UNIVERSITY OF BIRMINGHAM

University of Birmingham
Research at Birmingham

The future of leadership in Saudi Arabia
Khan, H; A, Aamir; Jan, S; Nassani, A; Haffar, Mohamed

[Link to publication on Research at Birmingham portal](#)

Annals of Operations Research

The Future of Leadership in Saudi Arabia: The Nexus of Shared Leadership, Project Team Process, and Performance
--Manuscript Draft--

Manuscript Number:	ANOR-D-21-01059R1
Full Title:	The Future of Leadership in Saudi Arabia: The Nexus of Shared Leadership, Project Team Process, and Performance
Article Type:	Original Research
Keywords:	Shared-leadership; project team processes and performance; commitment; Saudi Arabia
Corresponding Author:	Hashim Khan COMSATS University Islamabad Islamabad, PAKISTAN
Corresponding Author Secondary Information:	
Corresponding Author's Institution:	COMSATS University Islamabad
Corresponding Author's Secondary Institution:	
First Author:	Hashim Khan
First Author Secondary Information:	
Order of Authors:	Hashim Khan
	Alamzeb Aamir
	Sharif Ullah Jan
	Abdelmohsen A. Nassani
	Mohamed Haffar
Order of Authors Secondary Information:	

Abstract:	The current study aims to identify the impact of shared leadership on project team processes such as coordination, goal commitment, and knowledge sharing in the context of Saudi Arabia. To serve this aim, a survey is conducted of 168 project team members working in various project teams. For analysis of the data, the latest editions of both AMOS and SPSS were used. The findings exhibited that the shared leadership directly affected all the three factors which in-turn directly affected the team performance; though, the shared leadership had no direct impact on the team performance. Moreover, based on the results, this study provides implications for team members and leaders to focus on coordinating activities, commitment to goals, and share the knowledge effectively in order to affect the team processes for better performance. The study adds to the area of shared leadership and team performances with these novel insights by introducing the significant role of these factors.

Reviewer #2:

ü The researcher needs to provide clarification for the IMO framework which is used for applying in the team process. Besides, the chi-square test is the method used for the multi-group effect so it needs to be described.

Reply:

An IMO framework is mainly used to develop and maintain the continuous basis of all international numerical codes and instruments in terms of their circulars and guidelines. Also, it covers each and every aspects of international shipping including its manning, equipment, construction and design.

The chi-square test is the kind of statistical test which is mainly used to compare the existing results to predict the expected result. The main purpose of this test is to establish the variation between observed and expected data. Also, the chi-square test determines the relationship between the variables.

ü Provide additional information for the AMOS software since it is used in this study for the multi-group analysis. For tables, all the tables are needed to present in the sequence order for easy understanding.

Reply:

An AMOS is a statistical software used for the analysis of structure moments. AMOS software is also known as casual or covariance modeling software. It is used as a visual programming tool for SEM.

Thank you so much for your comments. As per your suggestion, the tables present in the paper are provided in a sequence manner.

ü Under the testing, the hypotheses, and the casual model are used for the figure representation so it is needed to provide elucidation about the casual model and the types of the casual model in the brief.

Reply:

Multiple causality is included in causal theories, meaning that each result may have more than one cause. Socioeconomic position, age, gender, ethnicity, and other characteristics, for example, might influence voting habits. Some of the independent or explanatory elements may also be connected. In the health-sciences literature, there are presently at least four primary types of causal models: causal diagrams (graphical causal models), potential-outcome models, structural-equations models, and sufficient-component cause models.

ü The confirmatory factor analysis (CFA) is used to find the factors and the loadings so the researcher is needed to provide a description of the confirmatory factor analysis. Similarly, the experiment process taken the KMO and Bartlett's Test hence it is needed to provide information about the test process.

Reply:

Confirmatory factor analysis (CFA) is a multivariate statistical technique used to determine how effectively variables measured represent the number of constructs. In exploratory factor analysis, all measurable variables are linked to every latent variable. As a result, confirmatory factor analysis focuses research on the overall activation of hypothesized networks, enhances statistical power by modeling measurement error, and provides a theory-based data reduction approach with a solid statistical foundation.

KMO is used to test the appropriateness of the factor analysis in the data set by measuring its sampling adequacy. Hence, the Bartlett's test evaluates the null hypothesis of the variables by uncorrelating the population of correlation matrix.

ü The exploratory factor analysis is used to determine the outline of the structure and used to create the scree plot so the researcher is needed to provide the information about the EFA (Exploratory Factor Analysis) model.

Reply:

Exploratory factor analysis (EFA) is commonly used to determine a measure's factor structure and to assess its internal reliability. When researchers have no ideas regarding the nature of the underlying factor structure of their measure, then the EFA is frequently advised the ideas regarding the nature of the factor structure.

ü The correlation analysis is used in the proposed methodology so it is needed to provide clear information about the correlation analysis. The multi-group analysis used the chi-square differences test so it needed to specify about the chi-square differences test.

Reply:

The correlation analysis is the statistical method, which is used to measure the strength of the linear relationship between the variables. Also, it computes the association between the variables in order to determine the weakly correlated variables.

The chi-square difference test is used to evaluate the variation among null chi-square statistics and alternative models to find whether the degree of freedom of chi-square statistics is equal to degree of freedom or not.

Reviewer #3:

® In para 1, ln-49: The functional differences between shared leadership and collective leadership should be explained clearly.

Reply:

The shared leadership is nothing but the sharing of influence and power between one people remaining in charge. It is developed to encourage the autonomy, opening other ideas in a transparent manner, also used to lead the organisational performance in a better way. But the collective leadership is the process of taking responsibility for the success of organisation, but not only for their area or job. In the meantime, the traditional collective leadership approaches develops the individual capability for the success of organisation.

®   In para 2, ln-56: The author should explain the relationship between task-oriented and relations-oriented behavior in a proper manner.

Reply:

The task oriented is an approach, where a person focuses only on the task that need to be performed to meet the particular standards and goals of the organisation, but the relationship oriented approach is process which motivates the person to focus on common well-being of the team members in the organisation.

®   In para 1, ln-207: What is mean by convenience sampling technique in the research method? What are the advantages of using convenience sampling?

Reply:

The convenience sampling technique is the type of non-probability sampling technique, which helps the peoples to sample the data in simple manner, because of its convenient data sources. Meanwhile, in probability sampling each element non-zero chance is selected with the help of random sampling procedure. The major advantage of convenience sampling is easy to implement, cheap and efficient.

®   In para 2, ln-212: The author should deliver an explanation for the benefits of using 5-points Likert scales.

Reply:

5-point likert scale is the simple technique which is mainly used by respondents and survey administrators, when compared to higher-point scales it takes minimum time and effort to finish the process. Also, it allows only lower margin of error for process and the scale does not have any neutral option to distort the results.

®   In para 1, ln-46: The author should deliver supplementary data about the functions of "shared leadership". Likewise, the advantages of shared leadership may be illuminated.

Reply:

The shared leadership motivates the group to achieve the target in a communicative and more interactive way. It also helps to improve the job satisfaction and engagement of the employees.

®   In para 1, ln-407: The outcome of the multi-group effect is significant with the help of the "chi-square test", then the functions of "chi-square test" should be explained in a detailed manner.

Reply:

The chi-square test is the kind of statistical test which is mainly used to compare the existing results to predict the expected result. The main purpose of this test is to establish the variation between observed and expected data. Also, the chi-square test determines the relationship between the variables.

® In para 4, ln- 255: The AMOS and SPSS software is applied in the analysis, then the functions of AMOS and SPSS software should be explained separately.

Reply:

SPSS and AMOS is the software which used to fit structural equation models (SEM), but the SPSS and AMOS is only applicable for window operating system. Likewise, the AMOS is standalone program and it can be installed easily without the help of SPSS statistics machine.

® In para 1, ln-273: The following terms should be explained using simple words:

· Kaiser Meyer Olkin (KMO)

· Bartlett's test of sphericity

· Goal commitment scale

· Knowledge sharing scale

Reply:

Kaiser Meyer Olkin (KMO): KMO is used to test the appropriateness of the factor analysis in the data set by measuring its sampling adequacy. Hence, the Bartlett's test evaluates the null hypothesis of the variables by uncorrelating the population of correlation matrix.

Bartlett's test of sphericity: The Bartlett's test is used to determine whether the interval-based variables or the continuous variables are present across two or more groups of an independent variable. Also, it evaluates the no differences null hypothesis between the variable groups.

Goal commitment scale: The goal commitment scale is generally used to define the determination of every individuals to maximise the effect to achieve the goal in a specific time.

Knowledge sharing scale: Knowledge sharing scale is used to define the activities of spreading the knowledge from one person to another in an organization or in a group.

® In para 2, ln-285: The differences between EFA and CFA may be illuminated clearly.

Reply:

Confirmatory factor analysis (CFA) is a multivariate statistical technique used to determine how effectively variables measured represent the number of constructs. In exploratory factor analysis, all measurable variables are linked to every latent variable. As a result, confirmatory factor analysis focuses research on the overall activation of hypothesized networks, enhances statistical power by modeling measurement error, and provides a theory-based data reduction approach with a solid statistical foundation. Exploratory factor analysis (EFA) is commonly used to determine a measure's factor structure and to assess its internal reliability. The EFA is advised, when researchers have no ideas regarding the nature of the underlying factor structure of their measure.

