FUTURE TEAM LEADERSHIP AND EMPOWERMENT IN THE PERFORMANCE OF MEASURING VIRTUAL TEAM PRODUCTIVITY WITH INFORMATION TECHNOLOGY

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ABSTRACT

Purpose: The purpose of this paper is to examine the virtual teams effectiveness in productivity, whether leadership and Empowerment with the relevant factors influencing the virtual team productivity are not. This study examines the virtual group in IT enterprises and their authority and strengthening of efficiency of a virtual group.

Theoretical framework: An essential method for directing business for associations to stay serious and support in a global environment. What's more, that is used in numerous kinds and sizes of associations either as a key unit or as a supporting unit. Virtual groups in Indian programming organizations stand out explicitly inside the world wide IT service sector.

Design/methodology/approach: The present study is conducted by designing the set of questionnaires with respect to the leadership and empowerment of a virtual team and the performance of virtual team factors. And it is distributed to the organization, which uses a virtual team. The questionnaires were distributed to the 300 participants; only 257 responses are received from the company. From the 300 respondents, 43 responses were rejected because the response is not clear, so a total of 257 responses are taken. By using a 5-point Likert scale, the questionnaire was prepared.

Finding: The relationship between the team effectiveness, team performance, and empowering the leadership of the hypothesis are empirically tested. The result indicated that the empowerment and leadership of a virtual team enhanced the performance and productivity of a virtual team.

Research, Practical & Social Implication: The paper contributes to a better understanding of the internal processes within a virtual team in order to develop the effectiveness through Leadership and empowerment which increase the productivity.

Originality/value: Notwithstanding the inescapability of overseeing virtual groups, associations find it especially provoking for virtual colleagues to display and deal with their initiative ways of behaving.

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FUTURA LIDERANÇA E CAPACITAÇÃO DA EQUIPE NO DESEMPENHO DA MEDIÇÃO DA PRODUTIVIDADE DA EQUIPE VIRTUAL COM A TECNOLOGIA DA INFORMAÇÃO

RESUMO

Objetivo: O objetivo deste documento é examinar a eficácia das equipes virtuais na produtividade, se liderança e capacitação com os fatores relevantes que influenciam a produtividade da equipe virtual não estão. Este estudo examina o grupo virtual em empresas de TI e sua autoridade e o fortalecimento da eficiência de um grupo virtual.

Estrutura teórica: Um método essencial para direcionar os negócios para que as associações se mantenham sérias e apoiem em um ambiente global. Além disso, isso é usado em inúmeros tipos e tamanhos de associações, seja como uma unidade chave ou como uma unidade de apoio. Grupos virtuais em organizações de programação indianas se destacam explicitamente dentro do setor de serviços de TI em todo o mundo.

Design/metodologia/abordagem: O presente estudo é conduzido através do desenho do conjunto de questionários com respeito à liderança e capacitação de uma equipe virtual e ao desempenho de fatores de equipe virtual. E é distribuído para a organização, que utiliza uma equipe virtual. Os questionários foram distribuídos para os 300 participantes; apenas 257 respostas são recebidas da empresa. Dos 300 respondentes, 43 respostas foram rejeitadas porque a resposta não é clara, portanto, um total de 257 respostas são tomadas. Utilizando uma escala Likert de 5 pontos, o questionário foi preparado.

Encontrando: A relação entre a eficácia da equipe, o desempenho da equipe e a capacitação da liderança da hipótese são testados empiricamente. O resultado indicou que o empoderamento e a liderança de uma equipe virtual melhorou o desempenho e a produtividade de uma equipe virtual.

Pesquisa, Implicação prática e social: O trabalho contribui para uma melhor compreensão dos processos internos dentro de uma equipe virtual, a fim de desenvolver a eficácia através Liderança e empoderamento que aumentam a produtividade.

Originalidade/valor: Apesar da inescapabilidade de supervisionar grupos virtuais, as associações acham especialmente provocante que os colegas virtuais exibam e lidem com suas formas de comportamento de iniciativa.

Palavras-chave: Equipe virtual, Desempenho da equipe virtual, Confiança, Liderança VT, Indústria de TI.

EL LIDERAZGO DEL EQUIPO DEL FUTURO Y EL EMPODERAMIENTO EN EL DESEMPEÑO DE LA MEDICIÓN DE LA PRODUCTIVIDAD DEL EQUIPO VIRTUAL CON LA TECNOLOGÍA DE LA INFORMACIÓN

RESUMEN

Propósito: El propósito de este trabajo es examinar la eficacia de los equipos virtuales en la productividad, si el liderazgo y el empoderamiento con los factores pertinentes que influyen en la productividad del equipo virtual no son. Este estudio examina el grupo virtual en las empresas de TI y su autoridad y el fortalecimiento de la eficiencia de un grupo virtual.

