

Role of team climate on teamwork quality: Mediating roles of inter-team and intrateam Trust

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Abstract

Teams are inseparable in any business organization. The effectiveness of teams determines organizational performance and success. Furthermore, teamwork plays a vital role in the success of projects. However, teamwork effectiveness and quality vary across the teams. Teamwork Quality means the quality of communications in the team. Teamwork quality is the function of various factors. One of the important factors is team climate. Team climate is a perception of the employees towards events and activities in working conditions. Trust ensures better interaction and cooperation between the teams and within the team. Intrateam trust and Inter-team trust are essential to achieve teamwork quality. This study aims at studying the impact of team climate on teamwork quality among the employees working in a service sector. In addition, mediation effects of intrateam trust and Inter-team trust in the relationship between team climate and teamwork quality have also been studied. The method of research is a survey method. The study is based on primary data. The data is collected from the employees working in the service sector using a structured questionnaire. Results are analyzed using suitable statistical tools.

Keywords: Team climate, Teamwork Quality, Intrateam trust, Inter-team trust, Service, Mediation

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I. Introduction

A team has two or more individuals working together towards a common goal (Figl & Saunders, 2011). Teamwork is vital in any organization as it contributes to team performance and ultimately organizational success (Lindsjörn et al., 2016). Good teamwork enhances the success of innovative projects (Hoegl & Gemuenden, 2001). Teamwork Quality (TWQ) and its implications are studied by many researchers (Hoegl & Gemuenden, 2001; Lindsjörn et al., 2016). TWQ construct has been used in this study as defined by Hoegl & Gemuenden (2001). TWQ denotes the value of communications in the teams. TWQ is measured using six sub-dimensions namely “communication, coordination, team member contribution, mutual support in a team, effort, and cohesion” (Hoegl & Gemuenden, 2001). TWQ is contributed by various factors. There are two approaches towards climate namely the cognitive schema approach and the shared perception approach. Due to some limitations of the cognitive schema approach, the shared perceptions approach has been researched a lot (Anderson & West, 1998). Team climate is a shared perception of the team towards events and circumstances in the work environment (Figl & Saunders, 2011). Climate for innovation is widely researched rather than climate for performance. Team climate has two dimensions namely task orientation and social orientation. Team orientation represents the team's ability to achieve the goals and tasks with higher standards. Social orientation deals with the promotion of the well-being of team members (Figl & Saunders, 2011). Based on team orientation and social orientation, team climate is of four types namely fully functioning team, cozy team, dysfunctional team, and cold team (Figl & Saunders, 2011). A fully functional team brings the best in standards and quality in the process of accomplishment of the goals or tasks. Thus, team climate determines teamwork quality. Trust implies a firm belief in the ability and integrity of individuals. Trust plays a vital role in the success of a team. A team that has individuals who do not trust each other cannot bring the best out of the team even though a favorable organizational and team climate exists. Further, Inter-team trust is also essential to achieve the goals as the organization is largely interdependent in nature. So, this study intends to measure and analyze the role of team climate in teamwork quality in the service sector, and mediating roles of Inter-team trust and intrateam trust in the relationship between team climate and teamwork quality are examined.

II. Literature Review

A work team consists of several individuals working together to achieve some tasks. A team is "a group of individuals who adopt the required joint and individual mental attitudes". Team members have better bonding than members of the workgroup (Ceschi et al., 2014). Teamwork is an essential feature of a team. Teamwork is a shared attitude and behavioral pattern (Anderson & West, 1998). A team will be efficient when it satisfies or exceeds the standards set for the particular task or activity (Benjamin et al., 2014). Teams are increasingly interdisciplinary because they need to face the challenges that require an interdisciplinary approach (Settles et al., 2019). Creating a diverse team is not a simple task (Settles et al., 2019). Managing diverse teams is more complex because of different perspectives, credit sharing, and power-sharing in a team (Settles et al., 2019). To overcome these limitations, team climate will be a critical factor. Team climate is "a perceived set of norms, attitudes, and expectations on the team". Team climate is instrumental in employees' attitudes towards the organization (Settles et al., 2019). Team climate can be measured using the dimensions such as "shared vision, support for innovation, participative safety, and task orientation" (Anderson & West, 1998). A good team requires a lot of behavioral norms (Hoegl & Gemuenden, 2001). Six concepts of teamwork quality include "communication, coordination, the balance of member contribution, mutual support, effort, and cohesion" (Hoegl & Gemuenden, 2001). "Trust can lead to cooperative behavior among individuals, groups, and organizations" (Mayer et al., 1995). Trust creates a safe environment in which the team members feel comfortable in sharing or discussing their own or others' achievement issues, unafraid of being viewed as incapable of harming their relationship with others (Kassa & Tekleab, 2018).

