TEAM DIVERSITY AND PROJECT PERFORMANCE: ROLE OF TRUST AND ABSORPTIVE CAPACITY IN IT INDUSTRY

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ABSTRACT

Team diversity has emerged as an essential concept in the field of project management. In a diverse climate, team members have different thinking capacities, knowledge, perspectives, and strategies that help to create new ideas. But sometimes, this diversity causes conflicts among the team members, ultimately creating tension, resentment, and loathing behavior at the workplace. Therefore, the current study attempts to understand the relationship between team diversity (knowledge, value) and project performance through trust and absorptive capacity. Data were collected from team members involved in IT (Information Technology) projects. Findings reveal that team diversity enhances project performance through trust and absorptive capacity. But the relationship is partially mediated in the case of value diversity and fully mediated with knowledge diversity. This study contributes to the IT sector, where dynamic team members utilize their innovative capabilities and problem-solving skills for achieving project success.

Keywords: Team Diversity, Knowledge Diversity, Value Diversity, Trust, Absorptive Capacity, Project Performance, It Projects, Innovative Capabilities, Problem-Solving Skills

INTRODUCTION

During the last decades, team diversity has gained viable scrutiny in the field of project management due to its multi-dimensional conceptualization (Usher & Barak, 2020). It is an emerging construct that combines skills, expertise, and professional experiences and represents the differences in common attributes of project team members (Bell et al., 2011). Previous studies showed that the interaction between diverse team members creates innovative ideas and knowledge, which is the key contributor to improved performance (Maqsoom et al., 2020). Every project has to manage various activities like managing teams, processes, time, cost, risks, claims for compensation, and stakeholder satisfaction. Project team members utilize diverse knowledge and skills to handle the project risks (Zhu & Mostafavi, 2017). Diverse teams involve different team members who have various skills, knowledge, ideas and experience (Akgün, 2020). Team diversity includes knowledge and value diversity. Knowledge diversity emphasizes on individuals to share

essential information with the team members that can improve team performance. It involves practical work, past experiences and thinking diversity (Zhu & Mostafavi, 2017). In value diversity, project teams share their goals, objectives, and the benefits of other groups. Team members with different insights put their energy into projects, which increase project performance (Todorović et al., 2015).

Companies require completing their projects within assigned time, budgeted cost, scope and quality (Eriksson, Hermansson & Jonsson, 2020). Previous studies explained that resources and activities should be in line to achieve a successful project. It also helps in achieving long-term organizational goals. Project performance measures the quality of the process employed in the project execution. In addition to that, projects are usually temporary in nature, so team members do not have enough time to build trust among them, which causes shortcomings in the project execution, resulting in poor performance (Thayer, Petruzzelli & McClurg, 2018). That is why scholars like Bell, Hoque & Ansari (2009); Rodan & Galunic (2004); considered trust as a key factor in project success. Team diversity is linked with effective teamwork, better communication, and cohesion among team members (Brunow & Blien, 2014).

The success of IT projects is not an easy task because it needs a high degree of participation, communication, and transparency. These projects are challenging to achieve because they need high motivation, collaboration, communication, transparency, and teamwork. Trust in project teams leads the team members to share their ideas and visions, enhancing the performance of the projects (Van Oortmerssen, Van Woerkum & Aarts 2014). Collaboration and communication make the performance of the project far better. Projects are temporary and complex, so it is necessary to develop trust among team members. When they have a high level of trust, objectives become easier. It reduces complexities, conflicts, and so many other things that can harm the project's performance (Zhu & Mostafavi, 2017).

The performance of the project does not solely depend on a single person. It depends on the collective efforts of the team. The exchange of knowledge and innovative ideas provides new dimensions to the team that are vital for the success of IT projects. These unique ideas can positively or negatively change the overall performance of the project (Gómez, Salazar, & Pilar, 2017). So, absorptive capacity is an important area of IT. If organizations develop trust, it indeed enhances the absorptive capacity of team members. In a diverse team, every team member has a different culture, mindset, and knowledge. The combination of these aspects has significant effects on projects (Thayer et al., 2018). The significance of absorptive capacity has pointed out that it is a significant factor for enhancing project performance. In this regard, this study will check the impact of team diversity dimensions, *i.e.,* knowledge diversity and value diversity on project performance through trust and absorptive capacity. In IT projects, teams are working with diverse knowledge, professional experiences, ideas and values. Modern knowledge is required for improving organizational learning. IT projects are innovative and can effectuate a high degree of knowledge which increases absorptive capacity, whereas, through trust, project team members feel open and share their ideas with the other team members.

This research will help the practitioners of the IT industry to achieve the best performance of the project. It is important to focus on team diversity to achieve new insights by developing trust among diverse teams of the IT projects, which will give a new direction to the IT industry. Through trust, members will be able to share their opinions with others, while absorptive capacity will create a learning environment, and it strengthens the performance of software projects. It also upgrades the project performance, which makes the IT industry of Pakistan progressive.

LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

Team Diversity and Project Performance

Diversity in people reflects the difference in values, personality, communication, and demographic variables (Ancona & Caldwell, 1992). It is essential for gaining a competitive edge in the marketplace (Zhang & Fan, 2013). Team diversity explains that resources organized for the execution of the desired project and should be reconfigured for other project teams. It is a compound concept which has various dimensions possessed among project teams. It impacts project performance and often causes unpredictable outcomes (Miller, Burke & Glick, 1998). Projects are composed of different project teams (e.g., owners, contractors, designers and consultants) where members belong to diverse backgrounds. Team diversity is split into various dimensions. Some of them are (i) knowledge diversity and (ii) value diversity. Project performance has divided into three dimensions on which the performance of the project depends (time, cost, and quality). Every project has various goals to achieve, like managing risks, claims for compensation, reparation and stakeholder's satisfaction like a client, project manager, sponsor (Lichtenthaler & Lichtenthaler 2009). Every team has different tasks and objectives to achieve a common goal. In every team, the members are from diverse backgrounds, and all have unique and different skills that can improve performance.