Marco teórico: Un método esencial para dirigir los negocios para que las asociaciones se mantengan serias y apoyen en un entorno global. Además, se utiliza en numerosos tipos y tamaños de asociaciones, ya sea como unidad clave o como unidad de apoyo. Los grupos virtuales en las organizaciones de programación de la India se destacan explícitamente dentro del sector de servicios de TI a nivel mundial.

Diseño/metodología/enfoque: El presente estudio se lleva a cabo mediante el diseño del conjunto de cuestionarios con respecto al liderazgo y el empoderamiento de un equipo virtual y el rendimiento de los factores del equipo virtual. Y se distribuye a la organización, que utiliza un equipo virtual. Los cuestionarios se distribuyeron a los 300 participantes; sólo se recibieron 257 respuestas de la empresa. De los 300 encuestados, 43 respuestas fueron rechazadas porque la respuesta no es clara, por lo que se toma un total de 257 respuestas. El cuestionario se elaboró utilizando una escala Likert de 5 puntos.

Resultados: Se comprueba empíricamente la relación entre la eficacia del equipo, el rendimiento del equipo y la potenciación del liderazgo de la hipótesis. El resultado indicó que la potenciación y el liderazgo de un equipo virtual mejoran el rendimiento y la productividad de un equipo virtual.

Implicación social, práctica y de investigación: El artículo contribuye a una mejor comprensión de los procesos internos de un equipo virtual con el fin de desarrollar la eficacia mediante El liderazgo y el empoderamiento que aumentan la productividad.

Originalidad/valor: A pesar de lo ineludible de la supervisión de los grupos virtuales, las asociaciones consideran especialmente provocador que los colegas virtuales muestren y traten sus formas de comportamiento de iniciativa.

Palabras clave: Equipo virtual, Desempeño del equipo virtual, Confiabilidad, Liderazgo VT, Industria de las TI.

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INTRODUCTION

Since the early 1990s, the globally distributed companies and their coordination have improved through new technologies and communications [1]. Evolving technologies have been driving dramatic shifts in the way people communicate, socialize and work. In globalization, the improvement in information and communication technologies (ICTs) and the increase in the number of remote works in organizations are implementing more virtual teams (VTs), which are also described in telecommunicating, virtual work, and mobile work[2, 3]. The virtual teams are geographically distributed collaborations that rely on technology and have several potentially beneficial aspects that aid productivity and become an integral construct for managing global dynamic organizations [4, 5, and 6]. There are different sorts of virtual groups, like between hierarchical groups, and disseminated impromptu assignments [7]. The virtual-based teammates, who might live and work in a scope of nations are typically gathered to follow through with a particular job and afterward disbanded [8]. The benefits of collaboration can increase competitive advantage, enhance productivity, and improve customer services [9]. The specialists gauge that around 60% of supervisors routinely complete undertakings as individuals from geologically scattered virtual groups, and as of late that "corporate groups are currently for the most part virtual" [10]. Many multinational firms utilize global virtual teams (GVTs) because they offer a range of beneficial outcomes with their latent diverse source of knowledge [11, 12]. The increase in the use of VTs in associations is impelled by propels in Computer-Mediated Communication (CMC) advancements, which have significantly modified how hierarchical individuals gather, impart, divide and convey information and furthermore connections between colleagues [13].

The VTs became well known in light of their unrivalled advantages contrasted with genuinely assembled, up close and personal (F2F). Other benefits include better decision-making and problem-solving skills. It targets giving advantages like decrease of transportation and low expenses, vicinity to the market, advancement, admittance to talented work, and expanded adaptability for representatives [14, 15, and 16]. The product organizations stand out explicitly inside the worldwide Information Technology (IT) administrations area and the VT sped up the development of IT global enterprises with possible expense reserve funds for both work and assets in business sectors [17]. In a virtual climate, different initiative methodologies are expected to control individual execution to expand the presentation of the general group [18]. The scattered groups might confront hardships, for example, lacking up close and personal connections in VTs may adversely impact the social cycles, clever fixes, trust, and cooperative adequacy [19]. Virtual group pioneers can assist with working with group standards for how

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the group will approach imparting and organizing with each other [20]. Consequently, understanding the qualities of VTs and positions of authority has arisen as another area of request to improve social and undertaking group processes. This introduced research procedure breaks down the authority and strengthening of the virtual group in IT enterprises and a very much organized poll study was led to examine the initiative and strengthening of virtual groups.