®   In para 6, ln-262: Explanation given for Correlation Analysis is imprecise. So, the author may deliver an appropriate explanation for correlation analysis.

Reply:

The correlation analysis is the statistical method, which is used to measure the strength of the linear relationship between the variables. Also, it computes the association between the variables in order to determine the weakly correlated variables.

®   In para 4, ln: 197: The Hypothesized Framework of the research model is well represented in diagram (1), but it should be explained theoretically.

Reply:

Figure (1) represents the hypothesized framework of the proposed methodology, in which how the knowledge is shared between the groups to improve their team performance is explained. First, the shared leadership share their knowledge between the persons in an organisation, including team coordination and goal commitment. Team coordination helps the organisation to achieve their target with minimal time and effort. Then, the goal commitment motives each and every employee to enhance their job satisfaction and engagement in their work. Finally, the knowledge sharing helps to determine the activities of the employee in knowledge spreading process.

The Future of Leadership in Saudi Arabia: The Nexus of Shared Leadership, Project Team Process, and Performance

Hashim Khan

Department of Management Sciences, COMSATS University Islamabad

hashim.khan@comsats.edu.pk

Alamzeb Aamir

Department of Management Sciences, FATA University Kohat, Pakistan

alamzeb.aamir@fu.edu.pk

Sharif Ullah Jan

Department of Management Sciences, FATA University Kohat, Pakistan

sharifullah.jan@fu.edu.pk

Abdelmohsen A. Nassani,

Department of Management, College of Business Administration,

King Saud University, P.O. Box 71115, Riyadh 11587, Saudi Arabia, Nassani@ksu.edu.sa.

Mohamed Haffar,

Department of Management, Birmingham Business School, University of Birmingham,

United Kingdom, m.haffar@bham.ac.uk.

ABSTRACT

The current study aims to identify the impact of shared leadership on project team processes such as coordination, goal commitment, and knowledge sharing in the context of Saudi Arabia. To serve this aim, a survey is conducted of 168 project team members working in various project teams. For analysis of the data, the latest editions of both AMOS and SPSS were used. The findings exhibited that the shared leadership directly affected all the three factors which in-turn directly affected the team performance; though, the shared leadership had no direct impact on the team performance. Moreover, based on the results, this study provides implications for team members and leaders to focus on coordinating activities, commitment to goals, and share the knowledge effectively in order to affect the team processes for better performance. The study adds to the area of shared leadership and team performances with these novel insights by introducing the significant role of these factors.

Keywords: Shared-leadership, project team processes and performance, commitment, Saudi Arabia

INTRODUCTION

The contemporary organizations are progressively becoming more complicated, decentralized, dynamic, and favor the teamwork (Day, Gronn, & Salas, 2004). Hence, the teamwork has become an integral part in the organizational effectiveness (Morgeson, 2005). The top leadership of these organizations is now emphasizing on the concept of "shared leadership" that empowers the employees at all levels to lead the organizational processes and achieve the desired goals (Houghton *et al.*, 2003; Pearce & Manz, 2005). The existing literature has also highlighted the role of shared leadership (as "collective leadership" or "distributed leadership") as this might enhance the teams' effectiveness particularly in a complex environment (Marks *et al.*, 2001; Day *et al.*, 2004). Moreover, the "vertical team has exhibited more positive impacts on teams' performances as compare to the traditional" "hierarchical" team (Nicolaides *et al.*, 2014). Despite the obvious significance of shared leadership, the basic questions of whatever "shared leadership" means and how it links to "team performance" are still unanswered (Han *et al.*, 2018).

Theoretically, shared leadership is generally defined along with two scales i.e. "task-oriented" and "relation-oriented" in the relevant literature (see such as Grille & Kauffeld, 2015). However, the documented empirical evidences regarding shared leadership are very rare in existing literature (Han *et al.*, 2018). The hallmark of the current study is to combine both the scales of shared leadership as suggested by Grille and Kauffeld (2015). The first scale for shared leadership i.e. task-orientation is concerned about the achievement of high performance by the team members. For this purpose, the members to achieve the goals, focus on coordinating activities including organizing, assigning, and explaining the work and procedures (Yukl, 2006; Kolb, 2011). The scale of relation-oriented focuses on the emotional bond of the team's members to develop the team environment and to enhance their performance (Mannix & Neale, 2005). The team members exercise various constructive socio-emotional behaviors e.g. extending team support and considerations for the emotions and needs of the teams' members (Yukl, 2006). Hence, this will be crucial to investigate role of shared leadership in enhancing the team's performance. The shared leadership is nothing but the sharing of influence and power between one people remaining in charge. It is developed to encourage the autonomy, opening other ideas in a transparent manner, also used to lead the organizational performance in a better way. But the collective leadership is the process of taking responsibility for the success of organization, but not only for their area or job. In the meantime, the traditional collective leadership approaches develops the individual capability for the success of organization.

Despite the utmost significance and contribution of shared leadership towards the performance of teams, the existing documented literature on the relationship of shared leadership and team performance is very scant (Han *et al.*, 2018). Hence, the current study has proposed three levels of mechanisms in shared leadership and performance relationship. These levels are coordination, goal commitment, and knowledge sharing to investigate the impact of shared leadership over the performance of teams (Gao et al., 2020).

An IMO framework is mainly used to develop and maintain the continuous basis of all international numerical codes and instruments in terms of their circulars and guidelines. Also, it covers each and every aspects of international shipping including its manning, equipment, construction and design.

LITERATURE REVIEW

Shared Leadership

The notion of "shared leadership" has been defined by several research scholars (e.g. Pearce & Sims, 2002; Pearce & Conger, 2003; Carson *et al.*, 2007); however, most of these definitions are based on the notion that a team could be led by many leaders collectively. In addition, these scholars have consensus on the interdependence of leadership via "collective achievement, shared responsibility, and the importance of teamwork" (Fletcher & Kaufer, 2003). Pearce *et al.* (2009) highlighted the need of distributed leadership responsibilities in all directions of a traditional hierarchy *i.e.* top, bottom, and across for shared leadership models. The shared leadership motivates the group to achieve the target in a communicative and more interactive way. It also helps to improve the job satisfaction and engagement of the employees. Moreover, shared leadership is signified by interactive behavior of team members e.g. communication, influence, suggestions, and accountability of these members (Contractor *et al.*, 2012). The current research adopts the definition of shared leadership from Carson *et al.* (2007) who explained it as a team's characteristic that is derived of distributed leadership influences across several team's members. More specifically, this notion evolves when the individual team member assumes the responsibility that affects the other members in team via interaction. Consequently, the shared leadership forms and affects the entire team activities and outcomes (Kbar at al., 2019; Zheng et al., 2021).

Teams' Processes

Team effectiveness has shown significant dependence on three fundamental processes related to behavior, motivation, and cognition (Kozlowski & Ilgen, 2006; Valentine *et al.*, 2015). These processes when combined in the team members will facilitate the team processes i.e. when they exert joint efforts (behavioral), try to achieve mutual goal (motivational), and knowledge sharing within team (cognitional). Hence, these three processes are overlapping and help the teams to overcome the complex and dynamic situation (Piraquive et al., 2014).

Team Behavior Processes

Based on different surveys, the most common behavioral processes included the team members' activities such as communication and coordination to complete the interdependent work (Valentine *et al.*, 2015; Piraquive et al., 2015).

Team Motivational Processes

These processes encompass the socio-emotional conditions including trust, group's emotions, team's commitments, and team's cohesiveness being segments of emotive environment of teams (Gully *et al.*, 2012; Valentine *et al.*, 2015). These are the efforts that the team members

exert while accomplishing a task. From the team's perspective, these processes are referred to the members' shared commitment to achieve their mutual goals (Kozlowski & Ilgen, 2006).

Teams' Cognitive Processes

These are referred to the significance of functioning of team's knowledge (De Church & Mesmer-Magnus, 2010). They include the knowledge sharing, learning, and experiencing of team members which in turn becomes the bases for effective teamwork (Shuffler *et al.*, 2011; Edmondson, 2012). In addition, these processes are developed over a long-term and serve as lenses used to visualize the information regarding the project goals.

All these processes when combined together effectively lead to team's composition, shared leadership, teamwork processes and ultimately to team performances (Ilgen *et al.*, 2006). For the purpose of this study, the team performances are the ultimate objective of team members through these team processes.

Hypothesized Research Model

All the three processes discussed are helpful to develop the team performances of the team's members by combining with the shared leadership responsibilities. The team members are required to focus and deliberately observe the development of these processes (i.e. behavioral, motivational, and cognitive). By keeping them in context, the current study develops the hypothesized research model as follows:

The shared leadership leads to team coordination, commitment to goals, and sharing of knowledge that would lead to team's performance.

The shared leadership evolves as a "mutual influence process" in a leaderless groups that "relationally produced, emerging through interactions and communication between actors in a context" (Denis *et al.*, 2012, p.50). Hence, it is logical that a shared leadership will affect the team process at behavioral, motivational and cognitive levels. More specifically, at behavioral level the processes include the extent of efforts that are exerted at qualitatively and quantitatively to improve the mutual communication and coordination (Rico *et al.*, 2008); the motivational processes consist of goal commitment (Kukenberger *et al.*, 2012); and learning and sharing of knowledge come under cognitive processes (Valentine *et al.*, 2015).

