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Effectiveness Of Virtual Team Building In Enhancing Employee Skills

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Abstract: The study intends to examine the effectiveness of Virtual Team Building (VTB) that enhances the employee skills. Nowadays the Information Technology industry is emphasized to be one of the sectors that has a vital role worldwide. Virtual platform has brought substantial changes in IT industry in India. A study among 472 employees of food delivery industry in Tamil Nadu was conducted. Virtual team building establishes an improved understanding of the determinants that enhance the employee skills. More importance needs to be given on the enrichment of the existing skills and talents of the employees so that they sustain in their field for a long period. The Covid 19 pandemic situation has led almost all the industries to prevail virtual team work. This study provides suggestive inferences for improving the employees' skills through effective team building.

I. INTRODUCTION

Virtual teams (VT) are a modern innovation driven by globalization and technology, consisting of members from diverse backgrounds and locations. While VT offers numerous opportunities, it also presents challenges related to communication, trust, and collaboration. Cultural diversity can complicate interactions, and biases may distort communication. Effective feedback, shared goals, and mutual trust are essential for team success. Managing team members, fostering trust, and bridging psychological gaps are critical for project success.

VT members require training in teamwork and technology to enhance collaboration. Motivation is key, as cultural differences affect communication and trust. Knowledge sharing through conference calls, online training, and virtual meetings improves performance and builds trust. However, the absence of face-to-face interaction and nonverbal cues can hinder communication. Regular virtual meetings help overcome these barriers and facilitate coordination.

Training in collaboration tools enhances productivity and job satisfaction, enabling members to develop new skills. Effective coordination, visibility, and monitoring are crucial to reducing challenges associated with global distance. Unlike face-to-face teams, virtual teams rely heavily on electronic communication and collaboration technologies. Strengthening communication, cooperation, and adaptability ensures successful VT operations in a globalized work environment.

OBJECTIVES OF THE STUDY

1. To determine the effectiveness of Virtual Team Building that enhances the employee skills
2. To analyze the opinion of the Virtual Team members regarding their skills enhancement
3. To identify the influence of employee skills on their performance
4. To assess the reliability and validity of the VTB Instrument
5. To provide valuable suggestions in improving the Virtual Team in enhancing the employee skills

HYPOTHESES OF THE STUDY

The following Hypotheses were tested for the study

H₁: There is no significant difference between Mean Ranks towards Virtual team building

H₂: There is no significant difference between Male and Female with respect to Virtual team building

REVIEW OF LITERATURE

Literature review is executed to determine the success factors in building and managing high performance by VT.

Cohen & Gibson (2003) pointed that almost all teams use technology to some extent, but virtuality grows as reliance on electronic communication grows. Geographically dispersed teams frequently have no choice but to communicate electronically, even if some team members would prefer face-to-face interaction.

Kirkham et al. (2002) stated that the highest level of virtuality is achieved when all members work in separate locations and only communicate and interact via computer-mediated communication or other distance communication technologies.

Maznevski & Athanassiou (2003) examined that establishing procedures for information sharing within a virtual team is relatively simple for virtual team members or leaders. Facilitators can even create different forums to distinguish between the task, social, and contextual information that team members typically share, and create procedures appropriate for sharing or transferring each type of information.

Cappel & Windsor (2000) depicted that team members in the virtual environment can express their ideas completely without interruption by others and can make these contributions at a time that is personally convenient or available to them, removing competition for immunization.

Johnson et al. (2003) found that as they were not physically present, virtual team members were less inhibited, and their ideas and feedback were franker. Differences in the technology resources available at the various sites; a lack of overlap in work hours between locations, which may result in slowed response time; and the constraints of local work priorities and culture may confound these apparent advantages.

Kanawattanachai & Yoo (2002) described that organizations are increasingly utilizing virtual teams because they enable organizations to bridge time and space.

Gibson & Cohen (2003) stated that since most of the interactions, commitments, and outcomes are automatically and electronically archived, performance in virtual teams is frequently easier to document and review.