III. Methods and Materials

This research work examines the impact of team climate on teamwork quality among the service sector employees. Further, this research measures and analyses the mediating roles of Inter-team trust and intrateam trust in the relationship between team climate and teamwork quality. Primary data has been collected and used to analyze the role of team climate on teamwork quality among the service sector employees and to study the mediating roles of Inter-team trust and Intrateam trust. The research framework is presented in table 1.

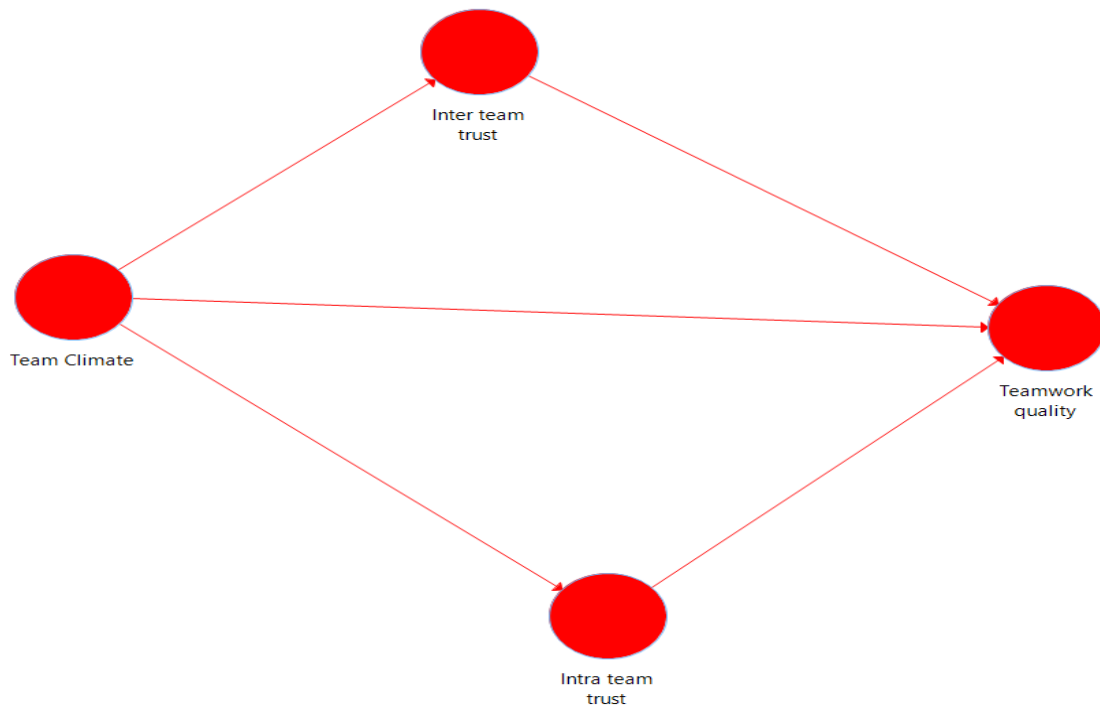
Table 1: Research Framework

Particulars	Type
Purpose	Description
Type of investigation	Causal investigation
Method of the research	Survey method
The environment of the study	Non-contrived field
Unit of the analysis	Employees working in Signalling and telecom companies providing services to Bangalore Metro
Time Horizon	Cross-sectional study
Data Type	Primary data
The locale of the study	Bangalore, India

A descriptive research design is applied. The study investigates the cause-and-effect relationship between team climate and teamwork quality among the service sector employees. The study has been conducted at a stretch. The target population of employees of signaling and telecom companies providing services to the metro in Bengaluru is 4427. The sample size for the study is 354 as per Krejcie and Morgan's formula. The data was collected from 354 team members from 58 teams (17 departments) from June 2019 to September 2020 working in different Signalling and Telecom companies providing services to metro transport.

A structured questionnaire has been used to measure employees' responses. The questionnaire begins with questions on demographic factors such as gender, age, marital status, qualification, experience, and size of the team. Figure 1 portrays the research model.