The construction of the introduced research work is coordinated as follows: in segment 2, the current procedures were made sense of; in area 3, the introduced research technique is made sense of; segment 4 talked about the outcomes and in area 5, the paper is closed and the future heading upgrade of the exploration review is additionally made sense of.

REVIEW OF LITERATURE

Rajalakshmi Subramaniam and Senthilkumar Nakkeeran [21] planned to break down the effect of corporate E-learning arrangements in improving the group execution of virtual programming groups. Essential information was gathered from 202 programming experts and directed observational examinations from different programming associations and virtual groups in India. What's more, to investigate the gathered information, a numerous straight relapse examination had been directed. The outcomes showed that the execution and use of E-learning frameworks in programming associations upgraded the presentation of groups despite the fact that they are geologically separated from each other. A constraint of the model was that the examination was directed with explicit reference to Indian programming associations and that too for virtual groups.

Emma S. Nordback and J. Alberto Espinosa [22] investigated the factors, that how the shared leadership was coordinated in global virtual teams and how it was related to team effectiveness. A qualitative multi-case study was conducted for the coordination effectiveness of team impacts and it was based on 71 in-depth interviews with team members and leaders from two global software development companies. The study found that shared leadership had a more positive effect on team effectiveness when shared leadership was coordinated both implicitly and behaviourally. However, certain limitations occurred in this study, where the qualitative study finding might not be generalized to other organizational contexts and it did not account for the longevity of the team.

Choi, OK Kyu and Erin Cho [23] analyzed the component by which trust was framed and impacted cooperation in virtual groups and furthermore distinguished the judgment aspects associated with deciding relational reliability. This concentrate likewise planned to recognize whether trust and cooperation would be impacted by the way of life of independence and errand

intricacy. The information was gathered from 483 respondents from South Korea and the speculation was tried. The outcome presumed that information sharing was improved by coordination and participation and that trust was basic in deciding all parts of cooperation. The outcomes additionally demonstrated that virtual group's areas of strength for with had more prominent trust and coordinated effort than powerless independence. Here, the information was gathered from South Korea, a country with an aggregate culture where the outcome would be separated from other social nations.

Sylvaine Castellano *et al.* [24] expected to investigate the impacts of self and shared initiative execution of virtual R&D groups. A poll study was led and circulated on a web-based stage to 485 members. What's more, to exactly explore the jobs of two contemporary initiative styles in group execution, a self and shared authority virtual group execution model were utilized. The finding of this study showed that to separate better execution levels from virtual R&D groups, self-situated pioneers need strength and responsibility. And furthermore, showed that self-arranged pioneers required strength and obligation to remove better execution levels from virtual R&D groups. In any case, the exhibitions were estimated by utilizing a self-detailed assertion, which could prompt predisposition in the outcomes as participants could over-gauge or limit the genuine presentation of virtual R&D groups.

Chieh-Peng Lin *et al*. [25] focused on a model based on social cognitive theory and social exchange theory for virtual team performance in the information technology industry. Here, the virtual team was directly influenced by IT training fulfilment, knowledge-oriented leadership, and transactional fulfilment and indirectly influenced by partial mediation of collective IT efficacy. The data were collected from 60 large high-tech firms in Taiwan. A two-step structural equation modelling (SEM) approach also included the confirmatory factor analysis and structural model test, which were used for survey data analyses. The survey of a result confirmed that the integrated applicability of social exchange and social cognitive theories developed the virtual team performance. Only a fewer data were collected for the analysis of the performance and the survey was conducted in a single country where the results might differ from other countries.

Nicole Franziska Richter *et al*. [26] expected to investigate the Cultural Intelligence (CQ) of colleagues to confirm whether it contributes decidedly to the social incorporation of Global Virtual Teams (GVTs). The information was gathered from 4000 understudies from 150 colleges in 40 nations. The analysts utilized PLS-SEM investigation procedures to dissect the introduced speculation. The review uncovered that the CQ of colleagues emphatically added to social combination in GVTs and further developed execution. Likewise, the outcome

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recognized the ought to have (drivers) and must-have (bottlenecks) levels of persuasive CQ among colleagues in GVTs. The examples of information were gathered at the more youthful age of an understy, which could likewise restrict the generalizability of the discoveries.