Recently, knowledge diversity has become a primary resource for a competitive edge for project performance. In other words, the project-based organization has gained much attention (Zhu & Mostafavi, 2017). Sharing of different knowledge is considered an essential aspect for an organization to remain competitive in the current market (Cohen & Levinthal, 1990). Knowledge management has gained substantial attention in the field of information technology (IT). Knowledge diversity is a crucial dimension that influences the performance of the project (Eastman & Santoro, 2003). Diverse project teams can give more than one solution to the problem rather than one team because diverse knowledge generates new ideas and insights (Guzzo & Dickson, 1996). The literature has studied the performance of construction projects. The impact of team diversity on IT project performance is still unknown. Therefore, it is concluded that diverse knowledge positively affects the performance and effectiveness of the project. So, the following hypothesis is proposed:

H1a: Knowledge diversity is positively and significantly related to project performance.

Projects are unique in nature. They have different kinds of activities that create new products, services, or outcomes. High Project performance is the sum of all project management success, including time management, cost management, and scope management. Every project has different milestones to achieve (Lau & Lo, 2015). Since project managers and other project team members have a high level of interest in attaining the deliverables of the project, there is a requirement for complete evaluation (Cooke-Davies, 2002). The major problem in evaluating project performance is the lack of knowledge, proper specifications, and scope. These factors have been considered incomplete by many researchers in literature. This incompleteness is the primary cause of project failure. Project performance is a multi-dimensional concept, and consequently, new models for project performance management should reflect the multidimensionality of a project (Barclay & Osei-Bryson, 2010). It is estimated by the behavioral and interpersonal skills of project teams as well as knowledge, creativity and ideas of the team members. Team diversity is a term

through which an individual uses other's information. Through cumulative energy, outcomes are always better (Kirkman & Shapiro 2005).

Whereas value diversity means to which extent team members believe each other. Suppose they are sharing common goals and sacrifice for the better deliverables of the project. All team members give their ideas and opinions (Brunow & Blien 2014). If all team members agree on one idea, it enhances the performance of the project and reduces conflicts and ambiguities. Value diversity is recognized as another significant and crucial construct that improves performance. Because value diversity enhances innovation, creativity, decision-making power, trust and collaboration (Miller et al., 1998). Therefore, a perfect and compatible team diversity level makes strong task interdependence between project teams and thus improves the project performance. Hence it is a proposed hypothesis that:

H1b: Value diversity is positively and significantly related to project performance.

Mediating Role of Trust between Team Diversity and Project Performance

In team-building, trust plays a vital role (Hausman, 2002). It can be defined as when one project team is willing to be liable to the other project team (Hooghe et al., 2009). In previous studies, interpersonal communication and trust is the key indicator. In a trustworthy environment, employees feel safe and comfortable, they feel psychologically happy and satisfied, and there is also the convenience of the flow of information among project teams (Van Oortmerssen et al., 2014). Diverse teams do not possess trust; developing trust among them is a difficult task (Eriksson et al., 2020). Sometimes, diverse teams create disharmony and it ends in lower performance of the project and also the psychological dissimilarities of project teams (Usher & Barak, 2020).

When there is trust among team members and project leaders, the outcomes become better. Trust is the name of integrity and honesty between teams of the project (Hooghe et al., 2009). The higher the trust, the better the communication. Due to trust, there are more chances that they see diversity as an opportunity for their project. Different knowledge, ideas, insights make the performance of IT projects better. Trust creates collaboration and psychological safety (Agarwal & Rathod, 2006). Projects need transparency, high communication, absorption of new knowledge, new ideas and insights. It is challenging to achieve success in innovative projects (Gottman et al., 1998). Trust is an important factor in IT projects, but it can serve a positive or negative impact on client's recognition of project success.

The ongoing discussion about knowledge diversity and the learning environment has made knowledge an essential factor of project performance (Lau & Lo, 2015). It has concluded in concepts such as core skills and competencies and diverse capabilities as the idiosyncratic building blocks of organizations and significant project performance sources (Cooke-Davies, 2002). In the discussion about the effect of knowledge, research has also focused on team collaboration as an appropriate way of handling complex projects of IT industry. But for knowledge to bear essentially on project performance, the transfer of information of team member expertise from one department to another need to work smoothly and without confusions and ambiguities (Lau & Lo, 2015). So far, the impact of culture on knowledge diversity has only been analyzed by a few researchers. Literature has focused on knowledge sharing in the organization through which team members share their views with the other team members. First of all, IT project teams are temporary and created to foster both knowledge creation and innovation.

Effective teams, who have strong communication in general, encourage and boost the team members to interact and talk. It ultimately facilitates creating different ideas, insights and opinions, which may lead to better performance. Team structures are considered an important organizational form to handle complex projects (Cohen & Levinthal, 1990). Team members of each project team had multiple professional experiences and diverse backgrounds, combined decision making, work in a coordinated and mannered way (Campbell, 2010). Now the task of the project is to organizing principle according to which experts are allocated. Thus, expert team members were simultaneously members in many project teams and different abilities, skills and cultural backgrounds. It has explained an important source of organizational flexibility. Opportunities for positive interaction and dialogue between project team members, researches give stress on the importance of project teams for trust-building and organizational learning methods (Hooghe et al., 2009). Another perspective that has explained by recent studies in the project view is different knowledge processes. Knowledge enhances the performance of the projects. It is a set of past experiences, including ideas, sharing, transfer, and application. Knowledge is a generic and basic asset and emphasizes sharing things with other members of project teams (Katila & Ahuja, 2002). So, trust in team members is beneficial for the betterment of the project performance (Eriksson et al., 2020). Therefore, the following hypothesis is proposed:

H2a: Trust mediates the relationship between knowledge diversity and project performance.