Coordination: In context of team processes, the coordinating activities involve organizing and assigning of team tasks and elaborating the SOPs (standard operating procedures) to perform these tasks (Zalesny *et al.*, 1995; Yukl, 2006). In addition, the coordination activities also cover the scheduling of deadlines and determining the pace of efforts (McGrath, 1990). To perform coordination activities, the team members are required to "articulate plans, define responsibilities, negotiate deadlines, and seek information to undertake common tasks" (Rico *et al.*, 2008, p.166). Similarly, these activities could also be perceived as crucial comportment for team members to exchange knowledge and align the order of their contribution (Marks *et al.*, 2001). Several research studies have reported that shared leadership enhances the level of coordination, controls the pace of activities, and monitors the outcomes of performance (Cascio, 2000; Wageman, 2001; Bell & Kozlowski, 2002; Malhotra *et al.*, 2007). Hence, shared

4

leadership is expected to be directly related to team coordination. Therefore, this study proposes:

H_1: The shared leadership has a direct effect on the coordination among team's members.

Goal Commitment: The commitment level of the team members to achieve their mutual goals indicates their level of determination and they are devoted to commit their cognitive and behavioral resources for this purpose (Aube & Rousseau, 2005). The empirical studies in context of team's empowerment and commitment have shown significant relationship between the two (Kukenberger *et al*., 2012). For instance, the team members might initiate discussion to establish work objectives, determine the steps to achieve them, and periodically analyze and present their status to other members in teams (Wageman, 2001). To investigate this relationship, the following hypothesis is suggested:

H_2: The shared leadership has a direct effect on the team's goal commitment.

Sharing of Knowledge: It is the ability of the team's members to share the information regarding their tasks within the team (Mesmer-Magnus & Church, 2009). However, this ability might be negatively affected due to the dissimilarities between their values, expectations, perceptions, and attitudes. These differences might stem from diversified cultures and values of the team members that ultimately reduce the level of information sharing among them (Gibson & Gibbs, 2006). Empirically, there is very limited evidence found in existing literature regarding impact of shared leadership on knowledge sharing (Mesmer-Magnus & DeChurch, 2009). Nonetheless, the shared leadership has crucial role to play as when the team leaders encourage the team knowledge sharing then the team members become ready to share and reveal knowledge (Arnold *et al*., 2010; Lee *et al*., 2010). Lately, the significant role of knowledge sharing as a "mediator" between shared leadership and team's creativity has been reported by Lee *et al*. (2015). This motivates us to further investigate the association between shared leadership and knowledge sharing as follows:

H_3: The shared leadership has a direct effect on the knowledge sharing among team's members.

Team Performance: There are two groups of researchers who have explained the relationship between team's performance and shared leadership in two different ways. Hence, the first group of researchers have reported a positive relationship between the two factors (these studies included Ensley *et al*., 2003; Carson *et al*., 2007; Wood & Fields, 2007; Small & Rentsch, 2010; Ishikawa, 2012; Lorinkova *et al*., 2013; D'Innocenzo *et al*., 2014). However, the other group of studies concluded a negative impact of shared leadership on team's performance (see e.g. Mehra *et al*., 2006; Srivastava *et al*., 2006; Boies *et al*., 2010). The contradiction of the results in these studies is mainly because of the way in which shared leadership has been conceptualized (Wang *et al*., 2014). As some of the studies have considered transformative measure for shared leadership and some considered the transactional leadership (D'Innocenzo *et al*., 2014) to capture the leadership distribution (i.e. they did not measure the shared leadership directly). This study suggests the following (neutral) hypothesis for this purpose:

H_4: The shared leadership has a significant effect on the team's performance.

Team Performance and Coordinating Activities: It is evident that when there is greater implicit coordination among the team's members that will lead to higher performance of the team. For instance, there are studies that have indicated a positive impact of coordination processes on the team's performance (LePine *et al.*, 2008; Fisher *et al.*, 2012; Lorinkova *et al.*, 2013). Hence, based on these empirical evidences, the current research suggests:

H₅: The Coordination activities affect positively the performance of team members.

Whenever the team members are more confident about their competence and abilities to perform a particular task, it leads to greater level of performance achievement (Gully *et al.*, 2002). This competence then translates into goal commitment of the team members. The existing literature supported the notion that team goal commitment has direct and significant impact on the team's performance (Aube *et al.*, 2014). Hence:

H₆: There is a positive effect of goal commitment on the team's performances.

The cognitive processes suggest that knowledge sharing has a greater contribution towards the performance of team members (Mohammad & Dumville, 2001; Kozlowski & Ilgen, 2006). Similarly, some other empirical evidences have also shown a direct and significant effect of knowledge sharing on team performances (such as DeVries *et al.*, 2006; Mesmer-Magnus & DeChurch, 2009; Lee *et al.*, 2010; Lorinkova *et al.*, 2013). Therefore, following the existing literature the following hypothesis is set to investigate:

H₇: The knowledge sharing of team's members directly impacts their performances.

The fig. 1 below presents the hypothesized relationship in the research model, in which how the knowledge is shared between the groups to improve their team performance is explained. First, the shared leadership share their knowledge between the persons in an organization, including team coordination and goal commitment. Team coordination helps the organization to achieve their target with minimal time and effort. Then, the goal commitment motives each and every employee to enhance their job satisfaction and engagement in their work. Finally, the knowledge sharing helps to determine the activities of the employee in knowledge spreading process.

Figure 1: Hypothesized Framework
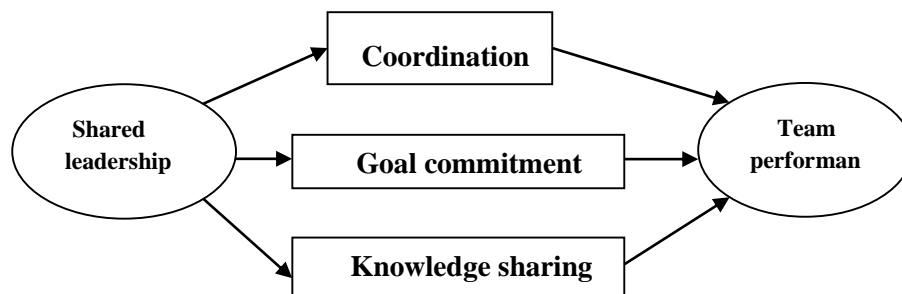
RESEARCH METHODOLOGY

Sample and Data Collection

The concentration of the current research is on the projects-based Organizations of Saudi Arabia, the participants of this study are the project managers of teams, assistants of the executive level, and their team players of randomly selected projects currently running in these organizations who intend to distribute leadership among employees. The selections of the organization are according to the employee's reviews about their working experience in their organizations. According to the identified problem, data is collected through a self-directed survey. 190 survey questionnaires were distributed among teams through convenience sampling technique, because of time constraints. Moreover, to ensure the precision of the information, the participants were guaranteed the confidentiality of their replies. The convenience sampling technique is the type of non-probability sampling technique, which helps the peoples to sample the data in simple manner, because of its convenient data sources. Meanwhile, in probability sampling each element non-zero chance is selected with the help of random sampling procedure. The major advantage of convenience sampling is easy to implement, cheap and efficient. To ensure the privacy of their answers, the answers were received as anonymous no identity or personal information was required for this activity.

The survey questionnaire was selected from prior experimental studies. The data collected on the basis of 5-points Likert scales that extended from "strongly disagree" to "strongly agree". The adapted questionnaire considered demographics and all research variables like Shared leadership in a project team, Project Team processes as a mediator, Gender as moderator, and Project Team Performance. Furthermore, the implemented questionnaire in this study also applied different demographical variables to acquire information relating to the age, experience, and qualifications of every participant.

Measures

A survey led to inspect team member's perceptions of mutual authorities and team-process-factors and team's performance. The investigation polls comprised of scales speaking to the factors portrayed above with course and group identifiers. Following is the detail about the measurement of study variables:

Shared Leadership

Share leadership is measured along with two different behaviors i.e. task and relation orientation on five-point Likert scale following the questionnaire of Grille and Kauffeld (2015). Furthermore, the task-oriented behavior scale addressed items that is "As a team we ensure that everyone knows their tasks." On the other hand, the relationship-oriented behavior scale included items such as "We support each other in handling conflicts within the team." The task oriented is an approach, where a person focuses only on the task that need to be performed to meet the particular standards and goals of the organization, but the relationship oriented approach is process which motivates the person to focus on common well-being of the team members in the organization.

Coordination

According to Zalesny *et al.* (1995), coordination explains the actions arranging the order and timing of inter-dependence. In addition, coordination processes include scheduled deadlines, time and task specifications, and the pace of coordination within and among the members (McGrath, 1990). Bourgault and Daoudi (2014) gave the scale to measure coordination. This scale comprises of 5-points and a sample item is "activities were well coordinated between project team members." This scale is placed on 5-points Likert scale i.e. from "highly disagrees" on one to "highly agree" on five. The Cronbach's Alpha for this scale and for the coefficient's value of the study is over 0.8. 5-point likert scale is the simple technique which is mainly used by respondents and survey administrators, when compared to higher-point scales it takes minimum time and effort to finish the process. Also, it allows only lower margin of error for process and the scale does not have any neutral option to distort the results.

