



# Impact of emotional intelligence and personality traits on managing team performance in virtual interface

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## Abstract

This research paper explores the implications of emotional intelligence and the Big Five personality model on virtual team effectiveness. It illustrates how emotional intelligence and Big Five personality traits help team members better understand interpersonal relationships and develop constructive virtual teams. The widespread use of virtual team meetings for collaborative work over in-person interaction with diverse personalities creates discord and trust among team members, limiting overall productivity. A quantitative analysis approach is used, with hypotheses tested and a series of multiple linear regression analyses performed on data collected from relevant industries using convenient sampling. The findings show that the Big Five personality affects the virtual team's trust and collaboration parameters. However, the relationship between personality traits and team effectiveness is mediated by emotional intelligence. Also, it is explored that having control over emotional intelligence or developing emotional intelligence would improve team performance while managing and working with a diverse group of people.

**Keywords** Trust · Team · Emotional Intelligence · Big Five · Personality

## Introduction

In several companies, virtual teams have increasingly replaced real-life face-to-face team meetings (Gibson et al., 2014; Peñarroja et al., 2013). 'Virtual work has become just as normal in that same manner as face-to-face work' (Webster & Staples, 2006, 182). The regional distribution of members of the company has culminated in virtual work concepts and virtual teams. A virtual team consists of all important characteristics that are clearly visible in a distributed team such as task

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interdependence, shared goals, etc., and collaboration of this diverse group is run with help of rising networking technologies in the digital platform.

In contrast to that, virtual teams showed a decrease in results in conventional face-to-face teams. Levels in terms of mutual agreement success, as well as the duration, are taken to make judgment calls (Baltes, et al., 2002; Hollingshead & McGrath, 1995). Virtual team members often show smaller numbers of other outcomes, such as collective effectiveness as well as job satisfaction (Baltes et al., 2002; Warkentin, et al., 1997), and problems arise with input parameters, including emotional intelligence (Hertel et al., 2004) and confidence (Jarvenpaa & Leidner, 1999).

One main factor in mitigating these obstacles and improving team performance is creating trust and by understanding emotions and personality of individual team members by motivating them for the formation of individual members of teams as leaders (interested to hold on leadership roles) which would ultimately build trust and create virtual effectiveness. Also, by sharing of leadership skills among members in the management of virtual teams in light of management challenges (Carte et al., 2006).

The idea of connecting emotional intelligence to team success is that high emotional intelligence helps team members to control their own emotions and other team members' emotions and be mindful of them. Emotional sensitivity and emotional management skills have significant implications for team success, as these skills help establish productive and appropriate relationships with fellow employees (Jordan & Troth, 2004). Communication among high emotional intelligence individuals is also suggested to develop significant positive effects in the intrateam (evolving entity) that increases group success outcomes (Marks et al., 2001). Since conversations between emotionally intelligent individuals (Mayer et al., 2008) can accrue the advantages of EI by focusing on communication skills and self-involvement while working in teams, EI could be an essential aspect in positive outcomes for virtual effectiveness.

But team members can have various personality compositions at times; the Big Five typology is the most common personality trait grouping (Hoch & Dulebohn, 2017). In the five core behavioural components, the Big Five study identifies extraversion, agreeability, conscientiousness, responsiveness to knowledge and emotional stability. Personality characteristics have been shown to be important in distributed team research which can have a beneficial influence on collective behaviour and success (Barrick et al., 1998; Bell, 2007; Mount & Barrick, 1995). Research findings on distributed groups have shown that compatibility, knowledge, and emotional health of group members are primary and accurate predictors of shared goals and team performance in developing team processes (Barrick, et al., 1998; Bell, 2007; Mount & Barrick, 1995; Peeters, et al., 2006).

Personality characteristics, including the motivation and emotional mechanisms that are stressed in emotional intelligence, will be analysed by combining the Big Five characteristics variables concerning their ability to affect emotional states and decisions for team resolution in virtual environments. The goal in this project aims to empirically determine the impact of emotional intelligence and model Big Five variables as inputs within virtual teams to analyse individual performance and team problem-solving process that in addition, governs each structure of group

personalities and virtual group effectiveness success experiences. The research also investigates whether emotional intelligence (EI) and Big Five variables boost the efficiency of team members in virtual settings.