Previous studies have tested and explored the link between trust in team and project team performance in recent research. General outcome about the potential of a diverse team to enhance project performance, results of the previous study clarified that in some cases, diverse teams create a negative impact on project performance. These negative relationships were pointed out as the lack of team communication and collaboration factors. Trust in an interdependent relationship of project teams can lead to outcomes (Yeung, 2009). Essentially, a trusting project team has the power of creativity, ability, capacity and honesty of another team member. Value diversity has a significant relationship with project performance, but the main thing is that members from different backgrounds do not have the same mindset. There is the possibility that all team members are not willing to make sacrifices for the good outcome of the project. Conflicts create among them. The positive thing is that diverse teams have more ideas and insights, which make better the performance of the project (Lichtenthaler & Lichtenthaler, 2009). Essentially, a trusting project team has the power of creativity, ability, capacity and honesty of another team member.

To achieve innovative solutions to accomplish difficult and complex tasks, everybody needs cohesive support. Trust is a belief in other's project teams that comes out in the betterment of the project (Harrison & Klein, 2007). So, it creates a positive and significant influence on team diversity and project performance. It includes attitudes, behaviors of the team members. All the members are not willing to trust the other member. This is the responsibility of a project manager to build up trust relationships among project teams (Harrison & Klein, 2007). Additionally, the project manager creates trust among teams which is positively related to goal orientation; for this project manager expects that he/ she is working on the orientation of the team, he/she is also going to get a reward for it. Trust in project teams is not like trust in the department of organizations. When all the members are from different backgrounds, it is difficult for them to communicate. Researchers said that when trust is high in project teams, the performance of projects gets stronger. But still, there is not any research that shows how trust in a diverse team enhances the project performance. There is a proposed hypothesis:

H2b: Trust mediates the relationship between value diversity and project performance.

Mediating Role of Absorptive Capacity between Team Diversity and Project Performance

ACAP is a source for team members to exploit external knowledge. It has gained attention in both the industry and academic side (Cohen & Levinthal, 1990). As ACAP supports every organization to stand with the current needs of clients and deliver a successful project to them. When the project manager recognizes the need for project deliverables, he/she able to understand which member can do which task or activity. The role of the project manager focuses upon diverse knowledge as the most important aspect of project performance. Previous studies have explained that knowledge gives new ideas if members participate and communicate with all the other team members of the project (Hooghe et al., 2009). The combination of external and internal knowledge always enhances the project performance and increases the organization's profit. Absorptive capacity is not just exploiting new knowledge but also deploy the knowledge stock.

Project performance also depends upon the mosaic of team members. The knowledge sharing and transfer of information within the organization has vital importance. It gives new ideas, which enhance the learning power of members (Croaker, Kessissoglou & Marburg, 2016). The previous studies propose that knowledge sharing and communication among team members have a complementary effect on project performance. Besides, due to the lack of competencies and the absorption of new knowledge the outcomes of the project are negatively impacted. The identification and utilization of absorptive capacity and available resources by project-based organizations are very important to enhance the performance of the organization.

There is a need to study diversity in knowledge processes in the context of project teams (Rodan & Galunic, 2004). It plays an important role in innovation and creativity (Cooke-Davies, 2002). Absorptive capacity is still an essential factor for researchers. In this literature, absorptive capacity is behaving as an influencer of the performance of the team and the success of the project. It clearly says that through absorptive capacity, project performance enhances (Robert, 1996). Nowadays, researchers are focusing on the absorption of new information because in tech projects or innovative projects latest and new skills are required to enhance the quality of work (Jehn et al., 2013). Teamwork is identified as an important indicator of innovative endeavors. Bio-demographic diversity also works as stimuli for projects; team innovation can be induced if task-related diversity is there. It means that knowledge diversity enhances the absorptive capacity. ACAP also involves new knowledge and also open innovation. It plays an important role in the creation of open innovation, here open innovation means doing things in an alternative way than it was traditionally done (Croaker et al., 2016). Through this literature, it is a proposed hypothesis that:

H3a: Absorptive capacity mediates the relationship between knowledge diversity and project performance.

It is axiomatic that the only things which take place in project-based organizations every day which have an impact on project performance are problem-solving and decision-making. That is to say, the successful rendering of IT projects and services is the direct consequence of how well an organization can solve technical problems and makes decisions. And toward that end, it has become a salient fact of organizational life that teamwork of various kind of team members are becoming the essential units for increasing problem-solving and decision-making in a project-based organization and in those organizations which want to attain and sustain such performance (Bell et al., 2009). The extra level of performance that temporary project teams can achieve has become crucial and vital for a growing number of organizations, especially as they move through major changes during which project performance depends on culture change and renewal. As such, a team

opportunity exists in every kind of project that hierarchy or organizational boundaries depict the skills and perspectives needed for required results (Robert, 1996). With a growing local market and international competencies, the performance of IT teams and the effect of diversity on team performance have become matters of the highest priority for software projects. A diverse team always brings a variety of perspectives, knowledge, ideas and a level of creativity which help to the analysis of the problem. It is impossible to duplicate ideas when that diversity is present (De Meuse & Liebowitz, 1981). All new thoughts, point of views gives optimal results. Moreover, based on previous researches within project-based organizations, it has also concluded that lack of understanding, knowledge and reservations held by some project managers about the efficiency of diverse project teams are greatly exaggerated (Jehn et al., 2013).

