THE EFFECT OF KNOWLEDGE SHARING ON TEAM PERFORMANCE THROUGH LENS OF TEAM CULTURE

Samia Jamshed  
Faculty of Business & Accountancy, University of Malaya, Kuala Lumpur  
Corresponding Email: samiajamshed@gmail.com; samia@siswa.um.edu.my

Mohammad Nazri (PhD)  
Senior Lecturer, Department of Business Strategy and Policy  
Faculty of Business and Accountancy  
University of Malaya, Kuala Lumpur

Raida Abu Bakar (PhD)  
Senior Lecturer, Department of Business Strategy and Policy  
Faculty of Business and Accountancy  
University of Malaya, Kuala Lumpur

Nauman Majeed  
Faculty of Business & Accountancy, University of Malaya, Kuala Lumpur

Abstract

Knowledge Sharing is a significant facilitator of performance in organizations through teams for gaining competitive advantage. However, very few studies investigated the relationship between knowledge sharing and team environment with a subsequent effect on team performance. For effective team performance, team members are encouraged to exchange their varied knowledge, opinions, paradigms, and expertise required to accomplish team tasks. Therefore, this study attempts to investigate the effect of knowledge sharing on team performance through the lens of team culture. A quantitative study by employing survey method was conducted by collecting data from healthcare teams working in healthcare institutions of Pakistan. The study examines the direct and indirect effect of team culture on team performance by statistically testing the research model by utilizing the technique of structural equation modeling. Results from response by 106 teams comprised of 397 members’ exhibit that teams with visible performance indicators depict strong team cultures which deemed important for sharing knowledge amongst team members. The study findings provide useful insights and contribute to the literature of team performance and knowledge sharing in the healthcare sector and urge administrators to encourage team members to share their expertise enhancing the performance of teams.

Keywords: Knowledge Sharing, Team culture, Team performance, Healthcare

Introduction

In the arena of knowledge-intensive professional services, the resources of knowledge are considered the core of competitive advantage (Alvesson, 2004). The knowledge sharing (KS) may also enhance organizational outcomes as job performance and job satisfaction (Tong, Tak, & Wong, 2015) and thereby bolster competitive advantage. The phenomenon of knowledge sharing is a significant facilitator of performance in organizations through teams and one-to-one interactions (Endres & Rhoad, 2016; Quigley, Tesluk, Locke, & Bartol, 2007). The component of knowledge assets provides the intellectual direction of "knowing what" or "know-how". The notion of Knowledge sharing has attracted considerable interest recently as organizations recognize knowledge as a viable source of accelerated performance within teams. One of the challenges which are faced by the organizations in the current era is to rely on work teams being the core of the
organizational structure, in order to share their various information, experience and expertise in collective outcomes (Ardichvili, 2002; Egan, 2005). The empirical evidence shows that it has a number of benefits for both employers and employees. Earlier studies perceived that knowledge sharing has significant influence on employees performance at the individual level (Henttonen, Kianto, & Ritala, 2016), at the organizational level (Ritala, Olander, Michailova, & Husted, 2015) and at the team level as KS influences team performance (Pangil & Moi Chan, 2014). Knowledge sharing within teams occurs when individuals assist and learn from others’ ideas, facts, expertise and judgments to develop new skills (Yang & Farn, 2009). So the factor of knowledge sharing by team members is considered to be perilous for the team performance (Cummings, 2004; Faraj & Sproull, 2000). Knowledge sharing in teams suggests team members share information, experience, and opinions regarding specific tasks.

Employees working in teams may hope to exchange explicit knowledge with their team colleagues but most of the time this exchange is hindered by the team culture to perform efficiently on their own tasks initially instead of interpreting and disseminating information relevant to that specific tasks (Van Ginkel & Van Knippenberg, 2008; Zhao & Lavin, 2012). Hence within teams, peer interaction promotes knowledge sharing, moreover, it enhances team performance. This study attempts to explore how knowledge sharing impacts the performance of teams working in healthcare organizations through mediating role of team culture. Knowledge sharing can improve the provision of quality services and innovation ability of healthcare teams. As innovation in healthcare continues to be a driving force in the pursuit of excellence in healthcare services. The Pakistani healthcare teams realized the importance of sharing knowledge but the implementation of such practices is confronting with cultural and leadership barriers (Arshad, Noordin, & Othman, 2016).