Team Goal commitment:

Assessing the overall shared commitment by the team members towards the team's goals is crucial as it has a significant effect on team's capacity to perform in a successful manner (Kozlowski & Ilgen, 2006). A scale is devised to measure the commitment level that describes the team's motivational process. The scale applies three items to assess the team's commitment given (Aube & Rousseau, 2005). Each element is allied to a 5-points scale range from "never true" (1) to "always true" (5).

Knowledge Sharing

The "knowledge sharing behavior" of the team members creates the knowledge base (Lee *et al.*, 2010). The scale that defined the degree of efforts to which the team's members shared their knowledge was adopted form Wageman *et al.* (2005). The mean of these five items gave a general proportion of knowledge sharing under an intellectual procedure. All items utilized a five-points scale oscillating from "highly inaccurate" (1) to "highly accurate" (5).

Team Performance

There are four estimations used for team performance i.e. "content", "efficiency", "excellence", and "originality". These measures were adjusted following the Hinds and Mortensen (2005)'s team performance scales. The basic 5 dimensions included "efficiency", "quality", and "technical innovation", "adherence to budget" and "schedule", and "work excellence".

Analysis and Findings

This section discusses the procedure of data analysis and the findings. The studied applied AMOS and SPSS in performing the analysis. SPSS and AMOS is the software which used to fit structural equation models (SEM), but the SPSS and AMOS is only applicable for window operating system. Likewise, the AMOS is standalone program and it can be installed easily without the help of SPSS statistics machine. An AMOS is a statistical software used for the

analysis of structure moments. AMOS software is also known as casual or covariance modeling software. It is used as a visual programming tool for SEM.

Descriptive Statistics

The following table 1 provides the summary statistic for each variable. In case mean values from descriptive statistics are on the higher end, it indicates preference in the direction of agreement, but if the mean values are on the lower end it indicates the disagreement using the statements.

Table 1: Summary Statistics

	N	Min	Max	Mean	SD
Shared leadership	168	1.20	4.60	2.9375	0.59737
Coordination	168	1.00	5.00	2.3125	0.81378
Knowledge sharing	168	1.33	5.00	4.0238	0.64596
Team performance	168	1.00	5.00	3.5878	0.77582
Goal Commitment	168	1.00	5.00	3.7996	0.66780
Valid N (listwise)	168				

Correlation Analysis

The correlation analysis is the statistical method, which is used to measure the strength of the linear relationship between the variables. Also, it computes the association between the variables in order to determine the weakly correlated variables. Correlation between every theoretical variable is exemplified in Table 2. The values of correlation of shared leadership is directly and significantly correlated with Coordination (r = .377, p < 0.01), Knowledge Sharing (r = 0.304, p < .01), Team Performance (r = .467, p < .01), Goal Commitment (r = .268, p < .01). Coordination was significantly and positively related to Knowledge Sharing (r= 0.294, p<0.01), team performance (r= 0.328, p<0.01) and Goal Commitment (r=0.170, p<0.01). The correlation of Knowledge Sharing was positive and significant with team performance (r = 0.410, p<0.01) and Goal Commitment (r = .441, p < .01).The Correlation of Team Performance was positive and significant with Goal Commitment (r = .381, p < .01). The Correlation Analysis of theoretical variables is presented in Table 2 as given below.

Table 2: Correlation

	Shared Leadership	Coordination	Knowledge Sharing	Team's Performance	Goal Commitment
Shared Leadership	1	.377**	.304**	.467**	.268**

Coordination	.377**	1	.294**	.328**	.170*
Knowledge Sharing	.304**	.294**	1	.410**	.441**
Team's Performance	.467**	.328**	.410**	1	.318**
Goal Commitment	.268**	.170*	.441**	.318**	1

Reliability and Validity Analysis

The Kaiser Meyer Olkin (KMO) is a proportion of inspecting sufficiency, results demonstrated that it was satisfactory plus "Bartlett's test of sphericity" was also significant at $p < .00$. The Bartlett's test is used to determine whether the interval-based variables or the continuous variables are present across two or more groups of an independent variable. Also, it evaluates the no differences null hypothesis between the variable groups. The values of Cronbach alpha for all factors shows significant reliability, explicitly all values are greater than 0.7. To measure the independent variable Shared leadership scale by (Grille *et al.*, 2015) which is used to have the reliability of 0.906, the scale consists of a total of 10 items. To measure the dependent variable that is team performance scale manage by (Hinds & Mortensen, 2005) was used and the scale consists of 4 items with the reliability of 0.908. To measure the mediating role of Coordination scale by (Bourgault & Daoudi, 2014) having reliability 0.922 with the total item of 4 was used, Goal commitment scale by (Aube & Rousseau, 2005) having the reliability 0.854 with the total item of 5 was used, Knowledge sharing scale by (Wageman *et al.*, 2005) having reliability 0.889 with 5 items. The goal commitment scale is generally used to define the determination of every individuals to maximize the effect to achieve the goal in a specific time. Likewise, Knowledge sharing scale is used to define the activities of spreading the knowledge from one person to another in an organization or in a group.

Table 2: Reliability & Validity Analysis

Variable	Cronbach's alpha
Shared Leadership	0.906
Coordination	0.922
Goal Commitment	0.854
Knowledge sharing	0.889
Team Performance	0.908

Exploratory Factor Analysis (EFA)

The EFA is applied for reducing data and exploring the impact of shared leadership on project team processes (Netemeyer *et al.*, 2003). For the current study five variables including shared

leadership, coordinating activities, goal commitment, knowledge sharing, and team performance were used to determine the outline of the structure in the 28-item and were used to create a scree plot (Thompson, 2004). Exploratory factor analysis (EFA) is commonly used to determine a measure's factor structure and to assess its internal reliability. When researchers have no ideas regarding the nature of the underlying factor structure of their measure, then the EFA is frequently advised the ideas regarding the nature of the factor structure.

The KMO and Bartlett's Test

The Kaiser-Meyer-Olkin Measure commonly known as KMO and Bartlett's test is used to confirm the appropriateness of the research data for structure decision. KMO is used to test the appropriateness of the factor analysis in the data set by measuring its sampling adequacy. Hence, the Bartlett's test evaluates the null hypothesis of the variables by uncorrelating the population of correlation matrix. Moreover, this test is also the measure of sampling adequacy that exhibits the proportion of variance in variables which could be caused by the given factors. Therefore, according to the guidelines and pre-specified criteria of this measure if the values are closed to 1.0 (considered as high values) then the data is suitable for factor analysis. However, if these values are low i.e. less than 0.5 then they are not suitable for factor analyses. From the table 4 below, it is obvious that the KMO sampling adequacy is = 0.859 with significant value of χ_2 = 2774.826 and p = 0.000. These statistics demonstrated that connections among the factors were adequately huge for EFA.

Table 4: KMO and Bartlett`s Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy		0.859
Bartlett's Test of Sphericity	Approx. Chi-Square	2774.826
	d.f..	276
	Sig	0.000

Confirmatory Factor Analysis (CFA)

Confirmatory factor analysis (CFA) is a multivariate statistical technique used to determine how effectively variables measured represent the number of constructs. In exploratory factor analysis, all measurable variables are linked to every latent variable. As a result, confirmatory factor analysis focuses research on the overall activation of hypothesized networks, enhances statistical power by modeling measurement error, and provides a theory-based data reduction approach with a solid statistical foundation. The CFA tries to find and determine if all considered factors and the loadings (measured item related to the fundamental concept) confer to what is anticipated on the base of a pre-developed concept, rationale, or model. The Measurement Model has a value of chi-square statistics as well as a DF. The value of chi-square is delicate to the size of the sample and is accompanied by the degree of freedom to give a strong measurement. Adequate model fit is specified by the ratio of chi-square

11

significances of fit to df no more than two (Browne, 1993). The proposed model consists of five variables "shared leadership", "coordination", "goal commitment", "knowledge sharing" and "team performance".
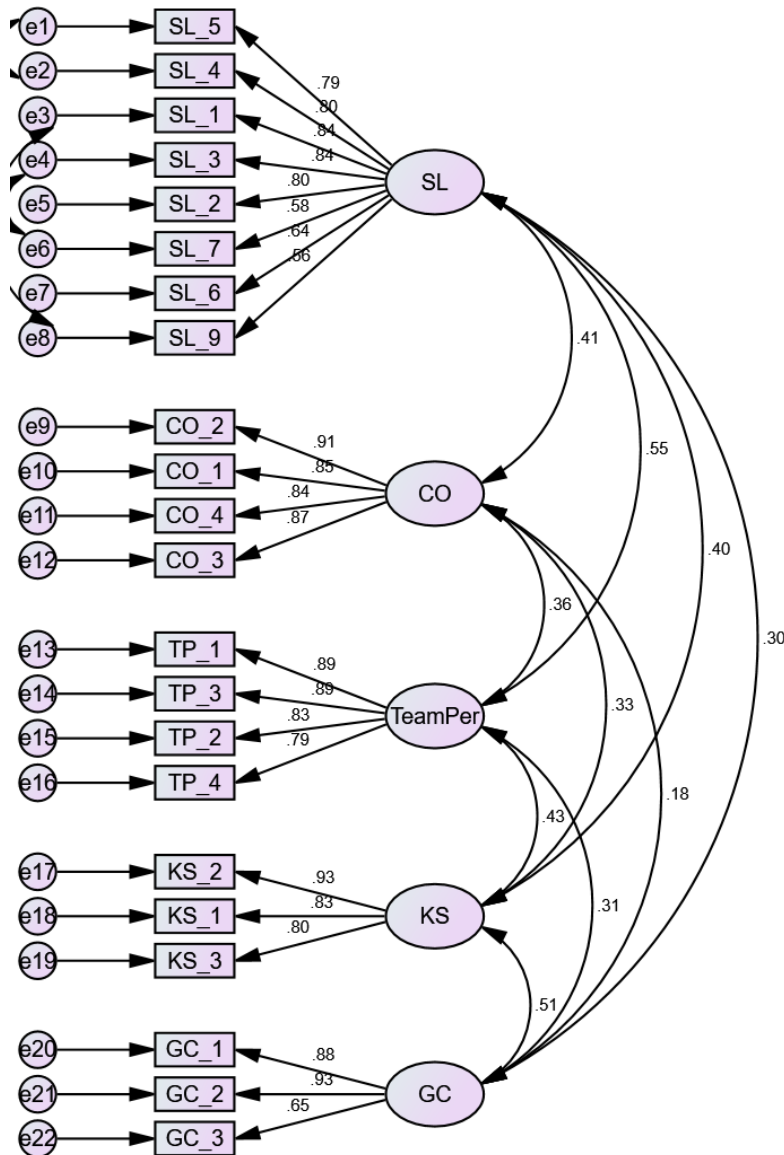

