficult issues for organisations and leaders (Taras et al., 2019; Zaharie, 2021). The management of GVTs is a challenge. GVT management differs from traditional face-to-face team management, and many organisations attempt to manage GVTs using traditional team best practises (Shaik et al., 2021; Zaharie, 2021). Another issue that GVTs face is a lack of understanding of cultural norms and cultural intelligence (CQ). (Shaik et al., 2021; Zaharie, 2021). According to Shaik et al. (2021), GVT team members of culturally different nationalities have a significant impact on team identification, leading to misunderstandings. A lack of CQ and trust can exacerbate communication issues and team member disagreements (Presbitero, 2021; Monday, 2022). The present study built on previous research by examining how trust in GVTs impact the performance of the team members and the team as a whole in the IT Sector.

Virtual teams have been used since the beginning, with varying degrees of success (Nguyen, 2013; Abarca, Sanchez and Arias, 2020). These advances in the use of GVTs were quickly followed by academic research in this field. Theoretical research on virtual teams and the supporting management procedures was first conducted in order to identify and outline the benefits and drawbacks of virtual teams. As a result, the advantages of virtual teams in various business scenarios and academic settings became clear. According to recent research, virtual teams are a widely used organisational tool at the group level that focuses on organisational success (Abarca, Sanchez and Camacho, 2021).

Previous research in GVTs found a link between trust and team performance. The current study's goal is to determine whether there is a direct relationship between trust and team performance within GVTs in IT Sector companies, as well as to identify factors that may aid or hinder trust growth in virtual teams in the IT industry (Nguyen, 2013; Breuer et al., 2020). The findings may assist academics, managers, and virtual team members in identifying key areas for developing targeted strategies to increase trust in virtual teams.

Objectives of this Study

The major objectives of the study are reported below:

- To identify and analyse the factors that influence the development of trust in virtual teams
- To analyse the impact of identified factors on the development of trust in virtual teams
- To analyse the impact of trust on the performance of virtual teams

Literature Summary

An extensive review of literature was carried out to understand the factors which influence in building trust in GTVs and how they are contributing to the team performance in virtual teams.

Organizations must keep updating themselves and training employees as technology changes and improves (Maznevsk and Chudoba, 2020). Organizations are increasingly utilising virtual teams to control and regulate their multi-location operations by utilising talent located in geographically dispersed locations. Previous research has revealed a number of intriguing insights that companies can use to better organise and manage their virtual teams and projects (Nguyen, 2013; Breuer et al., 2020). The authors investigate the effects of various virtuality levels on the fundamental dimensions. Using the three dimensions allows them to assess how differently they relate to the extent to which technology-mediated communication technologies are used as a proxy for virtuality. At high levels of virtuality, team effectiveness can be enhanced by having strong leadership and centralization, less skill disparity between team members, and a longer-term outlook, among other things (Zaharie, 2021). The paper examines the IPO from the perspective of the behavioural communication process (use of technology mediated communication), the inputs of team productivity, innovation, learning and adaptation, member satisfaction, the outputs of team productivity, skill differentiation, leadership, and authority differentiation (Presbitero, 2021).

Training is essential for virtual team success because it enables virtual team members and e-leaders to interact and organise their work effectively (Rosen, Furst and Blackburn, 2018). Training aids in the transfer of characteristics required to develop dependable and beneficial connections in GTVs, such as facial expression and voice tone. These technologies must have a high level of richness which assist relationship formation to effectively facilitate social information interchange. By examining both self-directed virtual teams and virtual teams with enforced behavioural constraints, team effectiveness results are contrasted (Nguyen, 2013; Piccoli, Powell and Ives, 2022). Multi-level leadership strategy is best working for virtual teams (Breuer *et al.*, 2020). According to the literature, research on virtual team leadership and its influence on processes has traditionally concentrated on the team level. Because virtual team members are frequently geographically separated, virtual

team leaders communicate with specific team members. As leader behaviours affect both team processes and individual members, evaluating virtual team leadership requires a multi-level approach.