The diversity of behaviors, experiences, backgrounds, professions, regions of the world, and levels of its members generates an innovative synergy that tends to give the best individual performance. When individuals work in a team for a given project, specifically in an IT project, each has unique activities which have to be performed by them, also strengths and weaknesses, and reflects a variety of backgrounds, talents, personalities, and attitudes (Kirkman & Shapiro, 2005). Through the mutual discovery and dialogue among team members also get to know how to apply and manage all its resources like manpower, material to achieve a common goal, a team develops and agrees on the best approach to achieve its scope and goals (Salas et al., 1999). The project managers of teams establish a social contract among its members that relates to their objective and that guides and obligates how they must work together throughout the project (Guzzo & Dickson, 1996).

The result is an exponential increase in the quality of outcomes. And that increase is even higher when diversity is added to the teamwork provided such diversity is required to achieve the common goal of software projects (Hwang, Zhao & Ong, 2015). Absorptive capacity enables the organization to use a high extent of knowledge to achieve the objectives of the projects. More knowledge, more success. Performance cannot be completed without the combination of knowledge, ideas and involvement of each team member (Gottman et al., 1998). Gains of skills and productivity through team diversity is the major thing. Understanding the point of view of each team member is important for the performance. Absorptive capacity enables the team members to work as a single team to achieve a common goal and sacrifice for the good outcome of the project (Heim & Peng, 2010). Diverse culture provides many benefits; teams can give their best when they are having diverse views. Through this literature, it is proposed hypothesis that:

H3b: Absorptive capacity mediates the relationship between value diversity and project performance.

Mediating Role of Trust and Capacity between Team Diversity and Project Performance

The literature argues that creativity and innovation is enhanced by those teams which have diverse team members like past professional experience, ideas and knowledge, abilities and insights (Bell et al., 2009). Researchers have explained few dimensions of team diversity, including values, norms, knowledge, behavior, gender, culture and nationality. However, this effect is still vague and unexplained in research (Heim & Peng, 2010). Knowledge is the most important dimension of team diversity; it has not been discussed in depth.

Learning is a core resource and it creates potential in team members to achieve the objectives and milestones of a project. Knowledge diversity refers to the sharing of knowledge within the team members of a project team; diversity learning is the build-up and creation of new

knowledge which is used to achieve innovation and flexibility of a particular activity of the project. Learning processes always help the project teams to work in a better way. Many other issues affect it (Ascione et al., 1987). Diversity not always supports the learning environment of an organization. It sometimes creates conflict among team members and their project managers/supervisors.

Here, trust works in this type of situation. The role of trust among team members is very important. If there is no trust among teams, the goal becomes vague. Nobody works with full dedication and strength (Eastman & Santoro, 2003). In different teams, every team member belongs to a different background and has various skills which make him/her unique. The relationship between the diversity of team members and performance have yielded different outcomes. For instance, the literature says that diverse teams performed very well rather than homogenous teams (Guzzo & Dickson 1996). Other studies explain that diverse teams with poor communication and lack of sharing ideas have a negative effect on the project and also on the organization and it leads to bad dialogue and conflict among team members (Ancona & Caldwell, 1992). The similarity in culture, experience significantly promotes social interaction, collaboration and team cohesion. Hence, diversity also has a negative impact on project performance. On the other hand, previous studies report that diverse teams work better rather than core teams, and also give remarkable outcomes (Zhang & Fan, 2013).

Team members absorb new knowledge and try to participate in dialogues and conversations. Absorption of knowledge directly impacts the project performance. Performance has increased when there is an add up of new ideas and insights (Van Oudenhoven-Van Der Zee et al., 2009). Absorptive capacity is not just absorption of new knowledge; it also absorbs the existing knowledge within the organization. If a team member is not able to absorb existing knowledge, it is difficult for him/her to cope up with external knowledge (Brunow & Blien, 2014). Sharing of knowledge is a key contributor to project performance. But in a diverse environment, members are not willing to communicate with each other (Klein et al., 2009).

Here, mutual trust reduces conflicts, ambiguities, while it enhances the performance of the project in terms of its indicator. Trust behaves as an important factor among project teams (Gómez et al., 2017). Through trust, individuals feel comfortable and get the energy to work together. As every employee is important for the project. They share their opinions with other team members there is no limitation of knowledge. They will be able to share their new ideas and insights. Trust is an interactive and psychological construct. It is used to define the intensity, nature and quality of relationships among project teams and their members in a project (Hooghe et al., 2009). Trust is the key component to achieve the scope of the project. Only skills are not enough for the successful completion of the project. Project teams are from different backgrounds having various skills and ideas, but they do not have a trust element among them. Conflicts create among parties due to a lack of trust. Both the parties do not want to negotiate (Jehn et al., 2013).

Considering IT project, the changing project conditions caused by the external environment, uncertainty and complexity, the application and dimensions of trust in IT projects are different from the other culture and settings (Thayer et al., 2018). The performance of the project is an integral part of any organization. IT projects are temporary and complex in nature. ACAP has emphasized the methods and processes through which an organization acquires and absorb external knowledge (Guzzo & Dickson, 1996). The relationship between external IT capability and absorptive capacity enhances project performance. Firstly, mutual trust enhances IT capability which facilitates an organization's external knowledge acquisition. Technological systems are difficult to understand. In IT projects every activity is related to technical skill, knowledge and expertise. Here, team members need high absorption of new knowledge (Rodan & Galunic, 2004).