Figure 2: CFA

Validity & Reliability

In table 5 below, the validity and reliability analysis for the study factors have been provided. More specifically, in the table 5 a convergent validity as evident by AVE showed higher than 0.50 values for all variables. Similarly, the reliability as evident by the CR presented values higher than 0.70 for all variables. Hence, following Hair, Black, Babin, Anderson, and Tatham (2010), both validity and reliability has proven by these values for all study variables.

Table 5: Validity & Reliability

	CR	AVE	MSV	MaxR(H)	KS	SL	CO	TeamPer	GC
KS	0.891	0.732	0.258	0.913	**0.855**				
SL	0.904	0.546	0.301	0.921	0.395	**0.739**			
CO	0.925	0.755	0.169	0.929	0.331	0.411	**0.869**		
TeamPer	0.912	0.721	0.301	0.919	0.434	0.549	0.358	**0.849**	
GC	0.865	0.686	0.258	0.910	0.508	0.303	0.178	0.315	**0.828**

"CR = Composite Reliability; AVE = Average Variance Extracted (AVE); MSV = Maximum Shared Variance; ASV = Average Shared Variance"

Model Fit Summary

By comparing all the values given in table 6 below with the cut points as suggested by Fan and Sivo (2007), the overall model has shown a good fit. From the table, it is evident that the ratio of CMIN to DF is 1.36 which lies between the cut-off criteria as shown in the table 9 also the CFI value in the table 7 lies between the cut-off criteria by the (Fan & Sivo, 2007) as shown in the table 9. Similarly, the value of PClose and RSMA also lies in the criteria set in table 8 and table 9 which proves that over model is fit.

Table 6: CMIN

Model	NPAR	CMIN	DF	P	CMIN/DF
Default model	57	268.343	196	0.000	1.369
Saturated model	253	0.000	0		
Independence model	22	2852.956	231	0.000	12.350

Table 7: Baseline Comparisons

Model	NFI Delta1	RFI rho1	IFI Delta2	TLI rho2	CFI
Default model	.906	.889	0.973	.967	.972
Saturated model	1.000		1.000		1.000
Independence model	0.000	0.000	0.000	0.000	0.000

Table 8: RMSEA

| Model	RMSEA	LO 90	HI 90	PCLOSE
Default model	.047	.032	.060	.628

Independence model	.261	.252	.269	.000

Table 9: Cutoff Criteria

Measures	Terrible	Acceptable	Excellent
CMIN / DF	> 5	> 3	> 1
CFI	< 0.90	< 0.95	> 0.95
SRMR	> 0.10	> 0.08	< 0.08
RMSEA	> 0.08	> 0.06	< 0.06
PClose	< 0.01	< 0.05	> 0.05

Testing the Hypotheses

Before analyzing the hypotheses, item-parceling was generated for shared leadership. MacCallum *et al.* (1999) defined several benefits of parceling, such as parceling makes the model more parsimonious decreases the sampling errors. Hence, the initial model of shared leadership included ten items which were reduced to only five through parceling following the existing practice (see Little *et al.*, 2002). Furthermore, for this research, those two items having significant covariance combined. In this way, we combined "knowledge sharing" and "goal commitment", "knowledge sharing" and "coordination", "goal commitment" and "coordination" as they showed high correlation (i.e. r = 0.55 to 0.63).
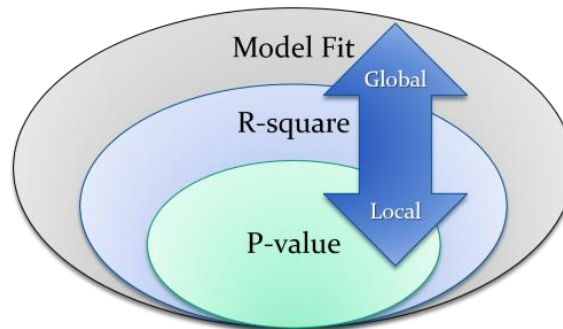
Figure 3

In order to get the model fit we have to covariate over variable by looking into the modification indices to meet the criteria set by (Fan & Sivo, 2007).

14
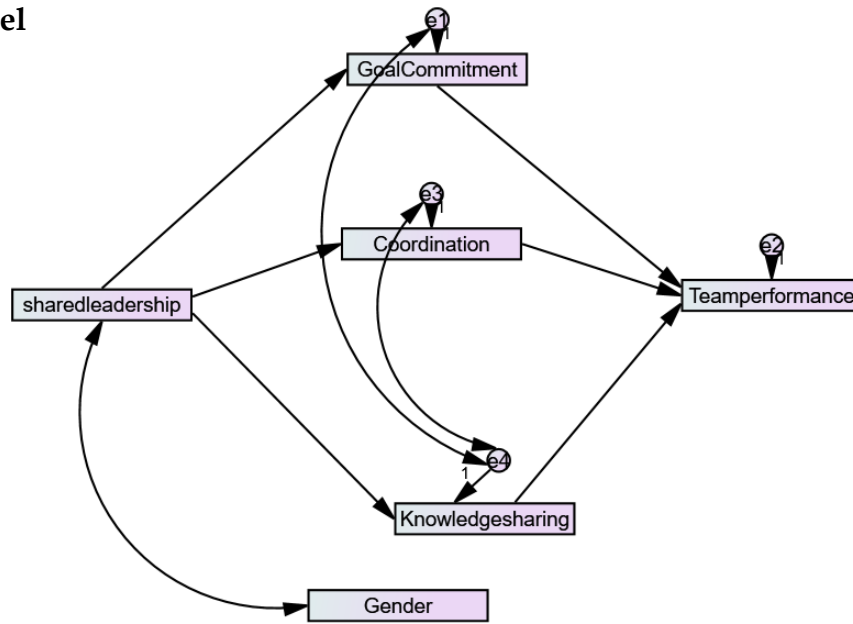
Causal Model

Figure 4: Casual Model

Multiple causality is included in causal theories, meaning that each result may have more than one cause. Socioeconomic position, age, gender, ethnicity, and other characteristics, for example, might influence voting habits. Some of the independent or explanatory elements may also be connected. In the health-sciences literature, there are presently at least four primary types of causal models: causal diagrams (graphical causal models), potential-outcome models, structural-equations models, and sufficient-component cause models.

Table 10: Baseline Comparison

Model	NFI Delta1	RFI rho1	IFI Delta2	TLI rho2	CFI
Default model	.978	.935	1.011	1.035	1.000

Table 11: RMSEA

Model	RMSEA	LO 90	HI 90	PCLOSE
Default model	0.000	.000	.087	.808
Independence model	.237	.204	.271	.000

Mediation

For H$_1$ i.e. "*The shared leadership has a positive impact on the coordination among team members*" the study uses the plugin Myindirect Effect by (Lowry & Gaskin, 2014) for the AMOS to find out the effects between variable basically, this plugin allows to name a path which we want to know as shown in the figure 5, so by computing the analysis we get the final result of this path which is shown in the below table 12 which shows that we have a positive effect at p=0.05

with the estimated value of 0.56 it is a small value because we multiply two decimals so the answer will be much smaller.

Table 12

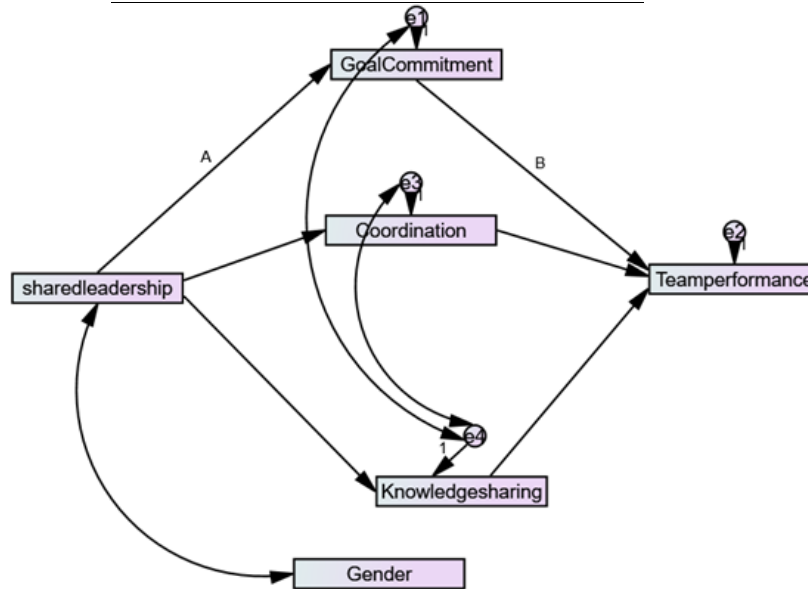| Parameter	Estimate	Lower	Upper	P
A x B	.056	.007	.124	.050

Figure 5: Mediation

Coordination Path

For H$_2$ i.e. "*The shared leadership has a positive impact on the team goal commitment*" has been proven from the below table 13, at p-value 0.013 with the estimated value of 0.108.