Socio-cultural features influencing knowledge value creation of virtual teams also affect the performance of GVTs (Vorakulpipat, Rezgui and Hopfe, 2019). Building trust in GTVs is more significantly impacted by organisational culture. Virtual team members should define diversity for themselves, be realistic when setting goals, involve everyone who has a responsibility for it, from the CEO to every virtual team member, and manage virtual team members' expectations in order to help them overcome challenges related to organisational culture (Paul et al., 2016; Breuer *et al.*, 2020). Organizational culture challenges are complicated, and not all businesses will develop at the same rate. This will help members of virtual teams overcome organizational-level obstacles related to organisational culture, strengthening the development of virtual team trust. Leadership and leader make a team to be successful by guiding, helping, improving their employees with virtual teams (Mukherjee *et al.*, 2016). Even participants need feel linked to one another in order to create trust, and the success of virtual environments is greatly influenced by how well communication tools are used (Abarca, Sanchez and Camacho, 2021; Monday, 2022). Additionally, it was shown that while trust levels are frequently on the low side at first, they clearly increase when teams begin to work together and exchange information.

Virtual teams build the bridge between Employees and Management and gauges the performance of Employee (Nguyen, 2013; Kirkman *et al.*, 2018). Teams are more effective when they use the right technology and standards for communication. Utilizing effective communication techniques promotes team building. We also draw the conclusion that teams are more effective when roles and duties are clearly assigned. Teams develop in a friendly social environment. The success factor of virtual teams is their capacity for adaptation and change. The research gaps were identified after the detailed review of literature. The anticipated growth in virtual team uses and the absence of meaningful training to prepare individuals for virtual team assignments is not specified (Paul et al., 2016; Rosen, Furst and Blackburn, 2018). Many studies have a constraint of availability of data and information amongst the members who actually work in a virtual scenario (Bhat, 2017; Monday, 2022). Limited studies on Trust and team performance relationship among IT sector Employees (Mukherjee *et al.*, 2016). The present study has taken these gaps for framing the research problems and objectives of the study. Based on the research gap analysis, a conceptual model for the study is proposed as depicted in Figure 1.

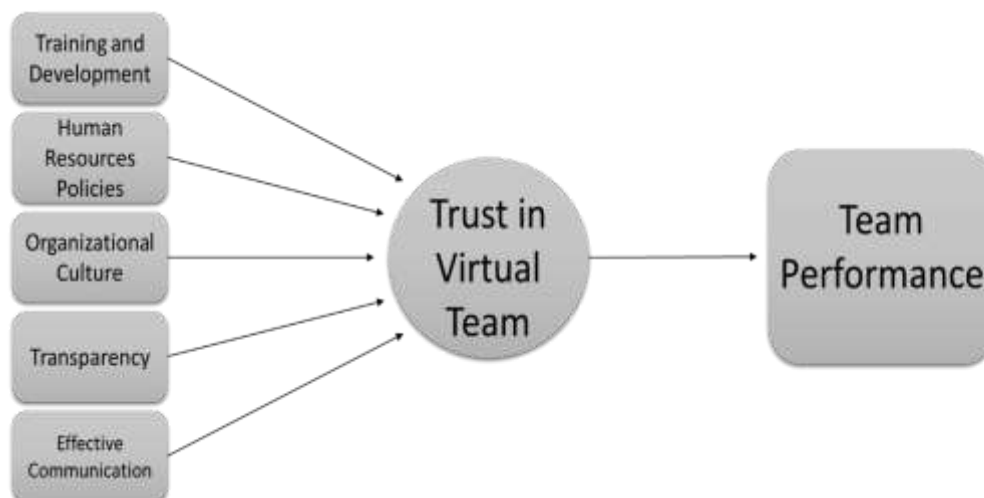


Figure 1: Conceptual Model

Based on the literature review, the conceptual model depicts the impact of various factors on building trust in virtual teams. The proposed study used variables to measure these factors and to identify a new factor structure for the Bangalore IT sector. Furthermore, the study proposed examining the impact of trust building on virtual team performance in the IT sector.