LePine et al. (2008) observed that team performance is influenced by a variety of factors, the most important of which is teamwork, which is widely regarded as an important predictor of team effectiveness and member satisfaction. While it is widely accepted that effective teamwork leads to improved team performance,

RESEARCH GAP

Building VT can be a difficult task due to workplace factors such as cultural, functional and organizational differences. The lack of a common language creates additional communication barriers. VT teams face more communication difficulties than face-to-face teams; traditional communication mechanisms are lost or distorted.

A lack of goals to help them complete their assigned tasks may impede team performance. Logistics are more complicated with VT members in different time zones. As a result, overcoming feelings of isolation and detachment among VT members becomes a challenge.

VT members need to gain new knowledge and skill sets to help the team achieve its performance and goals. Inadequately assigning tasks to appropriate team members can impede team performance and cause delays in delivering solutions to customers. Virtual teams allow organizations to expand their geographic reach while maintaining effective contact with employees and customers. (Maynard, 2006)

METHODOLOGY

The study focuses on Tamil Nadu in India. 472 employees of Information Technology industry from Tamil Nadu are taken as sample and surveyed with the help of a questionnaire for the study. The study is an empirical study. Secondary data is sourced from various credible sources like books, newspapers, journals, and through access to various websites. Primary data is collected through random sampling technique.

Sampling technique

Simple random sampling method was applied from probability sampling method to select the sample.

Research design

Descriptive research design is employed for this study.

Tools and Techniques

Statistical tools like Descriptive Analysis, Friedman Analysis, t-Test, Regression analysis, Factor Analysis with Kaiser normalization are employed for the study. Cronbach's Alpha is calculated for finding the reliability of the data.

Table 1 Overall Reliability Statistics for Dimensions of Virtual team building

Sl.No.	Reliability Statistics	
1	Cronbach's Alpha	N of Items
2	0.939	9

Source: Statistically analyzed data

The Overall Cronbach's Alpha for instrument (questionnaire) is **0.939**. It also shows a positive correlation between items in the instrument. It shows that all 8 items constructed in the questionnaire is confined its reliability.

Table 2 Reliability Test for Dimensions of Virtual teambuilding

Sl. No.	Item-Total Statistics				
	Particulars	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
1	Virtual team	93.0487	96.339	0.479	0.704
2	Trust	93.5297	94.046	0.454	0.708
3	Organizational factors	91.9301	107.658	0.317	0.730
4	Technology	92.4852	91.686	0.558	0.689
5	Performance	92.7987	92.548	0.454	0.709
6	Leadership	91.8347	107.769	0.308	0.731
7	Management	92.4597	96.984	0.442	0.710
8	Communication	92.5953	94.993	0.425	0.714
9	Information Sharing	91.8941	106.537	0.277	0.736

Source: Statistically analyzed data

The above table shows, reliability items result of Cronbach's Alpha (if Item deleted). By applying ALPHA method in SPSS, proved that there is an internal consistency between the items of 9 items in questionnaire related to the Virtual team building. The Instrument is analyzed through a purification process based on the coefficient alpha as a measure of reliability of measurement instruments.

HYPOTHESIS I

Null Hypothesis: There is no significant difference between Mean Ranks towards Virtual team building

Table 3

Friedman test for significant difference between Mean Ranks towards Virtual team building

1.	Virtual team building	Mean	Chi-	P value
Virtual team				
1	Team collaboration increases productivity	1.92	6.569	0.003**
2	Regular virtual team meeting improves	2.03		
3	Virtual team co-ordinates all the members together	2.05		
Trust				
4	Task commitment leads to trust	2.03	8.172	0.000**
5	Trust among team members prevents deceptive	2.05		
6	Trust enhances team performance	1.91		
Organizational factors				
7	Cultural differences initiate diverse knowledge and	1.83	96.418	0.014*
8	Real time training influences organizational	1.85		
9	Right functional expertise boost task success	2.32		
Technology				
10	Proper Training and Development initiates	1.90	22.160	0.000**
11	High quality task is attained by VT	2.15		