Table 13

Parameter	Estimate	Lower	Upper	P
A x B	.108	.036	.190	.013

16
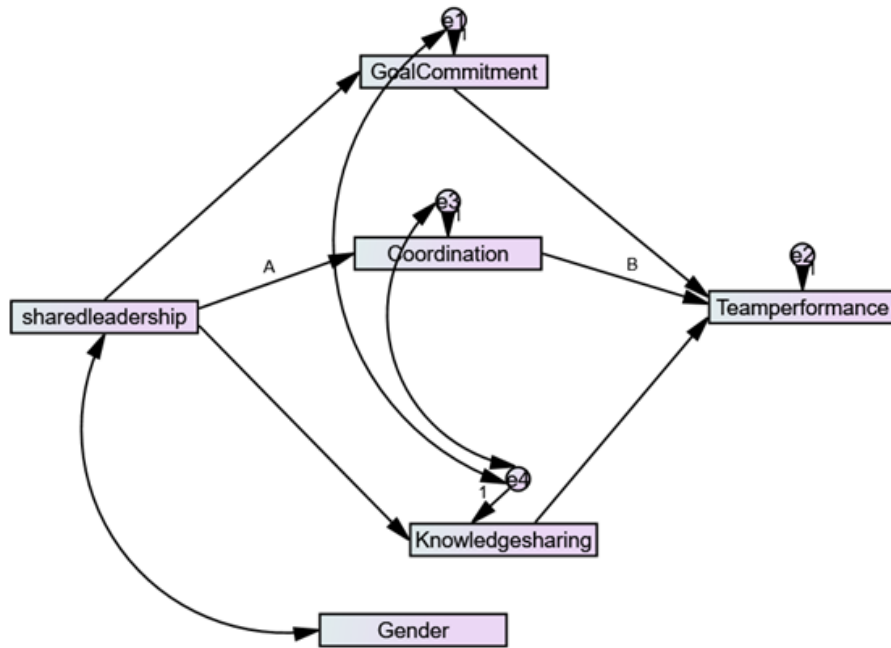
Figure 6: Coordination Path

Knowledge Sharing Path

For the H₃ *"the shared leadership has a positive impact on the knowledge sharing among team members"*, the path diagram is shown in figure 7, at the p-value 0.002 (see table 14) which is significant with the estimated value of 0.108.

Table 14

Parameter	Estimate	Lower	Upper	P
A x B	.108	.039	.206	.002
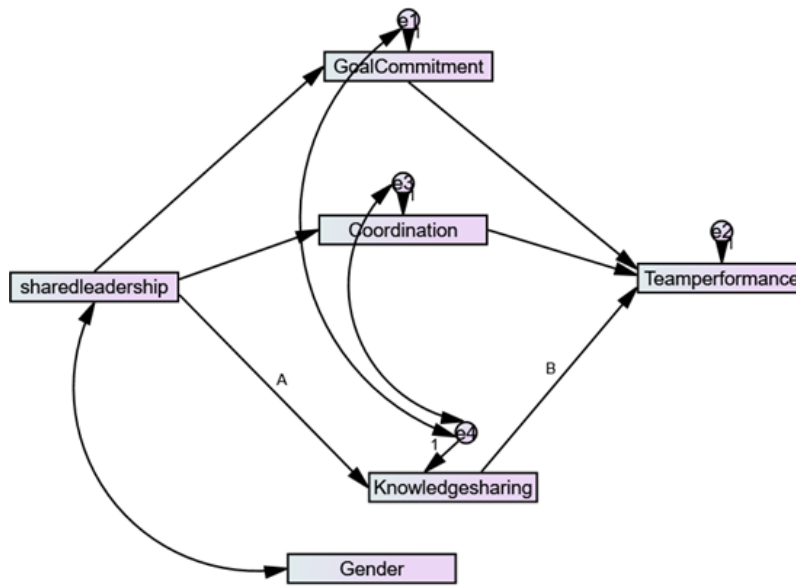
Figure 7: Knowledge Sharing Path

Multi-group Analysis

For multi-group analysis, the study used the relevant tool in the AMOS software. First, we have to check whether the model is same for both of the group i.e. for male and for the female for this purpose model comparison is performed with the stat tool package of "stat wiki" (Lowry & Gaskin, 2014) which is actually a chi-square differences test. The chi-square difference test is used to evaluate the variation among null chi-square statistics and alternative models to find whether the degree of freedom of chi-square statistics is equal to degree of freedom or not.

Table 15

Model	DF	CMIN	P	NFI Delta-1	IFI Delta-2	RFI rho-1	TLI rho2
Structural weights	6	14.583	.024	.084	.086	-.184	-.208

As we perform a chi-square differences test (table 15) on the above structural weights, we will see that there is no alteration between both the P values which means that the model groups are different at the model level i.e. check path differences (Lowry & Gaskin, 2014).

Table 16

	Chi-square	df	p-value	Invariant?	
Difference	14.583	6	.024	no	Groups are different at the model level. Check path differences

Now moving to check paths level to see whether the model is the same at the path level we have to perform a chi-square differences test for each path of the model, i.e. from path b1_1 to b1_6 shows below in table 17.

Table 17

For the path b1_1=b2_1

Model	DF	CMIN	P	NFI Delta - 1	IFI Delta - 2	RFI rho -1	TLI rho 2
Structural weight	1	1.862	.172	.011	.011	-.074	-.084

For the path b2_1=b2_2

Model	DF	CMIN	P	NFI Delta - 1	IFI Delta - 2	RFI rho - 1	TLI rho 2
Structural weights	1	.360	.549	0.002	0.002	-.109	-.123

For path b3_1=b3_2

Model	DF	CMIN	P	NFI Delta - 1	IFI Delta - 2	RFI rho - 1	TLI rho 2
Structural weights	1	3.557	.059	.020	.021	-.035	-.040

For Path b4_1=b4_2

Model	DF	CMIN	P	NFI Delta - 1	IFI Delta - 2	RFI rho - 1	TLI rho 2
Structural weights	1	1.629	.202	.009	.010	-.080	-.090

For Path b5_1=b5_2

Model	DF	CMIN	P	NFI Delta - 1	IFI Delta - 2	RFI rho - 1	TLI rho 2
Structural weights	1	.068	.794	.000	.000	-.116	-.131

For path b6_1=b6_2

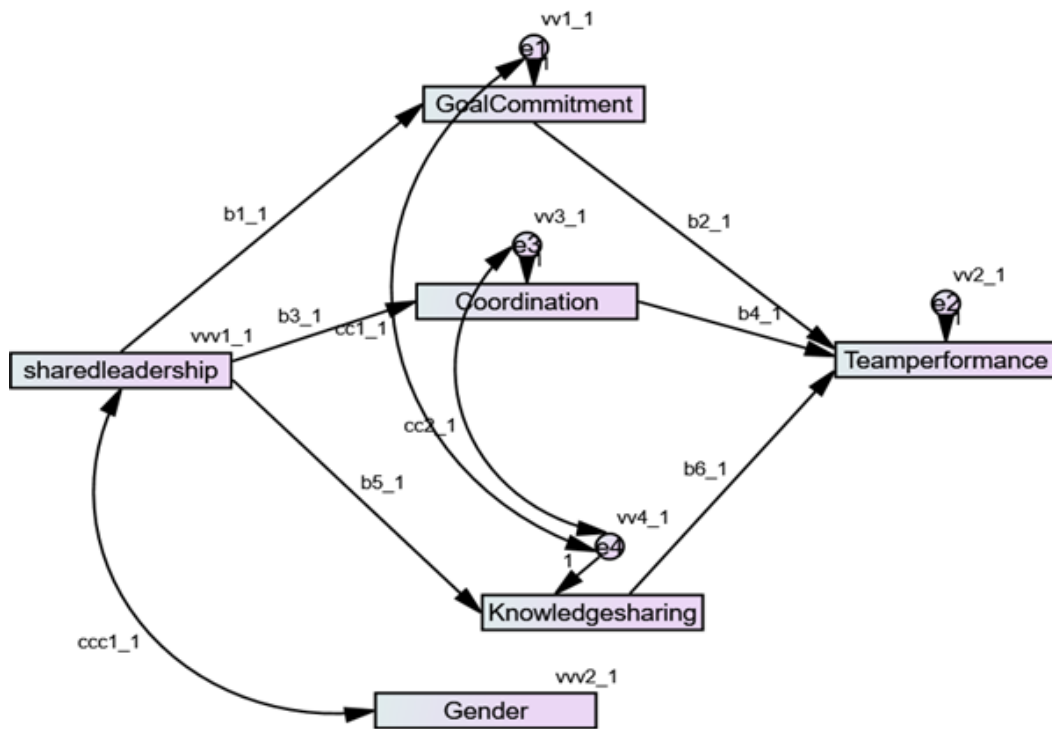| Model	DF	CMIN	P	NFI Delta - 1	IFI Delta - 2	RFI rho - 1	TLI rho 2
Structural weights	1	6.912	.009	.040	.041	.042	.047

Figure 8: Multipath

To explore the multi-group effect by applying a "chi-square test", the outcomes showed that the effect was significant i.e. (at 5%). The chi-square test is the kind of statistical test which is mainly used to compare the existing results to predict the expected result. The main purpose of this test is to establish the variation between observed and expected data. Also, the chi-square test determines the relationship between the variables. Here, we freely estimated the two models except constraining the one path to be equal across groups as showed in table 17 and we find that the chi-square was substantial representing that the effect was different for both genders.