Scope of the Study

Bengaluru is renowned as India's Silicon Valley, a technology powerhouse that attracts the top domestic and international companies. Further, Bengaluru emerged as the 'Unicorn Hub' with highest number of start-ups in India (Prasad & Jahan, 2021). Moreover, The city benefits from a rich heritage, cosmopolitan culture, pleasant climate and a multi-lingual environment. In view of this, Bengaluru attracts people from all around India comprising of people with heterogenous culture, who are looking to advance their education and careers. Therefore, Bengaluru is deemed as one of the suitable locations for the study.

Methods and Methodology

The present study is empirical in nature. Employees, Human Resource Managers of IT Companies in Bangalore with experience working in a virtual team comprised the study's population. As data collection is critical to carrying out the study, collecting the right data from the right employees at the right time allows us to increase the study's accuracy and reduce the error level.

Data Collection

The study relies on primary data. Data collected from the employees through online questionnaire survey using Google forms to analyse the casual relationships to be tested in the proposed study. Primary data was collected through a pre-designed questionnaire consisting of 29 items for employees and HR professionals. Questionnaire survey helps to maintain the data confidentiality of the responses given by the respondents. Based on the literature research, a questionnaire was created. Google Form was used to distribute the questionnaire. Demographic profile and scaled factors and open-ended questions for personal remarks were the three sub-sections of the questionnaire for employees and HR experts A five-point Likert Scale was used to measure the variables of study.

Before distributing the questionnaire to the larger population, a pilot study was conducted to test its validity and reliability with the first 25 responses. Finally, the total number of responses received from 164 employees, including HR professionals with virtual team experience.

Statistical Analyses

Different methodologies and statistical tools were used to achieve the objectives. Demographic characteristics were analyzed using descriptive statistics. Further, the challenging factors with respect to building trust in virtual team were identified through EFA (Exploratory Factor Analysis) followed by Confirmatory Factor Analysis (CFA) to validate the derived factor structure. Descriptive and correlation analysis were conducted to analyse the criticality and association between these factors. Further, to check the interrelationship between the Trust and Team performance of the Virtual team SEM (Structural Equation Model) was carried out in SPSS Amos.

Results and Discussion

The collected data was analyzed using different statistical analysis and tools to reach the objectives

Reliability Analysis

The Reliability Analysis enables us to comprehend the internal consistency of the data set gathered via questionnaire. The questionnaire in this study was framed from the results of the literature survey, which included 29 scaled variable questions, and collected responses from employees and HR professionals. If the Cronbach's Alpha value is greater than 0.70, the questionnaire is said to be reliable. The Cronbach's Alpha Value obtained in this case was 0.95, indicating that the data set's internal consistency and reliability to go forward with the data collection.

Demographic Characteristics of the Respondents

When the age of the respondents was examined, 37.8 percent of employees and HR professionals who responded belonged to the age category of less than 25 years. Furthermore, 40.1 percent of respondents were female, while 59.9 percent were male. The majority of respondents (71.3 percent) worked in hybrid mode, with the remainder working in complete virtual mode (approximately 14 percent), and the rest working in complete independent mode (14.6 percent). Based on various factors such as Training and Development, Organizational Culture, Human Resources Policies, and so on, the respondents' preferred mode of work was Hybrid. Furthermore, employees claim that face-to-face interactions and meetings are convenient than offline interactions and meetings. However, as a result of the pandemic, people all over the world are increasingly working and interacting online.

Data Screening

The collected data was checked for missing values and outliers, and corrections were made. The absence of Common Method Variance (CMV) was determined by deriving a single factor through EFA, which was 32.43 percent, less than the threshold limit of 50 percent (Podsakoff et al.,2012). Furthermore, a KMO value greater than 0.80 and a critical tail value of Bartlett's test at a significance level of 0.05 determined the data's suitability for factor analysis.