## Literature Review

### Virtual Teams

The use of virtual team formations in organisations is on the rise in the current period (Cascio, 2000; Walvoord et al., 2008). Researchers have discovered that virtual teams are becoming an increasingly common feature of the modern workplace, and they have conducted extensive research into the factors that influence the success of virtual teams in the digital environment, which has seen rapid growth (Algesheimer et al., 2011; Bell & Kozlowski, 2002; Martins et al., 2004). For companies, they have many benefits, such as connecting competent workers to a project irrespective of their venue, which provides flexibility to individuals, and reducing commuting fees (Geister et al., 2006). It exhibits the following characteristics, which are derived from existing conceptualisations of the virtual team: (1) a group of members who are culturally and organisationally distinct from one another, (2) who are temporarily grouped together, (3) who are geographically dispersed, and (4) who are connected by weak lateral ties. Companies are increasingly forming virtual teams to carry out routine tasks, which is becoming more common today. Organisations these days have allowed their employees to opt for working virtually from remote locations as per their convenience. In an organisation, the extent to which some team members are entirely distributed, but everybody else is a combination of locally located and scattered, is referred to as the organisation's degree of team virtuality (Griffith et al., 2003). However, because this adoption, has reduced social interaction among team members, virtual teams also face many challenges that are either absent or have a greater impact in virtual or semi-virtual teams.

### Virtual Team Effectiveness

Virtual teams must be managed properly in order to achieve high levels of effectiveness in teams as studies showed that groups working in virtual teams have a high failure rate, which has been estimated to be as high as 71% (Gelbard & Carmeli, 2009). Piccoli et al. (2004) stated that recent studies on team effectiveness digitally have supported behaviour monitoring in remote teams connected virtually as a form of collaborative management, suggesting so, "Clear schedules must be established of when the team will provide reports, interim deliverables and the final product" (Townsend et al., 1998, p. 25). Trust and collaboration efficacy are essential elements of working practices generally examined in regards to virtual teams.

Trust within the virtual team is by far the most important determinant of its effectiveness. Meta-analytic evidence shows that in face-to-face environments, trust among team members shows a strong productive relation for better performance in

a team. In virtual worlds, this relationship is even more prevalent than in the real world. People's willingness to be exposed to their teammates for critical elements reflects how much trust they have in their teammates' ability to behave as expected (A.C Costa, 2003). Cultural and temporal differences complicate working in a global virtual team, making trust even more important (Jarvenpaa and Leidner, 1999; Jarvenpaa et al., 2004).

Virtual collaboration can be defined as the use of technology-mediated tools to enable geographically dispersed employees or work teams to communicate and collaborate on the same project. Collaboration has long been regarded as a critical success factor in the majority of businesses. Workshops and training are popular ways for companies to improve collaboration among their employees. Another study from 2009 showed that well-managed virtual teams outperformed face-to-face teams using virtual collaboration. The study included 80 global software teams. Although effective virtual team collaboration may be built on a number of pillars, one of the most important of these is the relationship between the tasks being performed as well as tools and teams, as well as trust and the depth of relationships between the members of the team. (Peters & Manz, 2007; Zhang et al., 2018).

However, a good percentage of studies on virtual teams have concentrated on groups that can be managed on their own and that would not regulate actions (Piccoli et al., 2004). Even if a virtual team does have structured regulations (i.e. deadlines), members of the team can also develop very same flexible organisational systems to ensure optimal behavioural patterns among teammates (Polzer et al., 2002).

## Personality

A person's personality is defined as a combination of characteristics and qualities that distinguishes them from others (Cattell, 1973). It is an organised psychological framework that demonstrates and drives behaviour that is defined as personality traits. Luse et al. (2013) mentioned that in the digital group world, personality traits had indeed proven as key indicators in a member of the team behaviours. The Big Five personality traits are the most commonly used model in modern psychological theories to analyse the personality of the majority of present research because of their robustness and validity. The Five-Factor methodology model such as openness, extroversion, agreeable, conscientiousness and neuroticism is considered as being reliable as well as an effective method for analysing personalities amongst people amongst these widespread personality characteristics.

## Emotional Intelligence

Emotional intelligence, according to Brackett et al. (2011), involves the capacity to effectively identify emotions and apply them in cognitive processes, including reasoning, problem solving, and interpersonal communication. According to Prati et al., being emotionally intelligent is associated with improved relationship management as well as greater self-awareness, motivation, and empathy. Emotional intelligence (EI) has been shown in studies to be a major determinant for selecting

potential teams of self-managed virtual teams to determine whether these teams will fit the possibility (Frye et al., 2006). Mysirlaki & Paraskeva (2020) observed that in virtual collaboration with remote workers emotional intelligence has been a major indicator of group effectiveness, and employee participation activities as one mechanism whereby intellectual ability affects the effectiveness of groups in team performance. The correlation of emotional intelligence has indeed been demonstrated in significant rates (e.g. Rezvani et al., 2016) as well as same has seen with the involvement of members of the team (e.g. Miao et al., 2016); and hence, each is considered as the main components for team development. Additionally, research indicates that employees having higher emotional intelligence usually capable of performing at a higher level in team settings.