Maria Mutudi and Tiko Iyamu [27] inspected the variables that impact the enlistment framework and fostered an electronic enrolment framework utilizing a virtual group. The subjective technique was utilized to gather the information, and the members are utilized from three nations. By utilizing an open survey the subjective information were gathered and interpretively broke down. Also, to look at the impact of the worldwide enlistment framework factor and analyze the difficulties of virtual groups for programming improvement, the interpretive methodology was utilized. In light of the examination of the information, three elements, in particular innovation, culture, and administration were viewed as of basic effect on the improvement of programming, by utilizing a virtual group. Every one of these variables has a key commitment to the achievement or disappointment of cooperative programming improvement, as they manifest through different components. In any case, less information was gathered for the examination of the exhibition.

Vida Davidaviciene*et al.* [28] expected to quantify the information partaking in their virtual groups by estimating the variables in virtual groups. The information was gathered from the individuals from virtual groups in the IT business in the United Arab Emirates (UAE). Here, Cronbach's alpha technique was utilized to evaluate the unwavering quality of the inquiries utilized for the estimation. Furthermore, to decide the layered construction of the scale in light of eigenvalues, corroborative variable examination (CFA) was utilized. The outcome showed that information partaking in virtual groups was decidedly related with movement, authority, trust, and ICT. The executives of these elements help the association and the colleagues to accomplish adequacy and productivity and to arrive at high VT execution. Be that as it may, this study was led exclusively in UAE; the outcome could change in different nations.

Mohammad Alsharo *et al.* [29] inspected the social impacts of information sharing in virtual groups. Here, the calculated model was introduced, which conjectures a connection between information sharing, joint effort, trust, and group viability in virtual group settings. The information was gathered from the significant IT firms. The underlying condition model was utilized to assess utilizing the halfway least squares (PLS) technique. Furthermore, to test the dependability, Cronbach's alpha was utilized. The outcome showed that information dividing emphatically impacts the trust and coordinated effort between the virtual colleagues. Be that as it may, this concentrate just researched information partaking in groups autonomous

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of innovation and errand. This could influence the development of trust and the information shared by the colleagues.

Swati Kaul Bhat *et al.* [30] examined the role of vital elements like trust, information sharing, and communication, in building virtual teams. The data were collected from the members who work in virtual teams in the IT industry. The snowball sampling was used to target individuals who work in virtual settings. The data were collected by sending emails to virtual team members. The result indicated that the factors of trust, information sharing, and communications help the members in virtual teams to remain focused on achieving effectiveness and efficiency in their work.

Julia Eisenberg and Elisa Mattarelli [31] expected to investigate the job of multicultural representatives which were colleagues or pioneers who raise above various social limits and extension the distinctions among associates in various subgroups. Here, the multicultural intermediaries help to lighten the adverse consequences of character over dangers. The outcome demonstrated that the multicultural merchant assumed an exceptional directing part in the connections between personality treats and information sharing quality and amount. Notwithstanding, the number and size of subgroups could likewise influence the range of the adequacy of multicultural specialists.

Steven D. Charlier*et al.* [32] investigated the effects of two communication-related constructs of communication apprehension (CA) and text-based communication ability (TBCA) on leadership emergence in virtual teams. And also, examined how the leadership emergence was affected by team dispersion. Here, the theoretical model was presented that outlines the effects of the individual difference attributes and team dispersion variables on leading emergence. The experimental model was tested with 84 four-person teams. The result concluded the varying levels of team members' dispersion of CA and TBCA have significant relationships with leadership emergence as well as team configuration and team member co-location.

The research methodology was analyzed based on Empowerment, leadership, Enhancement of performance, Motivation, and Team effectiveness in virtual team productivity.

(a) Empowerment

Empowering refers to the most common way of sharing power and distributing more independence and obligations to devotees through a particular arrangement of pioneer ways of behaving that upgrade the importance of work, communicating trust in elite execution, encouraging support in direction, and giving independence from regulatory limitations.

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Enabling authority has been created with the examination stream of steady initiative, worker contribution, participative administration, and individualized administration. The engaged worker will be smarter to effectively perform assignments. Worker who feels engaged will actually want to examine how to start and end undertakings that they have been given. The individual way of behaving of an engaged representative will add to significant results inside the association.

(b) Leadership

The peer leaders are people who as of now have normal qualities of driving other people who are named to take on an administrative role to do a seriously directing and working with job. In order to encourage group work, team interaction, effective thinking, and active involvement social skills, empathy, self-regulation, self-awareness and motivation, and creating and maintaining positive thoughts are the key traits for peer leaders. Peer leaders are needed to practice and learn the basic skills and competencies that are effective. In order to improve the organization, the peer leaders addressed the issues that are a most worry to them to cooperate. Inside the setting of civil rights, the companion chiefs are frequently prepared to secure information and abilities which assists with advancing and fostered the networks, associations, and so forth.