Data Analysis to Achieve the Objectives

In order to accomplish the goals of our study Descriptive Analysis, Factor Analysis, Correlation Analysis, and Regression Analysis were carried out. The current study focused on three main objectives to understanding the factors that influence trust building and how trust is related to team performance in virtual teams.

Identifying the factors influencing the Building Trust in Virtual Team

Exploratory factor analysis (EFA) was used to identify the factors influencing the development of trust in virtual teams. Even though the factors were identified through literature, it is critical to understand how these factor structures differ among employees of IT sector companies. Principal component analysis with varimax rotation was thought to be the best technique for obtaining the greatest number of uncorrelated factors in this situation. Prior to that, KMO and Bartlett's tests were carried out to determine, whether the samples and data were adequate and suitable for factor analysis. Both of the calculated values met the threshold values listed in Table 1, indicating that the sample and data were adequate for factor analysis.

Table 1: KMO and Bartlett's test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.	0.92	
Bartlett's Test of Sphericity	Approx. Chi-Square	276
	Sig.	0.00

Based on the factor analysis, four factors were identified as having an impact on the development of trust. Table 2 lists the factors derived from factor analysis as well as the variables associated with them. The variables that comprised the factors were named based on their underlying similarity.

Table 2: Identified Challenge factors and the

Variables	Factors
There are shared goals and values among employees.	Human Resource Policies (HRP)
There is similarity and conformity between employee's personal values and organizational goals and values.	
Course material was difficult to understand without proper guidance	
HR policies in my organization are tailored to meet the needs of diverse work force.	
Unclear role and responsibility distribution can adversely impact trust building process	Employee Loyalty (EL)
There is team work morale among employees.	
Ample amount of information is transferred in order to make team members understand the purpose of team	
Employees can trust their colleagues when needed	Organizational Culture (OC)
A good knowledge about project leads to good performance of team	
In team, sharing knowledge and information is mandatory	
By accepting to work with other groups (Ethnic, Gender, Physical ability)	
By training employees to learn about & be sensitive to cross cultural differences.	
Acceptance of cultural diversities within the team leads to effectiveness in work	Employee Engagement (EE)
Employees consider themselves as members of a shared and large family.	
Consistency is one of the most important aspects of communication that build trust.	

corresponding variables for students

Thus, the final derived factors were Human Resource Policies (HRP), Employee Loyalty (EL), Organizational Culture (OC), and Employee Engagement (EE). These four factors explained 61.05% of the variation among all variables. Further, the variance explained by each factor is reported in Table 3.

Table 3: Variance explained by the derived factors

Identified Factors	Variance Explained
Organizational Culture (OC)	19.22
Employee Engagement (EE)	16.07
Employee Loyalty (EL)	13.86
Human Resource Policies (HRP)	11.90

According to the findings, organisational culture was the most influential factor in the development of trust in virtual teams. Confirmatory factor analysis (CFA) was also used to determine the validity of the derived factor structure from exploratory factor analysis (EFA). The same factor structure was retained by CFA. However, in order to achieve the required model fit, some of the variables were removed. Figure 2 depicts the path diagram for the CFA.