Figure – 1: Research Model



Team climate in this study has been measured by adopting 18 items team climate scale of Anderson and West (1998). Anderson and West scale have four sub-dimensions such as shared vision (6 items), support for innovation (6 items), participative safety (3 items), and task orientation (3 items).

Teamwork Quality has been measured using Hoegl and Gemuenden(2001) scale. This scale has 25 items for six dimensions such as communication (3 items), coordination (3 items), the balance of team member contribution (3 items), mutual support in a team (6 items), effort (3 items), and cohesion (7 items).

Inter-team trust has been measured employing a scale developed by McAllister’s (1995) scale that has 6 items on the Likert scale. Further, 5 items McAllister’s (1995) scale has been used to measure Inter-team trust. A pilot study was conducted on 35 employees. The Cronbach alpha for the constructs is presented below. Cronbach α scores for the constructs are satisfactory as the scores are more than 0.7.

Table 2: Reliability Analysis

Scale	α
Team Climate	0.858
Teamwork Quality	0.970
Inter-team Trust	0.750
Intrateam Trust	0.932

Upon validation, the questionnaire was served to 582 employees. The questionnaire was sent using email, or WhatsApp to the employees. Snowball sampling was adopted. The timing of the survey was ten minutes. Participants were additionally provided with the contact information of the researchers. With rigorous attempts and tenacity, the information was collected from the agreed employees.

IV. Results and Discussions

The collected data were checked for the completeness of the information. Data cleansing was done and then, statistical tests were undertaken. The first statistical test applied was the test of normality as normality tests provide the basis for the selection of parametric and non-parametric tests. The results of tests of normality are presented in table 3.

Table 3: Test of Normality

Variables	Kolmogorov-Smirnov ^a		Shapiro-Wilk	
	Statistic	p-value	Statistic	p-value
Team climate	0.116	.000	0.946	.000
Teamwork Quality	0.195	.000	0.895	.000
Inter-team Trust	0.137	.000	0.930	.000
Intrateam Trust	0.227	.000	0.817	.000

a. Lilliefors Significance Correction

Both the tests, Kolmogorov-Smirnov, and Shapiro-Wilk, indicate that team climate, teamwork quality, Inter-team trust, and Intrateam trust are not normally distributed as the p-values are less than 0.000.

Table 4: Demographic characteristics of the respondents

Particulars	Categories	N	Percentage
Gender	Female	127	35.9
	Male	227	64.1
Age	20-24	58	16.4
	25-29	128	36.2
	30-34	118	33.3
	35-39	23	6.5
	Above 40	27	7.6
Marital Status	Single	126	35.6
	Married	201	56.8
	Separated	4	1.1
	Widowed	10	2.8
Experience (in years)	Divorced	13	3.7
	One to three	106	29.9
	Four to six	102	28.8
	Seven to nine	94	26.6
	Above nine	52	14.7
Qualification	Diploma	77	21.8
	Graduate/ Bachelor's Degree	158	44.6
	Postgraduate/ Master's Degree	99	28.0
Team Size	Professional	20	5.6
	3 to 5	117	33.1
	6 to 8	147	41.5
	Above 8	90	25.4

Source: Primary data

The salient features of the demographic characteristics of the sample are

1. Male respondents are the dominant group in the sample as they constitute 64.1 % of the sample.
2. 69.5% of the respondents belong to the age of 25 years to 34 years. Above 35 years, there are only 14.1% of the respondents. 16.4% of the respondents are less than 24 years.
3. Most of the participants have a work experience of 1-3 years (29.9%) while 28.8% of the respondents have a work experience of 4-6 years.
4. Most of the participants are graduates/ bachelor's degrees (158 participants).
5. Most of the participants are married (201 participants).
6. Lastly, most of the participants are 6 to 8 in a team (147 participants) and most of the participants are 3 to 5 in a team (117 participants).

Variances in team climate, teamwork quality, Intrateam trust, and Inter-team trust have been studied to check whether team climate, teamwork quality, Intrateam trust, and Inter-team trust of the sample employees significantly differ based on their demographic characteristics. Non-parametric statistical tools such as the Mann-Whitney U test and Kruskal Wallis test have been applied as data is not normal.