By performing the multigroup analysis in AMOS for both of the group i.e. for males and for the female for the significant value of p following effects is reported. As shown in figure 9 and 10.

- The effects of shared leadership on goal commitment for the male are high as compared to that of the female.
- The consequence of shared leadership on coordination for the male group is high than that of the female group.
- The outcome of shared leadership on knowledge sharing is low than of the female group.
- For the goal commitment in team performance, the female group has a greater effect than that of the male
- Male has greater coordination within the team as compared to the females

- Knowledge sharing among the female group is much higher than that of the male group within the team performance.
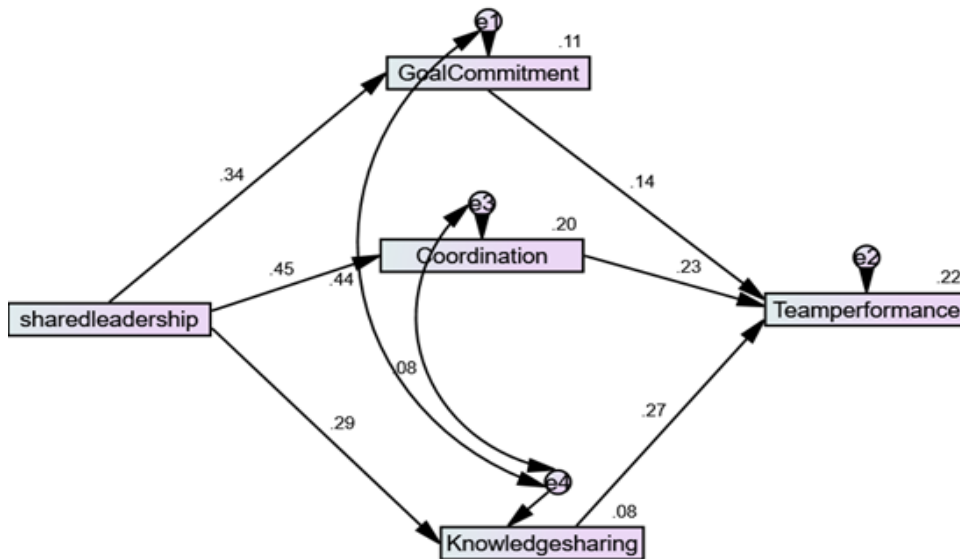
For Male Group:

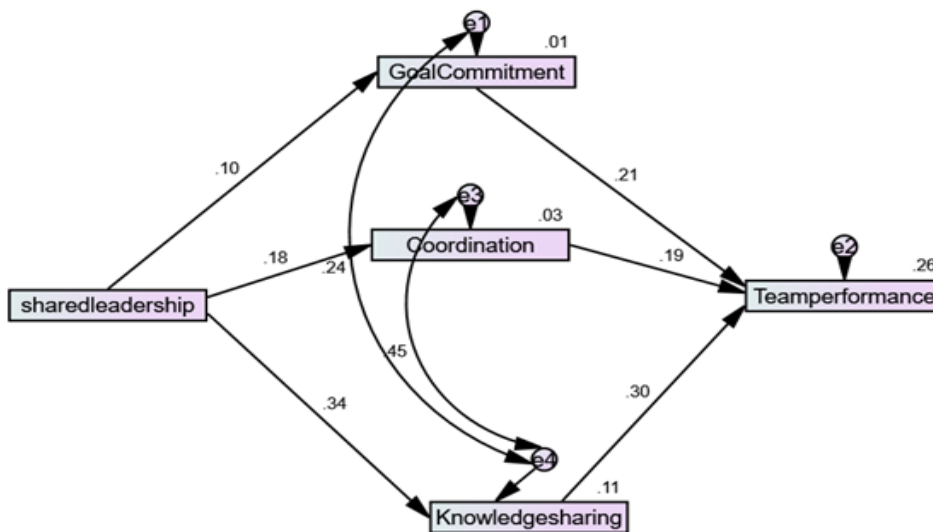**Figure 9**

For Female Group

Figure 10

Discussion

This study found "team performance" as the main results and investigated the relationship between shared leadership and team's processes factors (including "coordination, goal commitment, and knowledge sharing"). All these factors were selected based on their significance found in existing literature. The findings presented that shared leadership caused the project team members in coordinating activities, commitment to goals, and effectively

knowledge sharing. Nonetheless, for the shared leadership no direct significant impact was found on team performance. There could be two potential justifications for these findings.

The first, this study took various factors that contributed to team processes. For instance, the team members inclined to share leadership while focusing on their objectives. Furthermore, as suggested by Gully *et al.* (2012), the team members' performance was enhanced in a cohesive environment. Besides this, the team members were always encouraged to perform in a collaborative way and share their knowledge. In these ways, the team performance was expected to be increased substantially and a synergic impact was likely to be produced in these "horizontal relationships" (see Ishikawa, 2012). In short, team performance might not be increased by shared leadership alone; however, it is effectively achieved when combined with goal commitment, coordination, and sharing of knowledge.

The second, though the existing research exhibited no significant impact of shared leadership on team's performance; however, this doesn't mean that they are not related to each other. In fact, the shared leadership is acting an antecedent that sets the stage for other processes which ultimately impacts the team's performance. Additionally, shared leadership produces an atmosphere in which the leadership cannot remain in separation rather plays a "dispersed" responsibility.

Conclusion

The existing literature suggests how team processes lead to shared leadership in a team environment (Carson *et al.*, 2007); however, no study yet explained how shared leadership affects team processes that in turn affect the team's performance. This research has shown the effects of shared leadership on the sub factors of team processes by applying the IMO framework. The findings of this study are quite encouraging and open new avenues for the researchers in this field.

The study was limited to explore the impact of only three factors of team processes; however, the additional factors might even farther the knowledge about shared leadership as it affects the team performance. Even the sub-processes of the factors such as shared leadership, coordination, goal commitment, and knowledge sharing could be specified to according to the need of study. For instance, the sub-constructs of goal commitment i.e. learning and performance could have different effects. Hence, the researchers and policy makers must aware of the sub-constructs of these processes and must choose the one according to their objectives of the study. The decisions and implications would definitely be varied across these constructs.

This study carries several implications for project teams and their leaders in terms of project planning and execution. The findings propose that shared leadership empowers the project teams' members to inspire "knowledge sharing", "commitment to goals", and actively indulge in "coordination" all of these in turn increase the team's performance. The project managers/leaders could guide the project team members about effective shared leadership and team behaviors that in turn enhance the team performances. So, despite of the underlying

organizational structure, the team members could be encouraged to practice these findings in their project environment.

To sum, the findings of this study in context of team process model suggest a valuable framework to researchers and practitioners to apply these factors in the context of shared leadership to enhance the project teams' performance. Moreover, the model shared leadership developed by this study would also assist them to introduce strategic level interferences to increase teams' performance in their organizations.

<u>Acknowledgments</u>

BIBLIOGRAPHY

Arnold, J. A., Arad, S., Rhoades, J. A., & Drasgow, F. (2000). The empowering leadership questionnaire: The construction and validation of a new scale for measuring leader behaviors. *Journal of Organizational Behavior, 21*(3), 249–269.

Aubé, C., Brunelle, E., & Rousseau, V. (2014). Flow experience and team performance: The role of team goal commitment and information exchange. *Motivation and Emotion, 38*(1), 120–130.

Aube, C., & Rousseau, V. (2005). Team Goal Commitment and Team Effectiveness: The Role of Task Interdependence and Supportive Behaviors. *Group Dynamics: Theory, Research, and Practice, 9*(3), 189.

Bell, B. S., & Kozlowski, S. W. J. (2002). A typology of virtual teams: Implications for effective leadership. *Group & Organization Management, 27*(1), 14–49.

Bourgault, M., & Daoudi, J. (2014). Innovation projects conducted by distributed teams: the impact of key team characteristics on collaboration. *Journal of Innovation Economics Management, (1)*, 37–72.

Bowers, D. G., & Seashore, S. E. (1966). Predicting organizational effectiveness with a four-factor theory of leadership. *Administrative Science Quarterly*, 238–263.

Carson, Jay B, Tesluk, P. E., & Marrone, J. A. (2007). Shared leadership in teams: An investigation of antecedent conditions and performance. *Academy of Management Journal, 50*(5), 1217–1234.

Chen, G., Kirkman, B. L., Kanfer, R., Allen, D., & Rosen, B. (2007). A multilevel study of leadership, empowerment, and performance in teams. *Journal of Applied Psychology, 92*(2), 331.