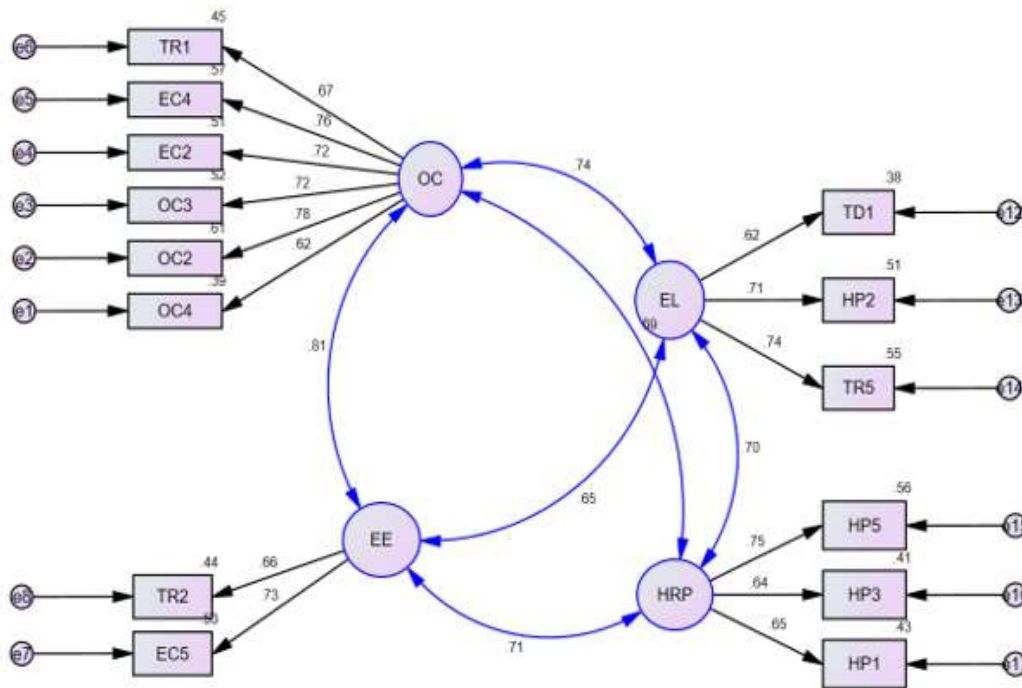


Figure 2: Path Diagram of CFA

The Chi-square value derived (445.15) was statistically significant with P-value less than 0.05, indicating the model fit. The other goodness of fit indices commonly considered in CFA (Kline, 2011) analysis to confirm the model fit are reported in Table 4.

Table 4. Model Summary Fit

Goodness of Fit Index	CMIN/DF	NFI	RFI	GFI	TLI	CFI	PNFI	RMSEA
Derived values	1.644	0.87	0.88	0.87	0.86	0.87	0.65	0.07
Thresholds (Byrne,1999)	>3	0.80	0.80	0.80	0.80	0.80	0.50	0.80

DF- Degree of Freedom, NFI-Normed Fit Index, RFI- Relative Fit Indices, GFI- Goodness of Fit Index, TLI-Tucker Lewis Index, CFI- Comparative Fit Index, PNFI-Parsimony Normed Fit Index - and RMSEA- Root Mean Square Error of Approximation.

All the goodness of fit indices were above the threshold value indicating a good model fit. Figure 2 displays the Standardized Regression Weights (SRW) for all the components in the trust model. The standardised regression weights (SRWs) indicating the association among the variables were above 0.60 and majority were above 0.70. SRW values indicated that all the variables are loaded well into each corresponding factor. Although it is recommended to take into account variables with SRW over 0.70 (Kline, 2011), variables below that also can be considered, if the latent concept's construct validity is attained. So, the final identified factors remained the same after CFA analysis and the factors were, Human Resource Policies, Employee Loyalty, Organizational Culture, and Employee Engagement. These factors were further considered for Structural Equation Modelling (SEM) to analyse the interrelationships between Trust and Virtual team performance.

Analysing the Trust Building Factors in GVTs

The importance of each derived factor was analysed using descriptive statistics, by deriving the mean value for each factor based on the responses of the employees. The results are interpreted based on the mean values. Table 5 shows the descriptive Statistics, the mean value of each factor responses.

Table 5: Descriptive Analysis

Descriptive Statistics	
Factors	Mean
Organizational Culture	3.47
Employee Engagement	3.52
Employee Loyalty	3.50
Human Resource Policies	3.47

According to the results in Table 5, Employee Engagement has a higher mean value of 3.52. Employee Engagement on building trust in Virtual Teams was found to be the most influential factor among the four factors studied.

Analysing the impact of identified factors on Building Trust in Virtual Team

Regression analysis was also performed to determine the relationship between trust (dependent variable) and the identified factors (independent variables). A positive correlation coefficient (R) indicates a positive correlation. The Organisational Culture, Employee Loyalty, Employee Engagement, and Human Resource Policies all contribute to or improve trust. As a result, keeping these factors high is critical for fostering trust among virtual team members. The result of the regression model is reported in Table 7.