Unexpectedly, in virtual team study, the relevance regarding personality and emotional intelligence as a comprehensive construction variable has attracted considerable interest and there is currently no empirical evidence of measures to achieve improved results during the resolution of virtual conflicts. So, to analyse these relationships in greater depth, it is important to examine inside virtual teams to understand the circumstances under which at the team level, project teams illustrate these all Big Five variables to varying extents and EI that influence the complexities of the team and collaborative outcomes at the virtual interface.

## Research Model and Hypothesis Development

In a distributed organisational structure, particularly when work has been shifted to a work from home model, the ideal interaction methods have been shifted to a virtual mode in a wide range of industries. The use of remote working is expected to increase in the future by many companies. However, because of the pandemic's impact, this change has been implemented; however, many individuals have encountered difficulties in adjusting to the new environment with their team members, particularly in a virtual environment. As seen in the model in Fig. 1, this model implies as that all of the five perceived personality characteristics are linked to an

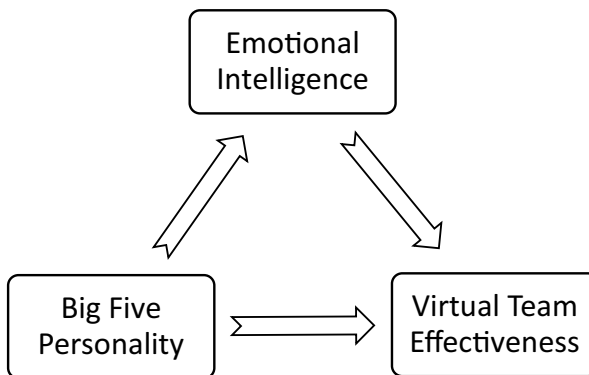


Fig. 1 Research Model

individual's emotional intelligence, and that both personality traits and emotional intelligence influence team effectiveness in virtual team situations. Furthermore, emotional intelligence acts as a mediating effect on the impact of personality traits on team effectiveness in a virtual setting, with emotional intelligence having a positive influence on the results.

For the last several years, researchers have tested the validity of the Big Five factors using numerous diverse samples and situations. This gives researchers a solid foundation for believing in the value of the Big Five factors as a measure of individuals' personalities and differences in personality (John et al., 2008). Personality characteristics that can be linked to virtual team characteristics are being investigated by researchers. Extraversion is one of the Big Five personality traits that represent friendliness, friendliness, and positivity, with extroversion eagerness for great opportunities and optimism. The term neuroticism refers to the absence of psychosocial functioning accompanied by a higher level of negative emotional control (negative emotional stability). Agreeableness is characterised by a tendency to be sympathetic, helpful, agreeable, and sympathetic, with sociable persons having a greater inclination to support others in need. People who have a good level of conscientiousness are also showing activeness for planning, arranging and performing activities. So those who have conscientious personalities are balanced, positive, trustworthy and carefully implement their words and deeds. Openness represents the want to learn and the readiness to experiment with new ideas, with open persons being more likely to come up with unique ideas, have unconventional ideals, and express views (Costa & McCrae, 1992). According to the findings of the study, individuals with a high level of emotional connection have a greater range of confidence when collaborating virtually (Brown et al., 2004). In addition, with the exception of neuroticism, four of the five Big Five measures were shown to be related to participants' convenience in adjustment to collaborative capabilities, with extroversion being correlated negatively and agreeableness, openness, and conscientiousness being positively correlated given the construct's ease of transition, as was conscientiousness (Vreede et al., 2012). In a virtual team setting, it was discovered that personality-based trust had an impact on total trusting reasons (Sarker et al., 2003). Other methods used in the meta-analysis indicated that all five aspects of the Big Five model were related to team performance in a positive way (in which emotional stability is used rather than neuroticism) (Bell, 2007; Mathieu et al., 2008). As a result of these considerations, the following is the first hypothesis of the research:

**H1: Big Five personality traits will have a positive significance on Virtual Team Effectiveness**

While emotional intelligence tests various personality traits and intellectual functioning, the additional assessments for emotional intelligence include measuring a few specific characteristics of emotional competence. While emotional intelligence is significant to the identification and management of emotional reactions, which are also vital in interpersonal development, emotional intelligence and personality traits are both strongly interconnected. The relationship between these two variables has been extensively researched, although the strength of the association between these two constructs is dependent on the methods employed to

examine them, for example, a correlation coefficient. According to Brackett and Mayer (2003), emotional intelligence (EI) is highly significant connected with neuroticism, extraversion, agreeableness, and conscientiousness, but only marginally significant correlated with openness to experience (OI). Association among both dimensions was already thoroughly researched; however, the strength of correlation between these two variables relies on the measurements employed to examine; for example, Brackett and Mayer (2003) discovered that EI is extremely substantially connected with neuroticism, extraversion, agreeableness and conscientiousness, but modestly associated to openness. As a result of these considerations, the following is the second hypothesis of the research:

H2: Big Five personality traits will have a direct and positive significance on Emotional Intelligence

As a critical personal aspect for efficient teamwork, emotional intelligence has gained prominence as a desirable trait. The ability to negotiate and resolve disagreements is enhanced in those who possess high emotional intelligence (Anand & Udayasuriyan, 2010; Blattner & Bacigalupo, 2007). The emotional intelligence aspects of self-awareness and self-management have a high correlation with principles in a collaborative setting, such as care for one's own well-being and the well-being of others, integration, engagement, flexibility, and transparency (Cole, et al., 2019). Team members' emotional competency is closely linked to team cohesion and performance, according to Rapisarda (2002). Team cohesion and team performance were positively affected by emotional intelligence skills that include influencing, empathy, and achievement oriented (Rapisarda, 2002). Competencies in emotional intelligence assist virtual teams in creating new and much more productive mindsets that encourage staff targets and implement higher performance (Cole, et al., 2019). According to research, emotional intelligence (EI) can be used to evaluate potential members of self-managed virtual teams in order to determine whether or not the prospect will fit within these teams (Frye et al., 2006). Emotional intelligence, as defined by Frye et al., (2006), is the combination of emotional and social intelligence. As a result of these considerations, the following is the third hypothesis of the research:

H3: Emotional Intelligence will have a positive significance on Virtual Team Effectiveness

As per Mayer & Salovey (1997), emotional intelligence (EI) is composed of four skill sets: observation, utilisation, interpretation, and management of one's emotions. The capacity for identifying and recognising emotions in self is referred to as the perceptual dimension of EI; using emotions to accomplish cognitive tasks like cognition, analysing, problem—solving skills, and analytical thinking is referred to as the applied dimension of EI; understanding emotional language such as happiness, anger, and grief is referred to as the cognitive dimension of EI (Mayer & Salovey, 1997). Self-management of emotions involves being able to adjust and control emotions of one's self as well as others' emotions for the betterment of both the individual and also the collective (Mayer & Salovey, 1997). Additionally, another focus of this research is to look at the connection of the Personality traits of the Big Five and team effectiveness in virtual interfaces, and to do so, also would analyse EI as a mediating variable. In this case, the argu-

ment is that if employees have a high level of EI, the relationship between the two correlation analyses will be more prominent than if they have a low level of EI. Increased EI enables individuals to engage in more tasks requiring cognition which includes analysing and evaluating a circumstance, which leads in to an improved understanding of individuals working in virtual groups. Furthermore, under certain research (e.g. Elife et al., 2015), EI has been seen to act as a mediating variable of outcomes. According to Ojedokun (2010), emotional intelligence (EI) has been scientifically proven for mitigating this similar connection between certain character traits of personality and behavioural patterns in many situations. People's failure to perceive and handle their own and the others' emotions, as well as their use of emotion, may be partly to blame for this undertaking facts as well as opinions by professionals discussed above; EI is proposed as a possible moderating factor in the exploration of the concept between Big Five personality traits and virtual team effectiveness. As a result, the following is hypothesised:

H4: Emotional Intelligence will act as a mediator on the impact of Big Five personality traits on Virtual Team Effectiveness

## Research Methodology

The proposed research model was tested in this quantitative study by analysing primary survey data, which was conducted as part of the investigation. To participate in the survey, the google survey form was created, shared and floated online via online mode of communication, and participants were made aware of the research idea behind the survey, while maintaining anonymity. Relevant companies as indicated in Table 1 had been chosen employing convenient sampling method to avoid sampling bias, and a questionnaire was administered to team members who work in an organisation structure within its corporate world in a virtual setting platform (e.g. software engineers, software developers, etc.). The study's assumptions were empirically tested using a succession of multiple linear regression analyses.

## Data Analysis

A total of 375 professionals were contacted through personal and professional contacts for the purpose of data collection. 203 professionals agreed to participate and complete the survey. The response rate was 54.13%. This survey was conducted between December 2020 and February 2021. They were then asked to identify their gender and age, as well as to answer a series of questions regarding information that could potentially affect the overall performance of the team. A summary of the data, including a demographic and descriptive analysis, is presented in Table 1. More than two-thirds of the respondents (34%) were female, while more than half of the respondents (64%) were male, and a small percentage (2%) decided not to reveal their gender identity. This study involved with 62% of the participants being under the age of 26, and then 27% of the individuals being between the ages of 27