Though the availability of state-of-the-art private hospitals scattered across the country yet facing challenges of effective knowledge sharing behavior. In healthcare institution, knowledge is mostly a blend of tacit and explicit knowledge resources which is not dependent on the structured resources but is highly influenced by the worker's perceptions and experiences for utilizing it for innovation (Hameed, Karamat, & Mehmood, 2012). Therefore factor of culture stimulates members to share the knowledge and use it instinctively (Abdul Rahman, 2011). The success of teamwork may be influenced by the extent how intelligently knowledge is being shared to improve patient care services (Jadad, Haynes, Hunt, & Brownman, 2000; Mahmood, Burney, Abbas, & Rizwan, 2012) which is amongst one of the prime factors to improve healthcare process. This study intends to provide empirical verification to determine the effect of KS on team performance through the lens of team culture. The sole knowledge of individuals is not enough to create a competitive advantage.

**Literature Review**

**Knowledge Sharing**

Most organizations are not sure whether the performance improvements achieved through the implementation of knowledge management or it is just a fad (Jayasingam, Ansari, Ramayah, & Jantan, 2013). The organization can use personal knowledge only through sharing of collective knowledge (Swart, Kinnie, Rossenberg, & Yalabik, 2014). Academic literature has long considered KS as a social process that must involve at least two people. Relying on this view, Davenport, and Prusak (1998) have characterized KS as a process that includes the transfer of knowledge between employees and team members. Previous studies have described various types of knowledge. The scholarly work by Polanyi (1962) classified organizational knowledge into explicit and tacit. Explicit knowledge is the type of knowledge which is mainly kept in documents, publications, reports, and databases. Whereas, ‘Tacit’ knowledge, is solely personal, challenging to codify or communicate and thus not easily shared with others (Nonaka & Takeuchi, 1995; Polanyi, 2015).

Knowledge has been recognized as a base of power and competitive edge for individuals who hold it. Some people may go so far as to see sharing their knowledge with others as a sign of losing their unique value in the organization. Accordingly, people are not often eager to share their knowledge or expertise with others. In the view of existing literature (Bartol, Liu, Zeng, & Wu, 2009; Nonaka & Takeuchi, 1995) the team members exhibit three individual behaviors for the exchange of knowledge. The behaviors categorize as provision, socialization, and externalization (Noh, 2013). Such behaviors for sharing knowledge in teams stick with the person who creates it or possesses it and primarily shared by personal contacts.
Team Culture

The literature review of culture suggests that different sub-cultures exist in organizations at different levels considering different functions in accordance with the business context. The conception of organizational culture symbolizes an anthropological metaphor used in research on organizational behavior, business, and management (Morgan, Gregory, & Roach, 1997). The prior literature on organizational culture has acknowledged the presence of diversified sub-cultures at team level within organizations (Hofstede, 1998; Jermier, Slocum Jr, Fry, & Gaines, 1991) and affirmed significant relationship between team cultures and employee job attitudes (Adkins & Caldwell, 2004; Lok, Westwood, & Crawford, 2005), but minimum is empirically investigated in relation to the association of team culture and team performance (Shin, Kim, Choi, & Lee, 2016). Team culture is the offshoot of organizational culture which may be developed considering the political, geographical, ethnic, religious or other dynamics of the teams. The characteristics of a defined team can be embodied in symbols, languages, and cultural relics, verbal and written traditions.