12	Latest version of virtual communication tools is used	1.95		
Performance				
13	Training acquires new knowledge and skills	1.97	29.247	0.000**
14	Feedback improves team performance	1.87		
15	Performance assessment motivates VT members	2.16		
Leadership				
16	Effective delegation of task leads to appropriate	1.82		
17	Leader motivates the VT members in achieving the	2.25	60.303	0.000**
18	Leadership nurtures VT spirit	1.93		
Management				
19	Efficient management eliminates the frustrations	2.00		
20	Responsibilities are articulated clearly and effectively	2.19	52.169	0.006**
21	Effective management monitors virtual distance	1.81		
Communication				
22	Virtual team overcomes face to face interaction	1.74		
23	Task oriented communication is more effective	2.17	58.752	0.000**
24	Virtual communication can be conducted at	2.10		
Information Sharing				
25	Effective information sharing bridges gap between	1.84		
26	Knowledge sharing helps in improving expertise	2.34	119.049	0.032*
27	Information sharing induces individual involvement	1.82		

Source: Statistically analyzed data

** Denotes significance at 1% level

* Denotes significance at 5% level

Based on **Mean Rank**, the top factors influencing Virtual Teams are ‘**Virtual team coordinates all members together**’ (2.05), followed by ‘**Regular virtual team meetings improve performance**’ (2.03) and ‘**Team collaboration increases productivity**’ (1.92). The **p-value < 0.01** confirms a significant difference in Mean Ranks.

For **Trust**, the key factors are ‘**Trust among team members prevents deception**’ (2.05), ‘**Task commitment leads to trust**’ (2.03), and ‘**Trust enhances team performance**’ (1.91) (**p < 0.01**).

Regarding **Organizational Factors**, ‘**Cultural differences initiate diverse knowledge and skills**’ (2.32) ranks highest, followed by ‘**Real-time training enhances organizational effectiveness**’ (1.85) and ‘**Right expertise boosts task success**’ (1.83) (**p < 0.05**).

For **Technology**, the most critical factors are ‘**Latest virtual communication tools are used**’ (2.15), ‘**High-quality task completion**’ (1.95), and ‘**Proper training enhances development**’ (1.90) (**p < 0.01**).

In **Performance**, ‘**Assessment motivates VT members**’ (2.16), ‘**Training enhances knowledge**’ (1.97), and ‘**Feedback improves performance**’ (1.87) are significant (**p < 0.01**).

For **Leadership**, ‘**Leader motivates VT members**’ (2.25), ‘**Leadership nurtures team spirit**’ (1.93), and ‘**Effective delegation leads to decision-making**’ (1.82) matter most (**p < 0.01**).

Management emphasizes ‘**Clearly articulated responsibilities**’ (2.19), ‘**Efficient management reduces frustrations**’ (2.00), and ‘**Monitoring virtual distance**’ (1.81) (**p < 0.01**).

For **Communication**, key factors are ‘**Task-oriented communication is more effective**’ (2.17), ‘**Virtual communication is convenient**’ (2.10), and ‘**Virtual teams overcome face-to-face limitations**’ (1.74) (**p < 0.05**).

Lastly, **Information Sharing** highlights ‘**Knowledge sharing improves expertise**’ (2.34), ‘**Bridges gaps between team members**’ (1.84), and ‘**Induces individual involvement**’ (1.82) (**p < 0.01**).