**Table 1** Demographics and Descriptive Statistics

	Category	Percentage of Participants	Mean	Standard Deviation	Sample Variance
Gender	Male	64%	1.38	0.54	0.29
	Female	34%			
Age	Prefer not to say	2%			
	26 and below	62%	1.60	0.93	0.86
	27—33	26%			
	34—40	3%			
	41 and above	9%			
Working Industry	BFSI	7%	4.54	1.57	2.48
	E-Commerce	3%			
	Education	20%			
	Healthcare	3%			
	ITeS	37%			
	Other	25%			
	Telecom	5%			
Virtual Team Participation	Category	Percentage of Participants	Mean	Standard Deviation	Sample Variance
	I have not participated in a virtual team	11%	2.78	0.93	0.86
	Participated in both types of virtual teams	23%			
Been a Virtual Team Leader	Participated in combined online and face-to-face teams	42%			
	Participated in online team(s) only	24%			
	Yes	53%	1.47	0.50	0.25
	No	47%			

and 33, with the remainder of the people being over the age of 34, i.e. 11%. Based on working industry preference, 37 per cent of the respondents were from the ITeS industry, while 20 per cent were from the education industry. Participants from the BFSI, Telecom, E-Commerce and Healthcare industries contributed a total of 18 per cent of the research data, and the remaining 25% of the participants came from other industries.

Participants' acquaintance with virtual teams was tested in order to determine their level of comfort. It was discovered that 42 per cent of respondents had engaged in a combination of online and face-to-face teams, according to the data gathered thus far. 24 per cent of participants have solely participated in virtual teams, while 23 per cent have participated in virtual teams as well as physically present groups. The remaining 11 per cent of the population has not taken part in a virtual team competition yet. And lastly, in response to the question of leading a group in different sorts of teams, 52% of the respondents have served as a leader and managed the team, while the remainder 48% have been team members.

### Measurements and reliability testing

The information was gathered through an online questionnaire that includes questions about the Big Five Personality Inventory (BFI), emotional intelligence (EI), and the effectiveness of virtual teams (VTE). For this study, standardised questionnaires of the different inventories were administered, and the validity and reliability coefficients of the questions included in the questionnaire were calculated using Cronbach's indicator.

To assess participants' personalities and how they present themselves to others, the 10-item short version of the Big Five Inventory (BFI-10, Rammstedt & John, 2007) was employed to collect data for the Big Five personality research ( $\alpha=0.614$ ): Extraversion ( $\alpha=0.799$ ); Agreeableness ( $\alpha=0.424$ ); Conscientiousness ( $\alpha=0.672$ ); Neuroticism ( $\alpha=0.664$ ) and Openness ( $\alpha=0.759$ ). The BFI-10 is divided into five subscales, each of which comprises two reversible questions for both of the five primary individual characteristics. It is decided how to assess the things using a Likert scale having five-point scale, with the participants choosing between replies which are ranged through "strongly disagree" and "strongly agree."

Each individual and groups' emotional intelligence was tested with the help of the Brief Emotional Intelligence Scale (BEIS-10; Davies et al., 2010), which has a reliability score of ( $\alpha=0.865$ ) and was used in this study. Brief Emotional Intelligence Measure (BEIS-10): The BEIS-10 is a 10-item brief that is designed on the basis of the Emotional Intelligence Scale created by Schutte (SEIS; Schutte et al., 1998) as well as the Salovey and Mayer Emotional Intelligence Framework (1990). A total of five elements are included in the BEIS-10: the utilisation of emotional states, one's own emotions, one's own emotions regulated, others' emotions regulated, and regulation of others' emotions (Davies et al., 2010). Individuals' own and others' emotions reflect how they express and perceive their own feelings as well as the emotions of others, according to the theory of emotions (Salovey & Mayer, 1990). Individuals' ability to regulate their own emotions and

influence the emotions of others are described by the terms "regulation of own emotions" and "regulation of others' emotions" (Salovey & Mayer, 1990). The use of emotions in problem-solving situations is referred to as the utilisation of emotions (Salovey & Mayer, 1990).

A total of 10 items were selected and developed measuring the two dimensions of Virtual Team Effectiveness ( $\alpha=0.873$ ) (Alsharo et al., 2017): Trust ( $\alpha=0.819$ ) and Collaboration ( $\alpha=0.733$ ).

The internal consistency and indicator reliability of the measurement model are examined in order to determine the dependability of the measurement model. Indicators of internal consistency, represented by Cronbach's alpha, are used to assess whether such a group of indications is reliable (shown in Table 2). The construct validity, internal consistency, and discriminant validity of the measurement model are all examined for determining the measurement model's validity. The construct's convergent validity was sufficient, with the AVE for all variables increasing for being greater than 0.6. (Fornell & Larcker, 1981). Data gathered showed that all variables were significantly and appropriately evaluated when the information was gathered (see Table 3).

Table 4 summarises the Discriminating Validity Index, from which we can conclude that our model does not have any discriminating validity difficulties. It can be seen in the table that the square root AVE (highlighted values in italic) for each construct is more than the sum of the values in its row and column. This suggests that the discriminant validity is very high.