Table 7: Regression

Regression Analysis		
R	R Square	Sig.
0.82	0.67	0.00

R square value obtained was 0.67 indicating that 67 % percentage of variation in Trust is explained by these four factors indicating a good model. The obtained Sig < 0.05, was also confirms the model validity.

Analysing the interrelationship between Trust and Team Performance

The last objective entails developing a model to determine the impact of the identified factors on Building Trust and, eventually, their impact on Team Performance. CFA was performed previously to confirm that the factor structure is adequate and a good fit for developing a model. This interrelationship between trust and team performance in virtual teams was analysed using SEM (Structural Equation Model).

Alternate Hypotheses for this Relationship is:

H1: Building Trust influences Virtual Team Performance

The path co-efficient of the relationship between Trust and Team Performance is displayed in Figure 3.

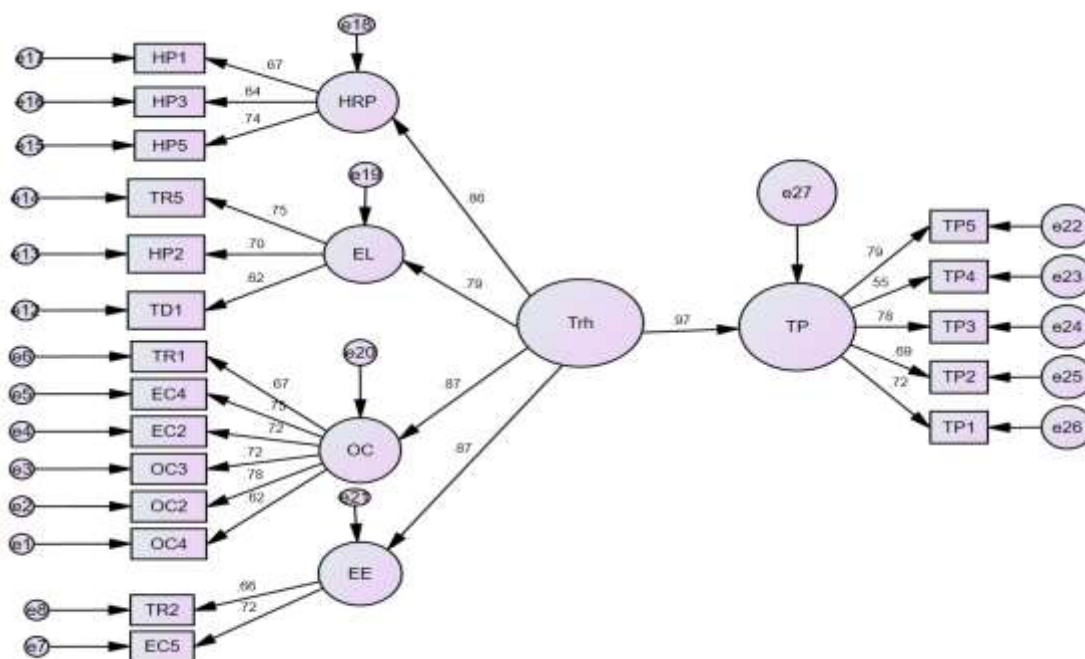


Figure 3: Trust-Virtual Team Performance Model

TP-Team Performance; Trh-Trust in Virtual Teams

The results indicate a highly positive impact of Trust on the performance of GVTs, The P-value for this relationship was also less than the level of significance 0.05, showing that the Null Hypothesis (NH) is rejected for this association between Trust and GVT performance.

Further, Table 8 reports the goodness of fit indices for the final trust model to analyse the validity of the derived model.