(c) Team effectiveness

The coordination of tasks has a pivotal role in virtual team performance. Effective virtual teams are good at maintaining social bonds while getting the job done. And to improve the team coordination activities, good communication and relationship building are most efficient. Managing a virtual team and its effectiveness is a whole new level of difficulty for the team leaders.

(d) Motivation

Motivation plays a major role in the organisation it initiates to develop the skills of the employees. Psychologically it will help the employees to meet their individual goals. In virtual team performance it is very mandatory to encourage the employees in different aspects. That's motivated employees more productive employees in more profitable. They have to make sure all team members are working productively while maintaining a healthy work atmosphere and a high level of motivation. They have to make sure all team members are working productively while maintaining a healthy work atmosphere and a high level of motivation. All of this is

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happening virtually, without live contact, or without sharing a room physically. Some of the factors that lead the team effectiveness are having clear pattern assumptions regarding being on time, unlucky deficiencies, performing multiple tasks, and meeting follow-up, involving the right innovation for the group, defining and imparting limits, have a sensible plan that is comprehensive individuals in the gathering and finishes with who, what, when for all things to do and be self aware, self-discipline and self-motivated.

RESEARCH METHODOLOGY

The present study is conducted to evaluate the leadership and empowerment of virtual teams in the IT industry in India. The main objective of this study is to analyze the productivity of virtual team in IT industries and analyzed how leadership quality, team effectiveness, and empowerment improves the performance of the virtual team. In order to attain objectives, a well-structured questionnaire is prepared and administrated. The data was collected from the organization that used virtual teams. The questionnaire is prepared by the 5-point Likert scale represented by strongly agree, agree, neutral, strongly disagree, and disagree respectively. The questionnaire was distributed to 300 participants working in the IT organization. Overall, 257 respondents completed the survey and the remaining 43 respondents did not properly reply to the structured questions. And also, the remaining participant does not have a virtual team experience. Thus, the information is not enough to summarize the response data so those response questionnaires are rejected.

And, the collective response of the data is used for empirical analysis. The relationship between team performance, trust, team effectiveness, and empowering leadership of the hypothesis is empirically tested. The research methodology considers the main objectives of productivity of the virtual team.A simple random sampling technique was used to gather data from the respondents, because the respondents diverged from every age group, gender, education, organization, marital status, etc. The questionnaire was intricately designed to tap the demographic variables including age, education, gender, and virtual team experience of the respondents. It also gathered information about the factors of leadership roles to enhance the performance of the virtual team in the IT industry. And to test the relationship between the variables, a statistical tool had been used for the analysis. Structural Equation Model is used to find the relationship between the construct. The research methodology designs question pattern based on the virtual team performance, leadership quality, and team effectiveness of productivity of the virtual team. The selected respondents of demographic characteristics were analyzed which was shown in table 1,

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DATA AND INTERPRETATION

Table 1: Demographic characteristics of the respondents

Age	Count	Percentage
21-30	78	30.35%
31-40	133	51.75%
41-50	25	9.72%
Above 50	11	4.28%

Gender	Count	Percentage
Male	152	59.14%
Female	105	40.85%

Education	Count	Percentage
Post graduate	112	43.57%
Under graduate	145	56.42%

Work experience	Count	Percentage
Less than 2 years	33	12.84%
3-5 years	109	42.41%
Above 5 years	115	44.74%

The details of the respondents are given with regard to their age, gender, education, and work experience were shown in the above table.

⇨ **Age:** In table 1 (a), the age details of the respondents are given. The majority of the respondents are presented under 31-40 age groups (i.e., 51.75%) followed by 21-20 age groups, which is 30.35%, 41-50 age groups, which is 9.72%, and above 50 age groups obtained a low percentage, which is 4.28%.

⇨ **Gender:** In table 1 (b), the respondents of the gender are given. The gender is categorized into male and female. The percentage of the male respondents is 59.14 and the percentage of the female respondents is 40.85.

⇨ **Education:** In table 1(c), the participants' respondents of education detail was shown. The post-graduate and undergraduate education qualification is given. Here, most of the respondents were qualified under graduated i.e. 56.42%. And, the 112 respondents from the post-graduate (i.e. 43.57%).

⇨ **Work experience:** Table 1(d) shows the respondents' employees working experience. The respondents below 2 years of experience are 33, which is 12.84%. The respondents with 3-5 years experience are 109, which is 42.41% and the respondents above 5 years experience are 115, which is 44.74%. The majority of the respondents' working experience is above 5 years.

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Table 2 shows According to Cronbach's alpha reliabilities statistics value more than 0.5 in the study. In this study as per table 2 shows the value is more than 0.8 so we can proceed with further analysis.