Dialogues among team members on a particular situation also increase ACAP which enhances team performance and also make outcomes better (Cooke-Davies, 2002). More importantly, sharing knowledge increases the understanding among all project teams, which make teams more effective and efficient. It helps them effectively communicate and collaborate with other members to acquire additional external knowledge (Campbell, 2010). On the other hand, external knowledge and capability not only help teams absorb the amount of available external knowledge from various

members but also assimilates this knowledge. It has increased the coordination and diversity of their knowledge area. Thus, organization's diverse knowledge increases the new external knowledge and when it combines with organization's existing knowledge, enabling the acquisition and assimilation of additional new external knowledge and call it absorptive capacity (Barclay & Osei-Bryson, 2010). Hence, it is proposed that from the literature:

> *H4a: Trust and Absorptive capacity mediate the relationship between Knowledge Diversity and Project Performance.*

Through trust, team members interact with each other, willing to work on a common goal. They take high risk, their locus of control gets high, motivate each other and explore new ideas but there are chances that outcomes are unpredictable (Hausman, 2002). Due to trust, project team members feel open and friendly environments. They try to tackle difficult situations, handle barriers, like every member is from a different background, so there are chances that conflicts arrive. Members of different project teams have different solutions, which creates disharmony. Communication and trust among different departments thus provide a social environment that improves efficiency and data absorption time (Cohen & Levinthal, 1990). Innovation is defined as a process that provides new technology advancements or improved solutions to the managers. It is a demand of the market. IT projects fail due to a lack of team member's ability. They are not involved in the depth of the projects which create problems (Robert, 1996). The absorption of new knowledge enhances project innovation by providing new ideas, thoughts, and inputs. Thus, trust enhances the absorption of knowledge, and when there is a high absorption of knowledge, innovation comes. Previous studies proposed that absorptive capacity always plays a vital role in innovation and creation, especially in IT projects.

Absorptive capacity also consists of knowledge transformation, assimilation, and exploitation. Transformation is the part of absorptive capacity and an organization can build and reconfigure the routine activities or daily operations. It combines existing knowledge with newly acquired external knowledge. Exploitation is also another aspect of ACAP, it refers to an organization's calibre and ability to exploit existing and transformed knowledge in its daily routine tasks (Agarwal & Rathod, 2006). It shows that the purpose of absorptive capacity is to combine acquired external knowledge with existing knowledge, thus consistently improving IT project performance (Bell et al., 2009). In another perspective, to gain benefit from innovative ideas, project teams need the ability to combine external with internal knowledge (Lucas, 2005).

When all team members agree on what is important for the success of the project then absorptive capacity facilitates the growth of innovation capability through the knowledge acquired from both external and internal resources thus enhancing innovation performance. When value diversity occurs among project teams, members tend to go with the best solution. Every team member knows that teams have a single common goal. All members try their level best to participate in discussion (Lau & Lo, 2015). Moreover, ACAP also injects more new knowledge into IT software projects through transforming knowledge and make easy for organizations to understand and exploit new knowledge to improve project performance. Recent studies also indicate that absorptive capacity also has a positive relationship with project performance as well as innovation performance. As a critical construct, helps organization integrate insights or ideas, thus improving project performance. Absorptive capacity (ACAP) generates project activities, is critical to completing innovative projects. To overcome this issue VD plays the best role (Rodan & Galunic 2004). Thus, this is a proposed hypothesis that:

> *H4b: Trust and Absorptive capacity mediate the relationship between Value Diversity and Project Performance.*

The hypothesized model is presented in figure 1.

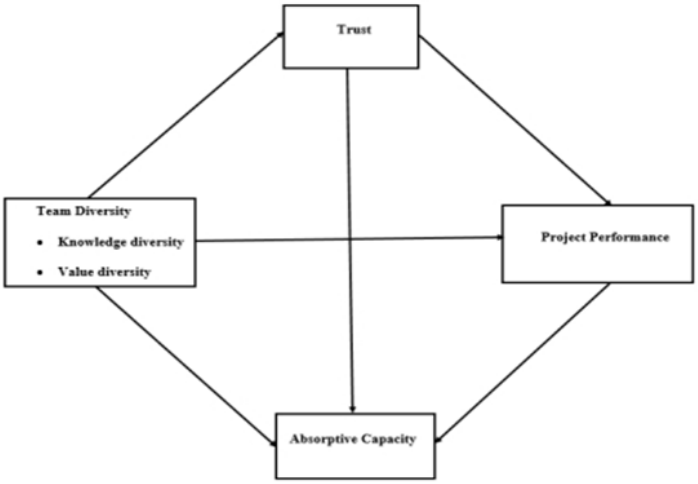

FIGURE 1
HYPOTHESIZED MODEL

MATERIALS AND METHODS

This study focuses on the IT sector projects, which are more creative and innovative in nature and require high variability in skills, knowledge, and methods (Akgün, 2020). Pakistani IT industry is flourishing day by day. Its economic contribution in terms of the local market and export is also increasing. According to the Pakistan Software Export Board (PSEB), IT business has crossed 3.3 billion in 2018 compared to 2017, *i.e.*, 2.8 billion. Since 2001, IT industry of Pakistan enjoyed a tax relief, and during 2001-2016 its size has grown up from $30 million to over $3 billion. It continues to produce more than 20,000 IT graduates and engineers every year due to this rising culture. Further, the IT projects require innovative and skillful experts from the field who can adapt to change dynamically. The circulation of new information and process methods is the core part of IT projects that will come from the different team members of the projects.

Therefore, current study targeted the projects from IT industry. Data were collected from project members (Project managers, Chief engineers, Project engineers, Project consultants, Project designers, Project contractors) through convenience sampling. 400 questionnaires were distributed to the targeted sample, and 324 were returned from them. Data were screened for missing values, multivariate outliers and unengaged responses, and further, 54 responses were deleted. Finally, we end up with 270 complete questionnaires that represent a response rate of 67.5%. Table 1 depicts the socio-demographic characteristics of the data.