**Table 2** Reliability

Construct	Sub-Construct	Cronbach's Alpha
BFI-10	Extraversion	0.799
	Agreeableness	0.424
	Conscientiousness	0.672
	Neuroticism	0.664
	Openness	0.759
BEIS-10	Appraisal of own emotions	0.622
	Appraisal of others' emotions	0.666
	Regulation of own emotions	0.565
	Regulation of others' emotions	0.622
	Utilisation of emotions	0.708
VTE	Collaboration	0.819
	Trust	0.733

**Table 3** Composite Reliability Scores and Average Variance Extracted (AVE)

Construct	Sub-Construct	CR (Above 0.6)	AVE (Above 0.4)
BFI-10	Extraversion	0.794	0.514
	Agreeableness		
	Conscientiousness		
	Neuroticism		
	Openness		
BEIS-10	Appraisal of own emotions	0.904	0.488
	Appraisal of others' emotions		
	Regulation of own emotions		
	Regulation of others' emotions		
	Utilisation of emotions		
VTE	Collaboration	0.905	0.494
	Trust		

**Table 4** Discriminant Validity

	BFI	EI	VTE
BFI	<i>0.717</i>		
EI	.285	<i>0.699</i>	
VTE	.187	.468	<i>0.703</i>

**Table 5** Correlation matrix among BFI, EI and sub categories of VTE (Collaboration & Trust)

	BFI	EI	Collaboration	Trust
BFI	1			
EI	.285**	1		
Collaboration	.520**	.431**	1	
Trust	.109**	.441**	.736**	1

## Results

To determine the links between independent and dependent variables, a correlation coefficient was calculated. The findings showed a statistically significant and positive ( $p < 0.01$ ) correlation between all different factors. A table presenting the findings of the Pearson correlation study is displayed in Table 5.

A statistical significance and positive ( $p < 0.01$ ) relationship was discovered between observed members' overall Big Five personality qualities and Emotional Intelligence ( $r = 0.285$ ), Virtual Team Collaboration ( $r = 0.520$ ), and Trust ( $r = 0.109$ ). Emotional Intelligence was also found to be favourably and significantly connected with virtual team collaboration ( $r = 0.431$ ) and trust ( $r = 0.441$ ).

**Table 6** Regression analysis between BFI and VTE and sub constructs of VTE

Independent Variable	Dependent Variable	B	Std. Error	Sig	R Square	F
BFI	VTE	0.185	0.149	0.217	0.008	1.532
	Collaboration	0.118	0.160	0.461	0.003	0.545
	Trust	0.252	0.161	0.119	0.012	2.448

**Table 7** Regression analysis between BFI and EI

Independent Variable	Dependent Variable	B	Std. Error	Beta	Sig	R Square
BFI	EI	0.450	0.107	0.285	0.000	0.081

Furthermore, Virtual Team Collaboration was found to be positively and significantly connected with Trust ( $r = 0.736$ ).

These findings demonstrate that an individual's Big Five personalities can act as a catalyst for the effectiveness of a virtual team in terms of team collaboration and the trust that the team has in one another. Additionally, developing emotional intelligence can have a big and beneficial influence on a virtual team's overall success across all aspects related to team effectiveness.

Hypothesis 1 is concerned with the existence of a favourable association of the complete personality characteristics of five dimension qualities and the effectiveness of teams in virtual interface. According to the results, there is no immediate connection between the personality qualities of the Big Five and team effectiveness in the virtual platform ( $B = 0.185$ ,  $S.E. = 0.149$ ,  $p = 0.217$ ). In addition, when the direct effect of virtual team effectiveness was examined with sub-constructs of virtual team effectiveness, the result with virtual team collaboration was highly insignificant ( $B = 0.118$ ,  $S.E. = 0.160$ ,  $p = 0.461$ ) and a low level of insignificance was discovered with virtual team trust ( $B = 0.252$ ,  $S.E. = 0.161$ ,  $p = 0.119$ ), respectively (see Table 6). Individuals with a high personality of four components (Extraversion, Agreeableness, Conscientiousness, and Openness) other than individuals with high Neuroticism personality can be trusted, according to the results of this hypothesis. Furthermore, collaborating with individuals who have high levels of Agreeableness, Conscientiousness, and Openness in their personalities may be achievable. As a result, Hypotheses 1 was unable to be supported by these findings.

Hypothesis 2 dealt with the relationship between the Big Five personality qualities and emotional intelligence in a direct and positive way. The relationship between the Big Five personality traits and emotional intelligence has been shown to be a positive and statistically significant ( $B = 0.450$ ,  $S.E. = 0.107$ ,  $p = 0.00000$ ) (see Table 7). Hypothesis 2 was confirmed as a result of this finding.