HYPOTHESIS II

Null Hypothesis: There is no significant difference between Male and Female with respect to Virtual team building

Table 4

Student t test for significant difference between and with respect to Virtual team building

Sl. No.	Virtual team building	Gender	Mean	SD	t value	P value
1	Trust	Male	4.09	1.169	5.427	0.000**
		Female	3.52	1.047		
2	Organizational factors	Male	3.18	1.033	4.105	0.000**
		Female	2.69	1.341		
3	Technology	Male	3.65	1.139	1.992	0.047*
		Female	3.84	0.937		
4	Performance	Male	4.27	0.752	7.108	0.000**
		Female	3.58	1.136		
5	Leadership	Male	3.73	0.866	1.095	0.274
		Female	3.84	1.094		
6	Management	Male	3.91	0.902	0.195	0.845
		Female	3.89	1.215		
7	Communication	Male	3.99	1.420	1.628	0.104
		Female	4.16	0.748		
8	Information Sharing	Male	3.37	0.880	7.642	0.000**
		Female	4.10	1.074		
		Female	4.10	0.856		

Source: Statistically analyzed data

Note: ** Denotes significance at 1 % level

* Denotes significance at 5 % level

The table shows differences in **Trust, Organizational Factors, Technology, Performance, Leadership, Management, Communication, and Information Sharing** between male and female employees. **Trust** has a mean of **4.09 (SD: 1.169)** for males and **3.52 (SD: 1.047)** for females. **Organizational factors** are **3.18 (SD: 1.033)** for males and **2.69 (SD: 1.341)** for females. **Technology** is **3.65 (SD: 1.139)** for males and **3.84 (SD: 0.937)** for females. **Performance** is **4.27 (SD: 0.752)** for males and **3.58 (SD: 1.136)** for females.

A significant difference ($p < 0.01$) exists in **Trust, Organizational Factors, Performance, and Information Sharing**, and a significant difference ($p < 0.05$) in **Technology**. However, **Leadership, Management, and Communication** show no significant differences ($p > 0.05$), meaning both genders perceive them similarly. The findings highlight key gender-based variations in workplace dynamics.

Table 4.3.42

Factor loading and Percent of variance using Rotated Component Matrix for 'Perception on Employee Skills'

Factor	Statement	Factor Loading	Rotation Sums of Squared Loadings		
			Eigen value	% of Variance	Cumulative %
I	Understanding the information	0.818	1.565	15.648	15.648
	Interaction through virtual communication tools	0.766			
II	Effective perception of goals	0.836	1.439	14.390	30.039
	Joint responsibility on outcomes	0.638			
III	Knowledge sharing at the right time	0.842	1.424	14.238	44.277
IV	Ability in bridging time and space	0.713	1.393	13.929	58.206
	Documentation and reporting carried through	0.708			
V	Presence of self-motivation and self-awareness	0.935	1.227	12.271	70.477

Source: Statistically analyzed data

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 11 iterations

The table reveals five extracted factors based on the criterion that only Eigen values of one or more are considered. These factors account for **70.477%** of the total variance, retaining most information while reducing eight variables to five. No variable correlates with all five factors, ensuring their independence.

Factor one includes ‘**Understanding the information**’ (0.818) and ‘**Interaction through virtual communication tools**’ (0.766) as positive loadings.

Factor two combines ‘**Effective perception of goals**’ (0.836) and ‘**Joint responsibility on outcomes**’ (0.638).

Factor three is ‘**Knowledge sharing at the right time**’ (0.842).

Factor four includes ‘**Ability in bridging time and space**’ (0.713) and ‘**Documentation and reporting through electronic tools**’ (0.511).

Factor five is ‘**Presence of self-motivation and self-awareness**’ (0.935).

Each factor significantly contributes to **Perception on Employee Skills**, demonstrating their role in virtual teamwork efficiency.

Regression Analysis of Adjustment on Virtual Team Building

Regression analyzes statistical relationships between variables. Simple regression involves one independent and one dependent variable, while multiple regression examines multiple independent variables. The regression equation, $Y = b_1X_1 + b_2X_2 + \dots + b_nX_n + b_0$, predicts the dependent variable **Y** based on independent variables **X1, X2, ..., Xn**. In this study, the dependent variables include **Trust, Organizational Factors, Technology, Performance, Leadership, Management, Communication, and Information Sharing**, with regression used to analyze their relationships.