Table 1
SOCIO-DEMOGRAPHIC CHARACTERISTICS (n=270)

Variables		**n=270**
Gender n(%)	Male	162 (60%)
	Female	108 (40%)
Marital Status n(%)	Single	99(36%)
	Married	149 (55%)
	Prefer not to say	22 (9%)
Work Experience n(%)	Less than 5 years	188 (70%)

	5-10 years	44 (16%)
	11-20 years	22 (8%)
	Greater than 20 years	16 (6%)
Educational Background n(%)	Undergraduate	146 (37%)
	Graduate	95 (33%)
	Doctorial	29 (4%)
Project Teams n(%)	System analyst	95 (35%)
	User designer and developer	34 (13%)
	Quality assurance	74 (27%)
	Deployment and implementation	32 (12%)
	Trainers team	35 (13%)
Project Duration n(%)	6-12 months	50 (18%)
	13-18 months	70 (26%)
	Greater than 18 months	150 (56%)

Table 1 presented the data collection summary. Out of 270 respondents, 162 were male, and 108 were female. Overall, married were 149, and the maximum number of respondents were undergraduate while the minimum number was doctoral. Based on other factors such as work experience and project teams, most respondents had less than five years of experience, and 95 respondents were members of the system analyst team. For project duration time, 150 projects had greater than 18 months duration.

Measures

Project performance is measured based on rigid project management criteria, such as timely completion, cost-effectiveness and technical implementation (Pheng & Chuan, 2006). Five Items were adapted from Chen (2015). Team diversity is a multi-dimensional concept, encompassing a variety of heterogeneities between project team members (Holzmann, 2013). It is divided into two dimensions, *i.e.*, knowledge diversity and value diversity. Knowledge diversity refers to the core knowledge heterogeneity between project teams, including professional diversity, experience diversity and thinking diversity (Wu et al., 2019). Value diversity refers to the factors associated with a diversity of inclinations, including sharing common goals, prioritizing project objectives, and considering the welfare of others (Eastman & Santoro, 2003). Five and four items were adopted from Zhang & Li (2016) respectively. Trust enhances the performance of the project by promoting communication among team members of the project (Pinjani & Palvia, 2013). Five items were adopted from Cook & Wall (1980). Absorptive capacity is an ability of an individual to absorb new knowledge, information and then create new knowledge that facilitates the individuals in implementing innovative projects (Volberda, Foss & Lyles 2010). It includes knowledge acquisition, assimilation, transformation and exploitation (Shubham, Charan & Murty, 2018) measured by ten items adapted from Szulanski (1996).

RESULTS

Internal consistency is the reliability of each variable. Additionally, internal consistency for all the variables is measured by using Cronbach's Alpha and Composite Reliability (CR). It shows

how much the items of each construct are related to each other. For this, a threshold value is 0.7. If the value is greater than 0.7, it means that variables are internally consistent. Composite reliability score for knowledge diversity=0.918, value diversity=0.909, trust=0.970, absorptive capacity=0.962, project performance=0.970. Therefore, it depicts good internal consistency. As shown in Table 2 above, the composite reliability score for each of the constructs is greater than 0.7. For AVE; knowledge diversity=0.692, value diversity=0.714, trust=0.868, absorptive capacity=0.715, project performance=0.84.

Table 2
VALIDITY AND RELIABILITY

Variables	Cronbach's alpha	Composite Reliability	AVE
Knowledge diversity	0.889	0.918	0.692
Value diversity	0.866	0.909	0.714
Trust	0.962	0.97	0.868
Absorptive Capacity	0.956	0.962	0.715
Project performance	0.963	0.97	0.843

Convergent validity is the average of items outer loading of each variable and it is also measured from the Average Variance Extracted (AVE) of each construct. If the AVE value of each variable is greater than 0.50 then the PLS model is declared to have met convergent validity. In the above table, the value for outer loading for each item is above 0.70.

Table 3
OUTER LOADINGS AMONG SCALE ITEMS

Variables	Items	Loadings
Knowledge diversity (KD)	KD1	0.844
	KD2	0.825
	KD3	0.857
	KD4	0.803
	KD5	0.829
Value diversity (VD)	VD1	0.833
	VD2	0.898
	VD3	0.781
	VD4	0.865
Trust (Tr)	Tr1	0.917
	Tr2	0.906
	Tr3	0.952
	Tr4	0.935
	Tr5	0.947
Absorptive Capacity (ACAP)	AC1	0.82
	AC2	0.785
	AC3	0.864

	AC4	0.865
	AC5	0.858
	AC6	0.87
	AC7	0.853
	AC8	0.813
	AC9	0.898
	A10	0.827
Project Performance (PP)	PP1	0.899
	PP2	0.884
	PP3	0.94
	PP4	0.915
	PP5	0.946
	PP6	0.924

PLS algorithm step is used to measure the validity of the constructs. The purpose of discriminant validity is to ensure that each variable is different from the other variable. The threshold value for AVE squared is greater than 0.7. The results are good if an exogenous variable (the value on the diagonal) greater than 0.7. If the value of diagonal is less than the values above them, then it means constructs are not valid. The discriminant Validity test in the table shows that all variables have an AVE square value is greater than 0.7 which means that model has fulfilled the discriminant value. Absorptive capacity has 0.846, project performance has 0.918, knowledge diversity has 0.832, value diversity has 0.845 and trust has 0.932.