Hypothesis 3 is concerned with the existence of a favourable relationship between total emotional intelligence and the success of virtual teams. The direct relationship between emotional intelligence and virtual team effectiveness has been demonstrated to be positive and statistically significant ( $B = 0.648$ ,  $S.E. = 0.088$ ,  $p = 0.000$ ).

Additionally, when the direct effect of virtual team effectiveness was examined with sub-constructs of virtual team effectiveness, the results revealed a positive and statistically significant relationship with both virtual team collaboration ( $B=0.649$ ,  $S.E.=0.095$ ,  $P=0.000$ ) and virtual team trust ( $B=0.648$ ,  $S.E.=0.006$ ) and virtual team trust ( $B=0.648$ ). This finding implies that those with high emotional intelligence are able to regulate their emotions well and might perform better in teams in terms of increasing team performance since they would be able to communicate with other team members as well as be trusted. As a result, Hypotheses 3 was supported by these findings.

Emotional Intelligence, according to Hypothesis 4, will operate as a mediating factor between the influence of the personality traits of the Big Five characteristics on the effectiveness of teams working virtually. As a result of the research, it was discovered that the indirect effects of the personality traits of the Big Five impact team efficiency in the virtual interface were  $\beta=0.482$  [95% CI=(0.476,0.821)] (see Table 8 for details). As a result, it can be concluded that the mediation is highly favourable due to the fact is that interaction between the personality traits of the Big Five qualities and emotional intelligence has demonstrated insignificant and significant relations on all areas of virtual team efficiency respectively.

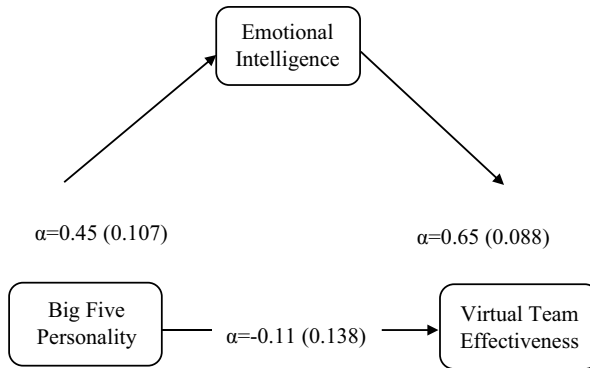
Figure 2 depicts the final results of the study as they were established. As previously stated, the study's findings support the hypotheses, revealing that there is a significant positive relationship between individuals' Big Five personality traits and virtual team effectiveness, with emotional intelligence acting as a mediator that can control personalities who respond negatively.

## Discussions

Unlike traditional teams, virtual teams operate in decentralised, sometimes self-managed environments, and they depend largely on technology to communicate with one another as well as organise and coordinate their tasks. Due to large and powerful corporate and social demands, virtual team working is becoming increasingly popular, and teams that work on a virtual basis are becoming increasingly popular. The introduction of new problems, such as those provided by COVID-19, has contributed to the rapid expansion in the number and size of virtual working teams. It has become increasingly necessary to research and comprehend the dynamic interaction that contributes to the development of virtual teams in the modern workplace, as their use has expanded in the workplace. Companies may benefit from teams working virtually in a variety of ways such as attempting to cope with a more highly dynamic environment, but there are also numerous difficulties and possible dangers to consider. Individuals with a variety of personality characteristics have varying levels of ability to regulate their own emotions while also sensing the emotions of others. This becomes more challenging in virtual team situations, and the final result when they perform in a group is compromised. As a result of these concerns, the study aims to evaluate the effect of the personality traits of five dimensions characteristics as well as emotional intelligence of individuals in a virtual environment while they execute any work in a group. This was executed by building

**Table 8** Regression analysis showing indirect effect through emotional intelligence

Independent Variable	Dependent Variable	Unstandardised Coefficients		Standardised Coefficients	Sig	95.0% Confidence Interval for B		R Square	F
		B	Std. Error			Lower Bound	Upper Bound		
(Constant)	VTE	2.331	0.482		0.000	1.381	3.281	0.221	28.411
BFI		-0.107	0.138	-0.050	0.439	-0.380	0.165		
EI		0.648	0.088	0.482	0.000	0.476	0.821		



**Fig. 2** Results of mediation analysis

four hypotheses but the main objective is to check whether there is an association between personality traits and dimensions of virtual team effectiveness and to determine that the emotional intelligence can function as a mediator in the connection with both characteristics of personality traits of Big Five and virtual team effectiveness through a series of multiple regression analysis.