Table 5: Variances in Team climate and demographic characteristics

Variables	P-value	Result
Team climate and Gender	0.803	Not Significant
Team climate and Age	0.854	Not Significant
Team climate and Marital status	0.434	Not Significant
Team climate and Experience	0.085	Not Significant
Team climate and Education	0.883	Not Significant
Team climate and Team size	0.720	Not Significant

Source: primary data

Table 5 shows that there are no significant differences between team climate and personal characteristics of the respondents such as gender, age, marital status, experience, education, and team size as p-values are more than 0.05. So, it can be said that team climate perceptions of the sample employees do not differ based on their gender, age, marital status, experience, education, and team size.

Table 6: Variances in Teamwork Quality and demographic characteristics

Variables	P-value	Result
Teamwork Quality and Gender	0.724	Not Significant
Teamwork Quality and Age	0.143	Not Significant
Teamwork Quality and Marital status	0.128	Not Significant
Teamwork Quality and Experience	0.622	Not Significant
Teamwork Quality and Education	0.991	Not Significant
Teamwork Quality and Team size	0.406	Not Significant

Source: primary data

Table 6 reveals that there are no significant differences between teamwork quality and personal characteristics of the respondents such as gender, age, marital status, experience, education, and team size as p-values are more than 0.05. So, it can be said that teamwork quality perceptions of the sample employees do not differ based on their gender, age, marital status, experience, education, and team size.

Table 7: Variances in intrateam trust and demographic characteristics

Variables	P-value	Result
Intrateam trust and Gender	0.700	Not Significant
Intrateam trust and Age	0.723	Not Significant
Intrateam trust and Marital status	0.376	Not Significant
Intrateam trust and Experience	0.694	Not Significant
Intrateam trust and Education	0.440	Not Significant
Intrateam trust and Team size	0.873	Not Significant

Source: primary data

Further, there are no significant differences between intrateam trust and personal characteristics of the respondents such as gender, age, marital status, experience, education, and team size as p-values are more than 0.05. So, it can be said that intrateam trust perceptions of the sample employees do not differ based on their gender, age, marital status, experience, education, and team size.

Similarly, there are no significant differences between Inter-team trust and personal characteristics of the respondents such as gender, age, marital status, experience, education, and team size as p-values are more than 0.05. So, it can be said that Inter-team trust perceptions of the sample employees do not differ based on their gender, age, marital status, experience, education, and team size.

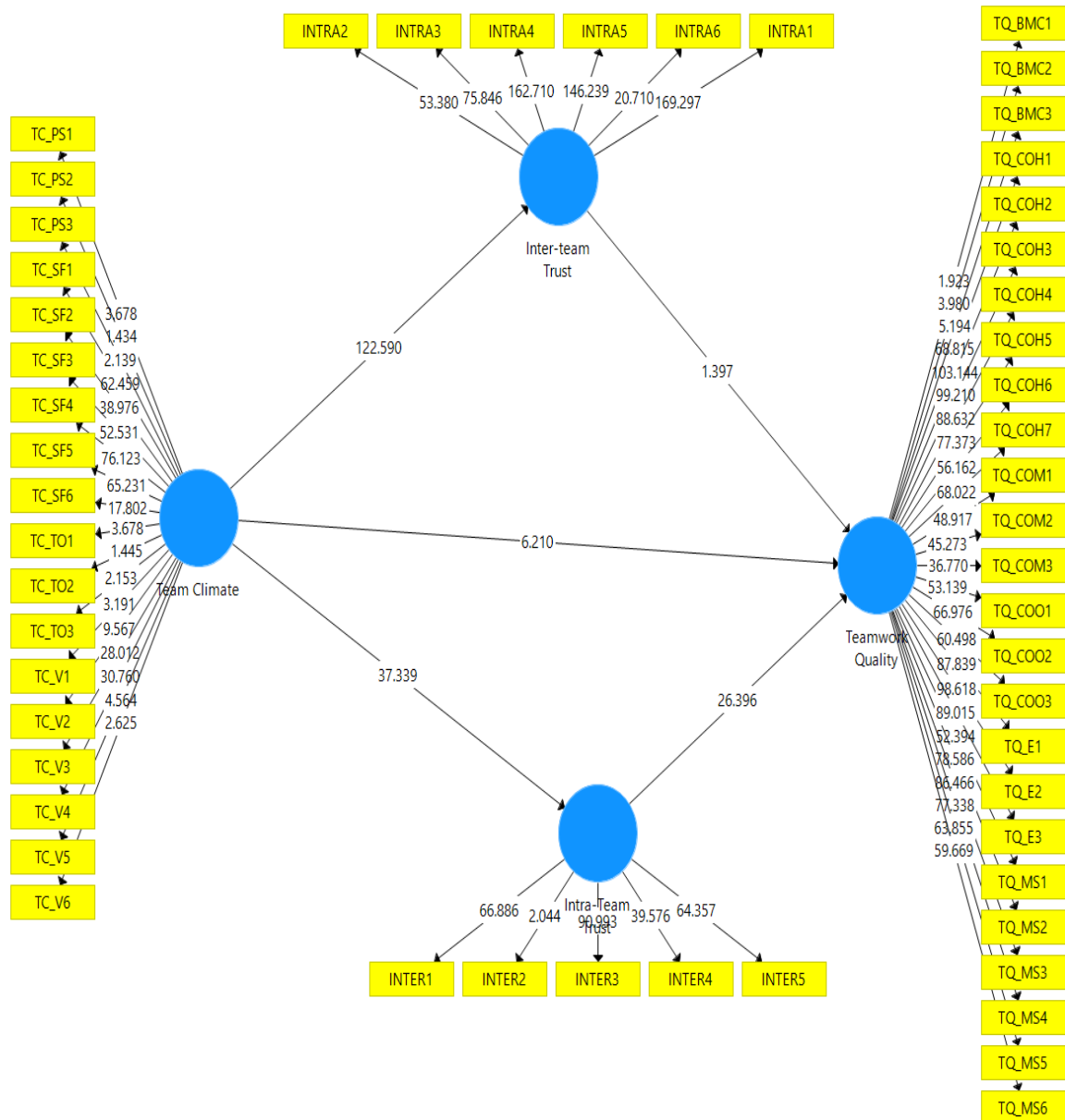
Table 8: Variances in Inter-team trust and demographic characteristics