D'Innocenzo, L., Mathieu, J. E., & Kukenberger, M. R. (2016). A meta-analysis of different forms of shared leadership–team performance relations. *Journal of Management, 42*(7), 1964–1991.

23

Day, D. V., Gronn, P., & Salas, E. (2004). Leadership capacity in teams. *Leadership Quarterly, 15*(6), 857–880. https://doi.org/10.1016/j.leaqua.2004.09.001

De Vries, R. E., Van den Hooff, B., & de Ridder, J. A. (2006). Explaining knowledge sharing: The role of team communication styles, job satisfaction, and performance beliefs. *Communication Research, 33*(2), 115–135.

DeChurch, L. A., & Mesmer-Magnus, J. R. (2010). The cognitive underpinnings of effective teamwork: A meta-analysis. *Journal of Applied Psychology, 95*(1), 32.

E. Hoch, J. (2014). Shared leadership, diversity, and information sharing in teams. *Journal of Managerial Psychology, 29*(5), 541–564.

Ensley, M. D., Pearson, A., & Pearce, C. L. (2003). Top management team process, shared leadership, and new venture performance: A theoretical model and research agenda. *Human Resource Management Review, 13*(2), 329–346.

Fan, X., & Sivo, S. A. (2007). Sensitivity of fit indices to model misspecification and model types. *Multivariate Behavioral Research, 42*(3), 509–529.

Fisher, D. M., Bell, S. T., Dierdorff, E. C., & Belohlav, J. A. (2012). Facet personality and surface-level diversity as team mental model antecedents: implications for implicit coordination. *Journal of Applied Psychology, 97*(4), 825.

Gao, J., Wang, H., & Shen, H. (2020). Smartly Handling Renewable Energy Instability in Supporting A Cloud Datacenter. *2020 IEEE International Parallel and Distributed Processing Symposium (IPDPS).*

Gibson, C. B., & Gibbs, J. L. (2006). Unpacking the concept of virtuality: The effects of geographic dispersion, electronic dependence, dynamic structure, and national diversity on team innovation. *Administrative Science Quarterly, 51*(3), 451–495.

Grille, A., Schulte, E.-M., & Kauffeld, S. (2015). Promoting shared leadership: A multilevel analysis investigating the role of prototypical team leader behavior, psychological empowerment, and fair rewards. *Journal of Leadership & Organizational Studies, 22*(3), 324–339.

Hair Jr, J. F., Black, W. C., Babin, B. J., Anderson, R. E., & Tatham, R. L. (2010). SEM: An introduction. *Multivariate Data Analysis: A Global Perspective, 5*(6), 629–686.

Han, S. J., Lee, Y., Beyerlein, M., & Kolb, J. (2018). Shared leadership in teams: The role of coordination, goal commitment, and knowledge sharing on perceived team performance. *Team Performance Management: An International Journal, 24*(3/4), 150–168.

Hecht, T. D., Allen, N. J., Klammer, J. D., & Kelly, E. C. (2002). Group beliefs, ability, and performance: The potency of group potency. *Group Dynamics: Theory, Research, and Practice, 6*(2), 143.

Hinds, P. J., & Mortensen, M. (2005). Understanding conflict in geographically distributed teams: The moderating effects of shared identity, shared context, and spontaneous communication. *Organization Science, 16*(3), 290–307.

Houghton, J. D., Neck, C. P., & Manz, C. C. (2003). Self-leadership and superleadership. Shared Leadership: Reframing the Hows and Whys of Leadership, 123–140.

Ishikawa, J. (2012). Transformational leadership and gatekeeping leadership: The roles of norm for maintaining consensus and shared leadership in team performance. *Asia Pacific Journal of Management, 29*(2), 265–283.

Kbar G., & Alazab, A. (2019). A Comprehensive Protection Method for Securing the Organizations Network against Cyberattacks. 2019 Cybersecurity and Cyberforensics Conference (CCC).

Kozlowski, S. W. J., & Ilgen, D. R. (2006). Enhancing the effectiveness of work groups and teams. *Psychological Science in the Public Interest, 7*(3), 77–124.

Kukenberger, M. R., Mathieu, J. E., & Ruddy, T. (2015). A cross-level test of empowerment and process influences on members' informal learning and team commitment. *Journal of Management, 41*(3), 987–1016.

Lee, D. S., Lee, K. C., & Seo, Y. W. (2015). An analysis of shared leadership, diversity, and team creativity in an e-learning environment. *Computers in Human Behavior, 42*, 47–56.

Lee, P., Gillespie, N., Mann, L., & Wearing, A. (2010). Leadership and trust: Their effect on knowledge sharing and team performance. *Management Learning, 41*(4), 473–491.

LePine, J. A., Piccolo, R. F., Jackson, C. L., Mathieu, J. E., & Saul, J. R. (2008). A meta- analysis of teamwork processes: tests of a multidimensional model and relationships with team effectiveness criteria. *Personnel Psychology, 61*(2), 273–307.

Lorinkova, N. M., Pearsall, M. J., & Sims Jr, H. P. (2013). Examining the differential longitudinal performance of directive versus empowering leadership in teams. *Academy of Management Journal, 56*(2), 573–596.

Lowry, P. B., & Gaskin, J. (2014). Partial least squares (PLS) structural equation modeling (SEM) for building and testing behavioral causal theory: When to choose it and how to use it. *IEEE Transactions on Professional Communication, 57*(2), 123–146.

Marks, M. A., Mathieu, J. E., & Zaccaro, S. J. (2001). A temporally based framework and taxonomy of team processes. *Academy of Management Review, 26*(3), 356–376.

Mehra, A., Smith, B. R., Dixon, A. L., & Robertson, B. (2006). Distributed leadership in teams: The network of leadership perceptions and team performance. *The Leadership Quarterly, 17*(3), 232–245.

Mesmer-Magnus, J. R., & DeChurch, L. A. (2009). Information sharing and team performance: A meta-analysis. *Journal of Applied Psychology, 94*(2), 535.

Mohammed, S., & Dumville, B. C. (2001). Team mental models in a team knowledge framework: Expanding theory and measurement across disciplinary boundaries. Journal of Organizational Behavior: *The International Journal of Industrial, Occupational and Organizational Psychology and Behavior, 22*(2), 89–106.

Netemeyer, R. G., Bearden, W. O., & Sharma, S. (2003). Scaling procedures: Issues and applications. Sage Publications.

Pearce, C. L., & Manz, C. C. (2005). The new silver bullets of leadership: The importance of self- and shared leadership in knowledge work. *Organizational Dynamics, 34*(2), 130–140. https://doi.org/10.1016/j.orgdyn.2005.03.003

Pearce, C. L., & Sims Jr., H. P. (2002). Vertical versus shared leadership as predictors of the effectiveness of change management teams: An examination of aversive, directive, transactional, transformational, and empowering leader behaviors. *Group Dynamics: Theory, Research, and Practice, 6*(2), 172–197. https://doi.org/10.1037/1089-2699.6.2.172

Piraquive, F. N., García, V. H., & Crespo, R. G. (2015). Knowledge Management Model for Project Management. Lecture Notes in Business Information Processing Knowledge Management in Organizations, 235-247.

Piraquive, F. N., García, V. H., Crespo, R. G., & Liberona, D. (2014). Knowledge Management, Innovation and Efficiency of Service Enterprises Through ICTs Appropriation and Usage. Lecture Notes in Business Information Processing Knowledge Management in Organizations, 300-310.

Rico, R., Sánchez-Manzanares, M., Gil, F., & Gibson, C. (2008). Team implicit coordination processes: A team knowledge–based approach. *Academy of Management Review, 33*(1), 163–184.

Small, E. E., & Rentsch, J. R. (2011). Shared leadership in teams. Journal of Personnel Psychology.

Srivastava, A., Bartol, K. M., & Locke, E. A. (2006). Empowering leadership in management teams: Effects on knowledge sharing, efficacy, and performance. *Academy of Management Journal, 49*(6), 1239–1251.

Thompson, B. (2004). Exploratory and confirmatory factor analysis: Understanding concepts and applications. *Washington, DC*, 10000–10694.

Wageman, R. (2001). How leaders foster self-managing team effectiveness: Design choices versus hands-on coaching. *Organization Science, 12*(5), 559–577.

Wageman, R., Hackman, J. R., & Lehman, E. (2005). Team diagnostic survey: Development of an instrument. *The Journal of Applied Behavioral Science, 41*(4), 373–398.

Williams, T. G. (1982). Consumer Behavior: fundamentals & strategies. *West Publishing Company St. Paul, Minnesota*.

Yukl, G. (2008). How leaders influence organizational effectiveness. *The Leadership Quarterly, 19*(6), 708–722.

Yukl, G., & Mahsud, R. (2010). Why flexible and adaptive leadership is essential. *Consulting Psychology Journal: Practice and Research, 62*(2), 81.

Zalesny, M. D., Salas, E., & Prince, C. (1995). Conceptual and measurement issues in coordination: Implications for team behavior and performance. *Research in Personnel and Human Resources Management, 13*, 81–115.

Zheng, X., Ping, F., Pu, Y., Wang, Y., Montenegro-Marin, C. E., & Khalaf, O. I. (2021). Recognize and regulate the importance of work-place emotions based on organizational adaptive emotion control. Aggression and Violent Behavior, 101557.