Table 8: Fit Indices for the Trust-Virtual Team Performance Model

FIT Indices	Values	Threshold Values (Byrne, 1998)
CMIN/DF	1.563	<3
NFI	0.85	0.8
GFI	0.84	0.08
IFL	0.86	0.08
TLI	0.88	0.08
CFI	0.85	0.08
PNFI	0.65	0.05
RMSEA	0.06	0.08

Team Performance has positive relationship with Building Trust in Virtual Team. Thus, the result established that the factors influencing the building trust in virtual team will directly affect the team performance too. The result can aid in focusing on these factors for enhancing building trust in virtual team and help improve the Team performance GVTs. By comparing the output of the analysis with the standard values we can say that building trust in Virtual team has influence and contributes in better Team Performance. All the obtained values satisfied the thresholds to conclude the validity of the Trust model.

Conclusion

It is critical for the performance of virtual teams to focus on a training programme that focuses on the development, maintenance, and support of these teams. Building Trust in Virtual Teams is Associated with Improved Team Performance. As a result, it was determined that the factors influencing the development of trust in virtual teams will have a direct impact on team performance. The final derived trust factors were Human Resource Policies (HRP), Employee Loyalty (EL), Organizational Culture (OC), and Employee Engagement (EE). According to the respondents, the most influential factor in building trust in virtual teams is employee engagement, which has a higher mean value of 3.52. Furthermore, all of the factors were found to be highly related to one another, indicating the importance of these factors in developing trust in virtual teams. These four factors explain 67 percent of the variation in Trust, indicating a good model. The results shows that all the factors together can explain trust in virtual teams. The outcome may help with concentrating on these elements to enhance developing trust in virtual teams and aid in increasing team effectiveness. Even previous studies conducted in the commercial sector found that there is a strong positive correlation between trust and team performance. The findings of this and related studies show a significant link between virtual team effectiveness and trust. It would be beneficial for both team members and leaders to translate contributing factors into useful tactics for promoting trust in virtual teams.

The study's findings will be critical in improving the effectiveness of virtual teams and virtual team employees. The findings also shed light on the relationship between trust and perceived team performance within virtual teams in the IT sector. The study also focuses on how remote teams in the IT industry foster and undermine trust. Building trust among team members, particularly trust based on institutional or cognitive trust, is advised for virtual teams that need to increase their performance. Perhaps training can be used to enhance team perceptions, member cohesion, and overperformance.

Recommendations:

The findings of the study are critical to enhance Trust and there by virtual team performance of IT sector companies. The results have multi-fold implications for the senior management in terms of nurturing an efficient virtual team for the success of the organisations.

Despite organization's extensive use of virtual teams, a lack of training specifically for these teams was identified as a weakness. Based on this, it is advantageous to devise a strategy to encourage improvements in various factors that contribute to trust. In order to continuously establish trust among team members from the outset and to maintain that trust over time in order to increase knowledge exchange, it is imperative that the leadership consider investing in training. While it is known that training virtual team members may improve communication and trust, it is less certain how this training may impact the effectiveness of the team as a whole. Further, a review of the knowledge, skills, and qualities deemed necessary to successfully lead and manage a virtual team in the IT sector would improve hiring practices and accession planning for both members and leaders. Based on the study's findings, it is vital to further examine the leader's position inside the virtual team and how their skills, knowledge, and perspectives on the team's performance relate to it.

Limitations and Future Scope for Study

Based on previous research findings, the current study assumes that there will be a quantifiable level of trust among the virtual team members. This begs the question of whether respondents will faithfully record their

responses. This study included only respondents who are either employed by or under contract to the entity being chosen, and the sample size was small. Due to the nature of the organization's purpose direction and leadership structure, the opinions of these organisational members may not adequately represent other non-IT sector agencies. Although this study's findings add to the body of knowledge, it's possible that the information and conclusions cannot be applied to the public sector or other non-IT-related organisations.

Future scope of study would be to increase the sample size to get more accurate result. The study can be extended to banking and other non-IT sectors and the circumstances of COVID-19 can also be studied. Further, future studies can consider the organisational perspective which helps to bring in suitable recommendations. In this study, team performance was examined at a specific point of time. It might be possible to identify whether the correlation between team performance and trust gets stronger, weaker, or stays the same over time, if efficacy could be assessed based on actual results as opposed to only looking at the link at one particular point in time.

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