The central premise of exhibiting different team cultures is the creation of an exclusive identity that provides a means of distinguishing an organization member from the team members (Schein, 2010). This perception suggests that culture provides medium to synchronize teams and their subsequent performance. Team culture can be characterized as emergent simplified rules, regulations, specifications, standards, expectations, and roles that are shared and promulgated by team members (Earley, 1999). This emerging culture leads to the development of shared identity held by the specific teams and groups (Sağ, Kaynak, & Sezen, 2016). According to Anderson & West (1994); team's culture is a set of shared perceptions of organizational policies, practices, and procedures. It influences how well members know one another, how comfortable they feel being themselves on the team, and the quality of their relationships with one another. The significance of utilizing conception of team climate inventory for this study lies in the rational pattern of climatic factors in relation to team performance is revealed by the previous literature on team-based research. The description of the team climate inventory (Anderson & West, 1990) revolves around the four drivers such as (1) “vision”, (2) “participative safety”, (3) Support for innovation and (4) task orientation.

Team Performance

The research scholars have advocated that the association amongst team performance and the factors which influences team performance are multifaceted and require rigorous evidence-based investigations to arrive at more consistent deductions about strengthening the team performance (Savelsbergh, Van der Heijden, & Poell, 2010). According to Driskell and Salas (1992), the most critical essence which effects the team performance is the interdependence of the employees to share their information. Thus, social exchange behavior gets the most important place when team performance is discussed. Recently Kim et al (2017) point out the same opinion, that core of group lies in the interaction of its members, the social interaction of two or more people when they work together in one team.

Team performance in healthcare is more complex phenomena as medical institutions collect and analyze data to determine their customer satisfaction and narrow the gap if they find something, which causes customer dissatisfaction. On reviewing the literature it has been revealed that team performance is often considered as a multi-dimensional construct (Dunphy & Bryant, 1996; Wageman, Hackman, & Lehman, 2005), a variety of performance indicators can be used to measure team performance. Based on the conceptualization of Shortell, Rousseau, Gillies, Devers, and Simons (1991), this study explored team performance in terms of effectiveness criteria of the team as one unit. The effectiveness is the absolute level of achievement of goals and expectations (Hoegl & Gemuenden, 2001) in terms of providing quality solutions, meeting patient family needs and monitoring turnover within teams. Team performance has to confront challenges of turnover in healthcare institutions. Due to reorganization and a global shortage of healthcare staff, the team member’s turnover can be high which may influence and deteriorate team performance. Whereas the high level of job satisfaction and lower level of turnover can lead to effective team outcomes (e.g. Hayward, Bungay, Wolff, & MacDonald, 2016; Shortell et al., 1994).

Theoretical Underpinning and Research Model

The Social Exchange Theory (SET) is a well-known interdisciplinary approach to study human behavior in organizational studies (Settoon, Bennett, & Liden, 1996). Research scholars have consensus that social exchange includes a series of interactions that create obligations and claims reciprocal transactions to create high-quality relationships. In particular to the workplace context, the concept of exchange relationship was presented through the inducement-
contribution relationship between the employees and employers (March & Simon, 1958). According to this theory, individuals share their knowledge because of their perception of the benefit that may result from such behavior. Hence, individuals in teams and organizations that provide an environment to support a positive perception are more likely to contribute their knowledge for augmented performance (Li, Ting, Liu, Chung, and Chia-Hsien, 2008).

Indeed, culture provides a social medium within which members can identify and form emotional bonds with each other (Beyer & Nino, 2001); which can satisfy their need for belongingness, commitment to organizations (Schein, 2004), trust in leaders (Gardner, Fisher & Hunt, 2009), and job satisfaction (Shiu & Yu, 2010). Considering the theoretical paradigm of SET, the essence of the hypothetical research model is that employees working in teams reciprocate the inducements provided by the organization via social exchange (Cropanzano, Dasborough, & Weiss, 2017). Considering the team culture which is another construct of the study refers to all the shared and implied assumptions that the members of the team hold. Such assumptions may affect the way in which the social exchange relationship is developed. The study by Homans (1974) advocated that teams of similar type strengthen related behavior influenced by the team culture. Team members bound in teams of the homogenous framework may prioritize their exchange accordingly. All such exchanges within the team are of significant importance such as leader’s behavior, the role of team culture induces the team member attitudes, knowledge sharing among team members which ultimately influences team performance. The subsequent section presents the discussion on the relationship amongst variables as depicted in figure one.