Variables	P-value	Result
Inter-team trust and Gender	0.790	Not Significant
Inter-team trust and Age	0.926	Not Significant
Inter-team trust and Marital status	0.705	Not Significant
Inter-team trust and Experience	0.331	Not Significant
Inter-team trust and Education	0.801	Not Significant
Inter-team trust and Team size	0.621	Not Significant

Source: primary data

Next, the proposed research model has been tested using the path structural equation model.

Figure – 2: Tested Research Model



The reliability and validity of the constructs are presented in table 9. Composite reliability (CR) and Cronbach’s α scores are much above the expected scores of 0.700. Further, Average Variance Extracted (AVE) scores for the constructs are also satisfactory.

Table -9: Statistical properties of the variables

Particulars	CR	AVE	α
Team Climate	0.912	0.727	0.858
Teamwork Quality	0.940	0.768	0.970
Inter-team trust	0.791	0.824	0.750
Intrateam trust	0.966	0.772	0.932

Relationships among the variables are exhibited in table 10. The strongest relationship among the variables exists between teamwork quality and Inter-team trust (.741). Team climate and Inter-team trust have the least positive relationship (.520). Team climate is moderately related to teamwork quality (.562) and moderately positively related to Intrateam trust (.631). Intrateam trust and Inter-team trust are moderately and positively related to each other.

Table - 10: Correlations of latent variables

	Team Climate	Teamwork Quality	Inter-team trust	Intrateam trust
Team Climate	1			
Teamwork Quality	.562	1		
Inter-team trust	.520	.741	1	
Intrateam trust	.631	.604	.581	1

As per able 11, team climate positively and significantly impacts teamwork quality to the extent of 85.8%. Team climate significantly explains variance in Inter-team trust by 94.7% and explains variance in Intrateam trust by 73.3%. Intrateam trust positively and significantly impacts teamwork quality. On the other hand, Inter-team trust negatively but insignificantly impacts teamwork quality.

Table – 11: Direct effects

Particulars	Direct effects	p-value
Team Climate→Teamwork Quality	0.858	0.000
Team Climate→Inter-team Trust	0.947	0.000
Team Climate→Intrateam Trust	0.733	0.000
Inter-team Trust → Teamwork Quality	-0.106	0.163
Intrateam Trust → Teamwork Quality	0.623	0.000

Table – 12: Indirect effects

Particulars	Specific indirect effects	p-value
Team Climate → Inter-team Trust → Teamwork Quality	-0.100	0.166
Team Climate → Intrateam Trust → Teamwork Quality	0.456	0.000

Table 12 presents the indirect relationships of the model. The mediating role of Inter-team trust in the relationship between team climate and teamwork quality is insignificant and mediating role of Intrateam trust in the relationship between team climate and teamwork quality is significant.