Table 2: Reliabilities analysis

Construct	Cronbach's a
Empowerment	0.92
Leadership	0.87
Enhancement	0.86
Motivation	0.83
Team Effectiveness	0.89
Productivity	0.81

Files of Empowerment, Leadership, Enhancement, Motivation, Team Effectiveness, and Productivity in the estimation model. Measurement model was used in the study Figure 1 explains the relationship between the constructs, after reflects of the decency of-fit record (GFI) for the estimation model find that the p-esteem is huge at 5 for every level, and it shows that the estimation model is sufficiently all around fit. Further, the integrity of-fit measure for the estimation model is underscored by outright, gradual, and stinginess fit records; GFI, changed decency of fit file (AGFI), normed fit record (NFI), relative fit list (CFI), Tucker - Lewis Index (TLI) and root mean square mistake of guess (RMSEA).

The outcomes show that the worth of GFI is 0.837, AGFI is 0.803, NFI is 0.839, CFI is 0.880, and TLI 0.864. These fit insights values are reasonably successful and which are fallen the limit esteem somewhere in the range of 0.80 and 0.90. The RMSEA addresses model fit in the populace, and the cut-off esteem somewhere in the range of 0.08 and 0.10reflects a fair fit, and underneath 0.08 shows a solid match McCallum et al. (1996), and the worth going from 0.03 to 0.08 is reminiscent of a solid match with 95% certainty (Hair et al., 2013). In this review, the RMSEA0.069, which is not exactly the edge worth of 0.08, addresses a good degree of accuracy. Thusly, the after reflects of fit files show that the estimation models extensively very much suggested and satisfactorily fitted with the information. The after reflects of GFI for the estimation model are introduced inTable.3
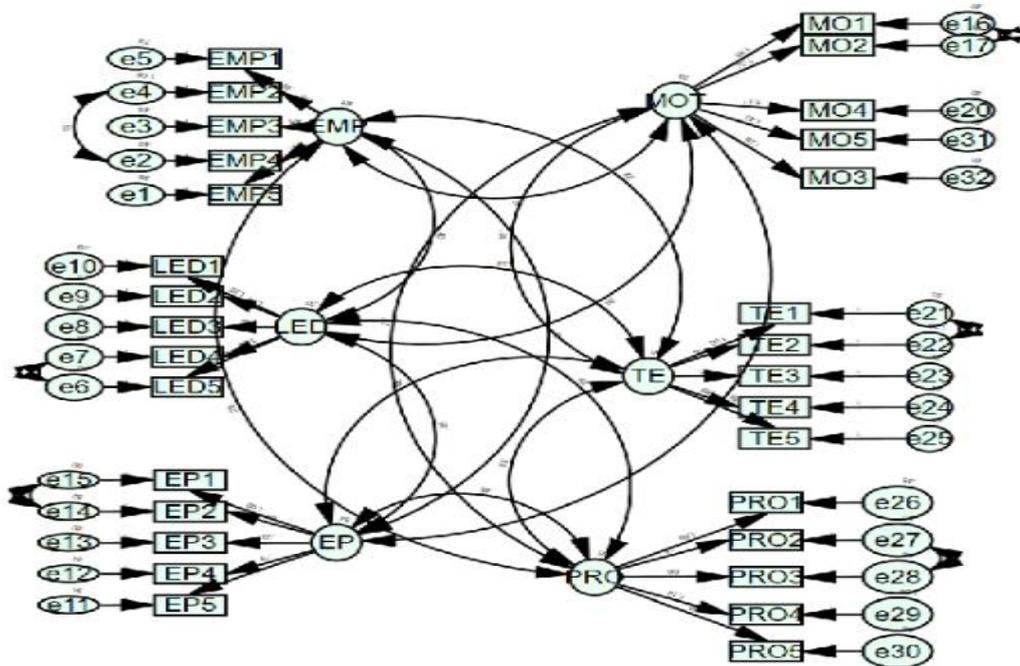
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Figure 1 Measurement Model

Table No: 3 Results of goodness-of-fit indices for the measurement model

Model	GFI	AGFI	CFI	NFI	RMSEA	TLI
Recommended value	0.8-0.9	0.8-0.9	0.8-0.9	0.8-0.9	<0.80	0.8-0.9
Measurement fit indices	.837	.803	.880	.839	.069	.864
Reference	(Hair et al., 2013	Daire et al.,2008	(Hu and Bentler,1999	(Hu and Bentler,1999	(Hair et al., 2013	(Hair et al., 2013

Normalized gauges showed the general donations of every free factorto every reliant variable. The speculative model normalized gauges are shownbeneath. Hence P value is >0.05 all the factors are significant with each other Empowerment, Motivation, Leadersip, Enhancement, Team productivity, as relationship with productivity. Table 4 shows the Relationship between the construct and questions.