Members of virtual teams may find it more difficult to interact with one another due to a lack of media richness (Watson-Manheim & Bélanger, 2002), miscommunication is somewhat more likely to cause to misunderstanding (Van der Smagt, 2000), and individuals would be less willing to disclose any normal or additional data due to inadequate of social interaction (Kraut et al., 1992). Because of the intense concentration on the job at hand and the difficulties in getting familiar with other team members, it is possible that trust is based on an individual's personal nature, not on the actions and characteristics shown with other teammates. In virtual teams, previous research has revealed a link between teams' trust and effectiveness (Jarvenpaa & Leidner, 1998; Thompson & Coovert, 2002). As previously reported (McAllister, 1995), people working in virtual teams had lower overall trust levels than those working in traditional teams. It was discovered in this research, based on the results of the first hypothesis, that an individual's personality alone cannot create a good connection between team effectiveness and group members while working in a virtual interface with other people. While testing with individual constructs, it was discovered that there was minimal significance and a positive relationship between virtual team trust and team performance, which has also been shown in earlier research as well. It may be inferred that, with all other factors being equal, someone with a personality that lends themselves to being more trustworthy would be a good fit for a virtual team. It was discovered via the hypothesis 1 experiment that in virtual teams, personality matters a lot when it comes to establishing trust among team members.

Across several ways, people's actual personalities and emotional intelligence are significantly related to one another. Several personality traits described in the Big Five may have the potential to influence an individual's emotional intelligence, either favourably or adversely, depending on the situation. The second hypothesis, which was focused on examining the direct relationship between personality



characteristics and emotional intelligence, revealed a positive relationship between the two variables. Although a study was done (Van Rooy & Viswesvaran, 2004) found that emotional intelligence and personality are shown to be linked, researchers still choose to consider that emotional intelligence is the higher of the two.

Organisations can greatly improve the effectiveness of virtual team projects by implementing an Emotional Intelligent framework and hiring people who exhibit characteristics that are consistent with the theory. The third hypothesis, in which it is noted that EI has positive relationships with virtual team performance as a whole as well as with its sub components, provides evidence in favour of this claim. By doing so, it illustrates the significant goal of this research, which is to comprehend emotional intelligence (EI) as a mechanism in investigating the association between the personality traits of the Big Five qualities as well as team efficiency required in groups in the virtual interface, as stated in hypothesis 4. The findings of the study suggest that emotional intelligence (EI) serves as a mediating factor that enhances communication between personalities and the success of virtual teams. Consequently, based on the understanding gained of how individuals and groups manage and process emotions with varied personalities throughout time, emotional intelligence appears to be a viable notion that will be extremely beneficial for teamwork in a virtual environment.

The study article has concentrated primarily on the information technology sector; however, this can be supplemented by two other sector-specific publications, which is the limitation. Aside from that, the sample size is restricted to millennials under the age of 33 years old. Another drawback is that the scale utilised for measuring the personality traits of the Big Five qualities of the participants from the BFI-10 was originally developed as part of the Big Five Inventory, and as a result, there were significant losses when compared to the full-scale Big Five Inventory (Rammstedt & John, 2007). To that end, it is possible to concur with Gosling et al. (2003) in stating that ultra-short measurements really shouldn't and cannot be used as replacements for more traditional personality assessments. Only in study situations where participants' time is actually constrained and where personality assessment would otherwise be impossible are these techniques used. As an additional limitation of the emotional intelligence scale, it is found that relatively brief measures, such as the BEIS-10, which are considered due to the minimal collection of elements within every component, do not yield results for the restricted possible aspect components (Davies et al., 2010).

## Conclusion

Lastly, the findings of the study may be useful to any business that is already utilising virtual teams or remote working programmes, or that is evaluating the possibility of implementing such groups in the future. The study can serve as a model for determining who should be in charge of virtual teams, who should engage in groups, and who should be banned from virtual programmes. The results of the study might potentially be used to identify the kind of persons who would be better suited for collocated teams rather than virtual teams. Additionally, the studies

revealed statistically significant results demonstrating that virtual team members believed that EI features contributed to the success of the project. As a result of the research, it can be concluded that people with high emotional intelligence and have demonstrated in a manner that shows they have faith in others, feel good about themselves, and are willing to try new things, have a greater tendency to comply to culturally approved norms, and are capable of managing significant doubt and negative emotions will be much more effective in virtual interface teams than others. Employees' emotional intelligence (EI) levels can be raised through training, which allows organisations to develop and improve employee performance. On the practical side, people may strengthen their emotional intelligence abilities by quickly and precisely recognising and appreciating the kindness of others, such as the key to understanding feelings can be obtained by following the concept of not responding appropriately immediately, not having gotten upset by strong criticism from the others, not trying to jump to conclusions, making sure to search at other people's needs empathically, and working to ensure to take a peek at the other people's problems with empathy (Allen et al., 2012; Serrat, 2017).

#### Declarations

The authors declare there is no conflict of interest and the work has not been submitted anywhere else for the purpose of publication.

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