They are discussed as follows:

Dependent variable: Virtual Team Building (Y)

Independent Variables:

1. Trust (X₁)
2. Organizational factors (X₂)
3. Technology(X₃)
4. Performance(X₄)
5. Leadership(X₅)
6. Management (X₆)
7. Communication (X₇)
8. Information Sharing (X₈)

• Method	:	Stepwise Method
• Step number	:	3
• Multiple R value	:	0.958 ^a
• R square value	:	0.911
• Adjusted R square value	:	0.910
• F value	:	214.313
• P value	:	0.000**

Table 4.3.39
Variables in Multiple Regression Analysis

Sl. No.	Variables	Unstandardized Coefficients (B)	SE of B	Standardized Coefficients (B)	t value	P value
1	Organizational factors (X ₂)	0.558	0.076	0.433	7.354	0.000**
2	Performance (X ₄)	0.256	0.072	0.203	3.571	0.000**
3	Communication (X ₇)	-0.112	0.048	-0.092	-2.325	0.021*
4	Constant	25.558	1.227	-	20.829	0.000**

Source: Statistically analyzed data

Note: **Denotes significance at 1 % level

*Denotes significance at 5 % level

The multiple correlation coefficient of **0.958** indicates a strong positive relationship between actual and predicted adjustment values, based on **Trust, Organizational Factors, Technology, Performance, Leadership, Management, Communication, and Information Sharing**. The **R-square value of 0.911** shows that 91% of adjustment variation is explained by **Economic, Social, Psychological, Interpersonal, and Decision-Making Empowerment**, significant at the 1% level. The regression equation $Y = 25.558 + 0.558X_2 + 0.256X_4 - 0.112X_7$ shows **Organizational Factors (0.558)** and **Performance (0.256)** positively impact adjustment, while **Communication (-0.112)** negatively affects it, significant at 1% and 5% levels, respectively.

DISCUSSIONS AND CONCLUSION OF THE STUDY

The study highlights that **Trust, Organizational Factors, Technology, Performance, Leadership, Management, Communication, and Information Sharing** impact virtual team (VT) building and employee skill enhancement. Efficient task allocation and process visibility are crucial for VT performance. Leaders must inspire remotely, despite limited nonverbal cues. Effective knowledge management, including innovation and transfer, improves team performance. Virtual teams, if well-structured, leverage global talent and operate 24/7. Without time or location constraints, VT fosters collaboration and output. As virtual teams grow, business communication becomes more strategic and intercultural. Managing VT requires complex skills, and building expertise is challenging without shared technical support.

REFERENCES

- Cohen, S. G., & Gibson, C. B. (2003). In the beginning: Introduction and framework. In C. B. Gibson, & S. G. Cohen (Eds.), *Virtual teams that work: Creating Conditions for virtual team effectiveness*, pp. 1-14. San Francisco, CA: Jossey-Bass
- Kirkham, B. L., Rosen, B. M., Gibson, C. B., Tesluk, P. E., & McPherson, S. O. (2002). Five challenges to virtual team success: Lessons from Sabre Inc. *Academy of Management Executive*, 16(3), 67-79.
- Maznevski, M. L., & Athanassiou, N. A. (2003). Designing the knowledge-management infrastructure for virtual teams. In C. B. Gibson & S. G. Cohen (Eds.), *Virtual teams that work: Creating conditions for virtual team effectiveness*, pp. 196-213. San Francisco, CA: Jossey-Bass.
- Cappel, J. J., & Windsor, J. C. (2000). Ethical decision making: A comparison of computersupported and face-to-face groups. *Journal of Business Ethics*, 28, 95-107.
- Johnson, S. D., Chanidprapa, S., Yoon, S. W., Berrett, J. V., & LaFleur, J. (2003). Team development and group processes of virtual learning teams. *Computers and Education*, 39, 379-393.