Table 4
DISCRIMINANT VALIDITY

Variables	ACAP	PP	KD	VD	Tr
Absorptive Capacity	0.846				
Project Performance	0.826	0.918			
Knowledge Diversity	0.829	0.731	0.832		
Value Diversity	0.81	0.766	0.798	0.845	
Trust	0.807	0.865	0.714	0.716	0.932

R square values explain how well IVs explains the DVs. The above picture shows that the R square value for trust is 0.569. It means that trust can be explained by knowledge diversity and value diversity by 56.9%. Also, the value of R square for ACAP is 0.837. So, ACAP can be explained by knowledge diversity and value diversity by 83.37%. R square value for 0.806 clearly says that PP can be explained by 80.60% by trust, absorptive capacity, knowledge diversity and value diversity.

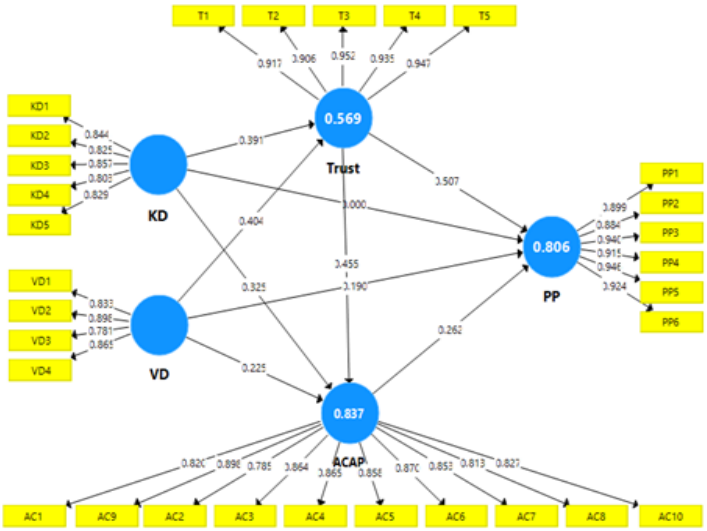

FIGURE 2
VALID ESTIMATION MODEL

Bootstrapping analysis is used to find out the significance of relationships. It tells whether the effect of a certain independent variable on a dependent variable is a significant and direct and indirect effect of constructs on each other. The above tables show that knowledge diversity and value diversity has a positive and significant impact on project performance. Study validate that H2a and H2b hypothesis are accepted (β=0.198; 0.007), (β=0.2.5; p= 0.004) respectively. Only H1a is rejected (β= 0.000; p=0.995).

Table 4
HYPOTHESIS TESTING

i- Direct Effect				
Hypothesized path	**β-value**	**t-statistics**	**P Values**	**Decision**
H1a Knowledge Diversity→ Project Performance	0	0.006	0.995	rejected
H1b Value Diversity→ Project Performance	0.19	2.725	0.007	accepted
ii- Indirect Effect				
H2a Knowledge diversity→ Trust→ Project Performance	0.198	2.968	0.003	accepted

H2b Value Diversity→ Trust→ Project Performance	0.205	2.902	0.004	accepted
H3a Knowledge Diversity→ Absorptive Capacity→ Project Performance	0.085	3.086	0.002	accepted
H3b Value Diversity→ Absorptive Capacity→ Project Performance	0.059	2.79	0.005	accepted
H4a Knowledge Diversity→ Trust→ Absorptive Capacity→ Project Performance	0.047	2.323	0.021	accepted
H4b Value diversity→ Trust→ Absorptive Capacity→ Project Performance	0.048	2.399	0.017	accepted

Furthermore, the above table also tells about the full mediation (fully mediating) or pseudo (quasi-mediating). In H4b it is hypothesized that trust and absorptive capacity mediates the relationship between value diversity and project performance. From the table above the effect of value diversity on a project, performance is still significant with the p-value of 0.007. Therefore, it is concluded that the mediation is quasi-mediating (β=0.048; p=0.020). In the case of knowledge diversity, its direct impact on project performance is not significant; it needs a path to make it significant. Through trust and absorptive capacity, its effect on project performance become significant and positive and it has full mediation (β=0.047; p=0.020).

DISCUSSION

In the rapidly changing market environment, innovation has become a crucial aspect for organizations to gain a competitive advantage. It is considered an essential component for the project success in every industry, particularly in IT industry, where high innovative capabilities and advanced technological infrastructure required. These projects often face uncertainties that increase the complexities and risk to obtain the targeted results. This study investigates the effect of team

diversity on project performance through trust and absorptive capacity. Data were gathered from team members working on software projects in Pakistan. There are three main findings of the study.

Firstly, a direct relationship between knowledge diversity and project performance is statistically insignificant. In contrast, the previous studies revealed that knowledge diversity positively affects project performance. The main reason behind this insignificant relationship is the existence of the diverse culture of project based-organization. Team members have various innovative ideas. When a team member puts his/her insights in front of other team members, not everybody agrees on it. Whereas the second dimension of team diversity, *i.e.,* value diversity, has a positive and significant impact on project performance. It leads to creating innovative ideas that enhance project performance.

Secondly, the core part of this study is the mediators through which the success of the projects can be enhanced. Results show that knowledge diversity and project performance are fully mediated by trust and absorptive capacity, while value diversity is partially mediated by trust and absorptive capacity. It signifies that both the mediators play a vital role in enhancing the project performances. Findings show that knowledge diversity positively affects the performance of the project and highly significant in the presence of trust. When trust is developed among team members, it enables team members to take advantage of their past experiences. The other dimension, value diversity, also has a positive and significant impact on project performance. It leads team members to share their ideas to achieve a common goal and directly enhance the project performance.