The total effects of the model are shown in table 13. Direct and indirect effects combinedly form total effects. Team climate has a total effect of 75.8% on teamwork quality, has 94.7% effect on Inter-team trust, and 73.3% effect on Intrateam trust. On the other hand, Inter-team trust impacts negatively 10.6% on teamwork quality. Intrateam trust impacts teamwork quality positively to the extent of 62.3%.

Table – 13: Total effects

Particulars	TC	TWQ	Inter-team Trust	Intrateam Trust
TC	-	0.758	0.947	0.733
Inter-team Trust	-	-0.106	-	-
Intrateam Trust	-	0.623	-	-

The mediation effect of Inter-team trust is checked using "Variance Accounted For" (VAF) and VAF is the ratio between IDE and total effect (TE). VAF determines the size of the mediation effect (Hair et al., 2014). If VAF lies between 0% to 20%, it represents no mediation. In a situation in which VAF falls between 21% to 80%, mediation is a partial one. If VAF is more than 80%, it forms full mediation (Hair et al., 2014). Table 14 shows the mediation effect of Inter-team trust.

Table – 14: Mediation effect of Inter-team trust

Path	Path Value	Remarks
TC→TWQ	0.858	
TC→Inter-team	0.947	
Inter-team→TWQ	-0.106	
DE	0.858	
IDE	-0.100	= TC→Inter-team * Inter-team→TWQ = .947*-.106
TE	0.758	= DE + IDE = 0.858 + -0.100
VAF computed	-13.19%	= IDE/ TE = -0.100/0.758 = -0.131

Since the VAF score for mediation effect of Inter-team trust is -13.19% which is less than 0. So, Inter-team trust does not have mediation in the relationship between team climate and teamwork quality.

Table – 15: Mediation effect of Intrateam trust

Path	Path Value	Remarks
TC→TWQ	0.858	
TC→Intrateam	0.733	
Intrateam→TWQ	0.623	
DE	0.858	
IDE	0.456	= TC→Intrateam * Intrateam→TWQ = .733*.623

TE	1.314	= DE + IDE = 0.858 + 0.456
VAF computed	34.70%	= IDE/ TE = 0.456/1.314 = 0.3470

Table 15 presents the mediation effect of intrateam trust. Since the VAF score for the mediation effect of intrateam trust is 34.70% which is more than 20%. So, Intrateam trust has a partial mediation in the relationship between team climate and teamwork quality.

Teamwork is a vital component in the personal success and the success of the organization. This statement indicates that teamwork focuses on the task and well-being of the employees. Teamwork quality depends on the environment in which the teams function. Team climate determines teamwork quality. Further, trust within the team and trust across the team play a significant role in teamwork quality. So, this study tries to determine the relationship between team climate and teamwork quality of the employees working in the service sector. Further, mediating effects of Inter-team trust and Intrateam trust in the relationship between team climate and teamwork quality have been studied. Variance analysis reveals that team climate, teamwork quality, Inter-team trust, and Intrateam trust do not vary based on the demographic characteristics of the sample respondents. Thus, team climate, teamwork quality, Inter-team trust, and Intrateam trust do not depend on demographics, and they can be impacted by their respective dimensions considered for the study. Team climate significantly impacts the teamwork quality of the sample employees. Intrateam trust significantly mediates the relationship between team climate and teamwork quality. Intrateam trust has a partial mediation. On the other hand, Inter-team trust insignificantly impacts the relationship between team climate and teamwork quality negatively. So, Inter-team trust does not have any mediation effect. These results indicate that trust within the team members is a critical factor in determining teamwork quality in each team climate and Inter-team trust does not make any difference in the relationship between team climate and teamwork quality.

V. Conclusions

This study examined the impact of team climate on the teamwork quality of the employees working in the team in the service sector. Further, mediating roles of inter-team trust and Intrateam trust in the link between team climate and teamwork quality have been analyzed. The study made use of primary data collected through administering the structured questionnaires. The collected data have been cleansed and then statistical analysis has been applied. The results of the analysis reveal that team climate, teamwork quality, Inter-team trust, and Intrateam trust do not depend on the demographics of the employees. The study found that team climate significantly impacts the teamwork quality of the sample employees. Intrateam trust significantly mediates the relationship between team climate and teamwork quality. Intrateam trust has a partial mediation. On the other hand, Inter-team trust insignificantly impacts the relationship between team climate and teamwork quality negatively.

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