Table 4: Regression weights

Item	Path	Construct	Estimate	S.E.	C.R.	P
EMP5	<---	EMP	1			
EMP4	<---	EMP	0.961	0.057	16.91	***
EMP3	<---	EMP	0.855	0.055	15.625	***
EMP2	<---	EMP	0.719	0.07	10.321	***
EMP1	<---	EMP	0.822	0.063	13.088	***
LED5	<---	LED	1			
LED4	<---	LED	1.042	0.067	15.61	***
LED3	<---	LED	1.117	0.078	14.245	***
LED2	<---	LED	1.041	0.088	11.837	***

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LED1	<---	LED	1.222	0.086	14.143	***
EP5	<---	EP	1			
EP4	<---	EP	0.793	0.051	15.528	***
EP3	<---	EP	0.934	0.056	16.667	***
EP2	<---	EP	0.839	0.055	15.228	***
EP1	<---	EP	0.996	0.061	16.36	***
MO1	<---	MOT	1			
MO2	<---	MOT	1.019	0.069	14.833	***
MO4	<---	MOT	1.41	0.101	13.945	***
TE1	<---	TE	1			
TE2	<---	TE	0.179	0.073	2.468	0.014
TE3	<---	TE	0.946	0.058	16.216	***
TE4	<---	TE	0.991	0.061	16.138	***
TE5	<---	TE	1.009	0.066	15.199	***
PRO1	<---	PRO	1			
PRO2	<---	PRO	0.783	0.07	11.161	***
PRO3	<---	PRO	0.863	0.061	14.168	***
PRO4	<---	PRO	1.138	0.081	14.119	***
PRO5	<---	PRO	0.66	0.059	11.196	***
MO5	<---	MOT	1.42	0.108	13.185	***
MO3	<---	MOT	1.258	0.101	12.475	***

In figure2 represents to test the all independent variable is influencing the dependent variable is tested by structural equation model, Table 5 analysis shows that all the factors influencing each other because P value is >0.5. Empowerment, leadership, Enhancement of performance, Team Effectiveness, Motivation as positive relationship with Productivity.
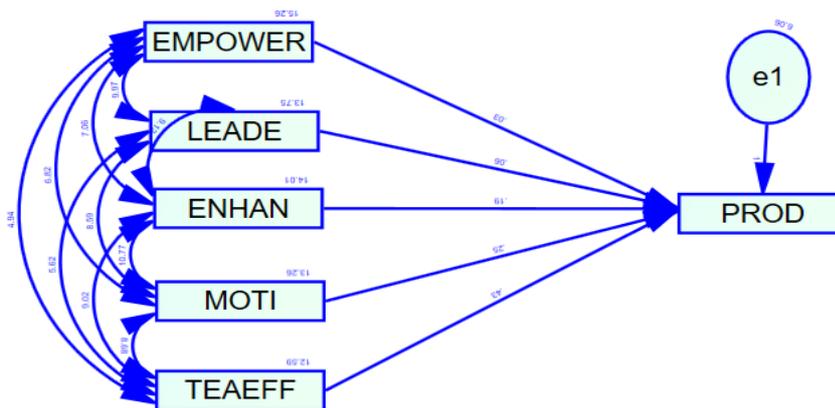
FIGURE2. PATH MODEL FOR VIRTUAL TEAM PRODUCTIVITY

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Table 5: PATH MODEL FOR VIRTUAL TEAM PRODUCTIVITY

			Estimate	S.E.	C.R.	P
PROD	<---	EMPOW	.132	.052	.828	.003
PROD	<---	LEAD	.156	.051	1.155	.002
PROD	<---	ENHAN	.193	.053	3.619	***
PROD	<---	MOTI	.250	.053	4.705	***
PROD	<---	TEAM EFF	.433	.044	9.823	***

Enhancement of the performance of virtual software team

Table 6: Performance of virtual software team

Factors	Mean	Standard deviation
System quality	3.1301	.48281
Service quality	3.0550	.48426
User satisfaction	3.1108	.54478
Information quality	3.1304	.49633
System use	2.8442	.66845
Net benefits	2.9935	.48748

Table 6 analysis the mean and standard deviation of factors for the performance of a virtual software team [21]. Both the mean and the standard deviation values are presented as positive. The factor of information quality achieved the highest number of mean $\mu=3.1304$. And most of the factors were greater than 3 and the factors of system use and benefits were achieved less than 3. And the second-highest factor of system quality of a mean value is $\mu=3.1301$ followed by user satisfaction ($\mu=3.1108$) and service quality ($\mu=3.0550$). The mean value of system use and net benefits ranges from 2.8 to 3 where the system use obtained $\mu=2.8442$ and net benefits achieved $\mu=2.9935$. Comparing all the factors of mean values the system used achieved the lowest mean value. Similarly, the standard deviations of all those 6 factors are mentioned in the table.