Thirdly, absorptive capacity is a viable factor that provides team members with the ability to achieve the goals within the project's scope. Recent researchers emphasized on its importance, potential and value in IT projects. It is a distinctive organizational capability (Maqsoom et al., 2020). It ensures the interpretation of diverse, unique ideas; and results in favorable outcomes. The significance of absorptive capacity has pointed out that it is essential to enhance project performance (Eriksson et al., 2020). This is why it has a positive impact on project performance.

Managerial Implications

It is concluded from this research that if team members of different teams have trust among them, it creates better cohesion and good communication. It justifies the problem for which this research is being done that most of the members do not feel comfortable when working with the other team members. This research serves the IT industry of Pakistan. IT-related projects need more capacity, ability, knowledge, ideas, and creativity. So, it is also found that if team members have high absorptive capacity while having a trust element with them, it enhances the performance of such projects. Failure of software project would be reduced. The purpose of this study is to examine the relationship of project performance with team diversity. But literature says that there are so many other variables that negatively affect the project performance. This research has fulfilled this gap by providing a clear path that is mediated by trust and absorptive capacity. Findings show that this path enhances the project performance. Both the dimensions of team diversity *i.e.,* knowledge diversity and value diversity positively impact the project performance through trust and absorptive capacity.

Project managers should focus on the communication and relation of their respective members. Trust is the backbone of project performance. This study is helpful for the project managers who are the core part of every type of project. They can develop trust among team

members of different project teams. All are from different backgrounds in terms of knowledge and value which make them panic and anxious due to which the project performance reduces. So; if members are having a trust element, it helps them to exempt all the negativity. They will be able to combine existing knowledge with the extreme knowledge which simultaneously serves the IT industry.

Innovation arises from creative and unique ideas (Bell et al., 2009). Creativity and innovation are key components for the success of organizations (Miller et al., 1998). Through open innovation, organizations discover internal and external resources. This study highlights the importance of team diversity for creativity, an innovation that improves project performance and further provides opportunities for open innovation. The dimensions of team diversity: knowledge and value emphasize open learning as well as sharing new and unique ideas from others (Todorović et al., 2015). Diverse teams create such an environment which appreciates other strength and contribution. They acknowledge their deficiencies and point of view about themselves. In that way, it cultivates the follower creativity, which may articulate the open innovation in the services industry (*i.e.,* IT sector). It motivates the teams to move towards digital infrastructure by giving new and useful ideas that can help to build a competitive advantage. Hence, IT sector should pay concern to the development of digital infrastructure for gaining a competitive advantage. For this, open innovation may play a critical role.

CONCLUSION

The current study elucidates the link between team diversity and project performance. Further, it illustrated the intervening role of trust and absorptive capacity. Results show that trust is the key factor for project performance. More the better communication, the more the team members are able to share their new ideas and insights with their respective supervisor or project manager. So, trust as a mediator plays a crucial role in achieving the scope and objectives of IT project. The absorptive factor is an important factor in software projects. In IT projects generation of maximum ideas enhances project performance. New knowledge is required for improving organizational learning. In a friendly environment, team members feel easy to grab new knowledge, tools and techniques. Especially in IT projects diverse teams can work better. They have ideas and new insights which can entirely change the mindsets of people. Gains through diverse team members enhance the performance of the project. Project teams, who are having trust among them, are able to absorb new knowledge regarding their project. Absorptive capacity is a vital condition for getting benefit in innovation. As innovative projects need creativity like critical thinking, and strategic thinking etc. So, it has a positive and significant impact on project performance.

Limitations and Future Studies

There are always some limitations in every study. The sample of this study came from only Pakistan. Previous studies explain the sensitivity of trust is different for various culture (Eriksson et al., 2020). It has a different scale for every employee of an organization. Data was collected from IT industry which cannot be generalized to the other industries like the construction industry and banking industry. All industries have a different type of problems and issues. The study was also cross-sectional due to time constraint and limited resources. Future scholar should use longitudal study to confirm the current results. Lastly, the lack of cultural perspective and employee's unwariness towards creativeness and innovation is another limitation of this research.

Trust and absorptive capacity are considered as mediators, it is suggested to use other variables as a mediator like process conflict, knowledge sharing, it supports management etc. Future researchers should focus on other dimensions of team diversity. This study only looked upon two dimensions; further studies can take other dimensions to explore their effects on project performance. Moreover, the current study took only software industry projects as its sample, future studies should consider other industries. It will help in the generalization of the study. In this study small ample size was taken, future studies can take large sample size and use probability sampling for more accurate outcomes. Current research has done in the context of Pakistan and took only a project-based organization. Future research should be conducted in another context to make it more generalizable. Lastly, it is recommended that in further studies the same type of projects should be considered which have almost the same project constraints.

AUTHOR CONTRIBUTIONS

For research articles with several authors, a short paragraph specifying their individual contributions must be provided. The following statements should be used "Conceptualization, X.X. and Y.Y.; methodology, X.X.; software, X.X.; validation, X.X., Y.Y. and Z.Z.; formal analysis, X.X.; investigation, X.X.; resources, X.X.; data curation, X.X.; writing—original draft preparation, X.X.; writing—review and editing, X.X.; visualization, X.X.; supervision, X.X.; project administration, X.X.; funding acquisition, Y.Y. All authors have read and agreed to the published version of the manuscript." Please turn to the Credit taxonomy for the term explanation. Authorship must be limited to those who have contributed substantially to the work reported.

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INFORMED CONSENT STATEMENT

This study was carried out through the approval of the Departmental Committee of Professional Ethics Institute of Management & Management, University of Engineering and Technology, Lahore, Pakistan, in accordance with the Declaration of Helsinki. Informed consent was obtained from all individual participants included in this study.

DATA AVAILABILITY STATEMENT

Data is available and can be provided on request.

CONFLICTS OF INTEREST

This research received no external funding.

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