Motivation in Virtual Team

Table 7: Correlation analysis for motivation of the virtual team

	1	2	3	4	5	6
TW	1					
SIW	0.30	1				
SR	-0.2	0.28	1			
SE	0.23	0.44	0.49	1		
TC	0.17	-0.1	0.36	-0.03	1	
CR	0.59	0.32	-0.22	0.12	-0.6	1

Table 7 shows a correlation analysis of the motivation of virtual team members [23]. Team work positively correlated with the self-improvement of work, skill enhancement,

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technical challenges, and creativity that is 0.30, 0.23, 0.17, and 0.59. And it is only negatively correlated with the shared responsibilities, which is -0.2. Then, self-improvement with a variety of work is positively correlated to most of the factors such as team work, shared responsibilities, skill enhancement, and creativity that is 0.28, 0.44, and 0.32. However, self-improvement with a variety of work is negatively correlated to the technical challenge, which is -0.1. The shared responsibilities are positively correlated with skill enhancement (0.49) and technical challenges (0.36) and negatively correlated with creativity (-0.22). Then the technical challenges are negatively correlated only with creativity, which is -0.6.

Overall contributors to virtual team effectiveness

Table 8: Analysis of virtual team effectiveness

Factors	Mean
Team work	3.22
Trust	2.96
Commitment	2.96
Management/Leadership	2.35
Diversity	2.01
Respect	1.98
Communication quality	4.29
Clear goals and objectives	4.14

Table 8 analysis the mean values for the factors of an analysis of the effectiveness of the virtual team and the mean value ranges from 1 to 4. In all the 8 factors, the minimum rated value is 1.98, which is achieved by the factors of respect. And the maximum rated value is 4.29, which is achieved by the factors of communication quality. The factor of communication quality and clear goals and objectives (4.14) was greater than 4. And the factor of team work achieved the $\mu=3.22$. The factor of trust and commitment both equally achieved the mean value of 2.96 followed by management & leadership (2.35) and diversity (2.01). And the factor of respect achieved the minimum mean value.

Testing of hypothesis

To analyze the virtual team performance for the productivity the hypothesis are generated and tested. The hypotheses are,

Hypothesis 1: Empowerment has a positive effect on virtual team productivity.

Hypothesis 2: Leadership has a positive effect on virtual team productivity.

Hypothesis3: Enhancement of performance has a positive effect on virtual team productivity.

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Hypothesis 4: Relationship building has a positive effect on virtual team productivity.

Hypothesis 5: Team Effectiveness has a positive effect on virtual team productivity.

Hypothesis 6: A greater motivational virtual team leads to better team productivity

DISCUSSION

In this section, the data of the collected respondents are analyzed and discussed by the descriptive analysis, Here all independent variable dependent variable is tested by the Measurement model and structural equation model, as all the factors influencing each other because P value is >0.5. Hence alternate hypothesis is accepted. Some of the variables like empowering virtual teams to boost productivity, virtual team leadership, enhancement of the performance of virtual software team, motivation to be a member of a virtual team, overall contributors to virtual team effectiveness mean, standard deviation, and correlation. Measurement model and path model analysis shows the clear relationship with both dependent and independent variables.

CONCLUSION

In the contemporary business environment, virtual teams are progressing with unparalleled velocity. Leadership behaviours are the key attributes that enable cognitive resources embedded within a team to be effectively leveraged. This research study analyzes the virtual team in IT industries in India and also analysis the virtual team leadership and empowerment, which influences the virtual team productivity. This research study is based on the questionnaire distribution and collection. The questionnaire was distributed to the 300 participants, where 257 responses were considered in the research study. The descriptive statics that is mean, standard deviation, and correlation is called for all the factors and the hypothesis are tested by using a structural model. The hypothesis results show that communication, relationship building, trust, and motivation are positively related to the team performance also reward and coordination are negatively related to the team performance. And the virtual team members are positively correlated to the motivation factor that enhanced the performance of a virtual team. The result of this study proved that the leadership and empowerment of a virtual team enhanced the productivity of the virtual team. In the future, the study can be extended by considering more populations for analyzing the virtual team in various organizations and also increasing the item count.

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