Relationship of Knowledge Sharing and Team Performance

For effective team performance, team members are encouraged to exchange their varied knowledge, opinions, paradigms, and expertise required to accomplish team tasks. So the factor of knowledge sharing within the team by team members is considered to be perilous for the team performance. (Cummings, 2004; Faraj & Sproull, 2000; Lewis, 2004). Hence it is inferred that team performance is influenced by the construct of knowledge sharing (Plowman & McDonough, 2010); and the excellence of knowledge sharing varies in teams due to varied nature of team culture. The occurrence of KS in teams relies on the quality of expressions and interaction of the members consequently influencing team performance (De Dreu & Weingart, 2003; Jehn & Chatman, 2000). Hence to understand how the factor of knowledge sharing can smoothly incorporate in miscellaneous teams which can accelerate the process of knowledge sharing positively has become an important area of research for the academicians and practitioners belong to the field of human resources and knowledge management (Garavan & McCarthy, 2008; Jamshed, Nor, & Bakar, 2017; Sessa & London, 2015). Hence it is suggested that:

H1: Knowledge sharing has a significant positive relationship with team performance.

Relationship of Team Culture and Team Performance

Professional subcultures also influence team performance, as it is concluded that culture varies in teams (Ashkanasy & Nicholson, 2003). Research provides evidence that workers belong to particular team structure, their behavior and attitude according to the prevailing culture of teams that may have an ultimate influence on team performance (Avey, Wernsing, & Luthans, 2008). Team culture encourages team members to grasp change, offer varying perspectives, and talk about issues straightforwardly prompting valuable and positive results. Members of a team are guided by certain team objectives which require adequate cooperation, sharing information and gaining from each other. A culture facilitates coordination as a result of the care and support provided to each other in teams (Barczak, Lassk, & Mulki, 2010; Bell, 2007). Thus considering the above discussion it is hypothesized as:

H2: Team culture has a significant positive relationship with team performance

Relationship of Knowledge sharing, Team Culture, and Team Performance

Knowledge sharing is one of the precarious team processes which is the fundamental component of knowledge management (Tung & Chang, 2011). The viability and effectiveness of knowledge sharing is exceptionally reliant on the behavior of the members of the team, for example, members' passionate insight, their way of interaction within team mechanisms, collaboration, and their insight application to the ultimate mission of the organization (Hu & Randel, 2014;
The culture of a team is comprised of certain norms, beliefs, principles, customs or any sort of knowledge possessed by the members; thereby team members get familiar with all such knowledge that formulates the culture of a team. By practicing such team culture over a period of time lead to the team functions as a coherent team in completing team tasks (Zhou & Shi, 2011; Kaur et al., 2016). Thus it is inferred that:

**H3: Knowledge sharing has a significant positive relationship with team culture.**

**H4: The relationship between knowledge sharing and team performance is mediated by team culture.**

**Methodology**

**Procedure and Sampling**

To test the proposed research model, this study employed quantitative research methodology grounded in positivist paradigm by use of survey questionnaire. By utilizing purposive sampling technique the study sample was determined as the respondents for this study are not common employees rather they are working in form of teams which belongs to different healthcare departments and units. A total of 125 teams consisting of 475 team members from 5 biggest hospitals of Lahore Pakistan were purposely approached with permission of hospital administrators in order to collect the data. The unit of analysis for this study is “Team”. Therefore, the collected data from individuals working in teams were aggregated to the team level construct. After data cleaning and calculating data aggregation indices a total of 106 (84%) teams comprised of 397 members were qualified for the further analysis. Table 1 presents the demographic summary of the respondents.

**Table 1: Demographic Summary of respondents (N= 397)**

<table>
<thead>
<tr>
<th>Variables</th>
<th>Frequency (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Gender</strong></td>
<td></td>
</tr>
<tr>
<td>Males</td>
<td>121 (31)</td>
</tr>
<tr>
<td>Females</td>
<td>276 (69)</td>
</tr>
<tr>
<td><strong>Age in Years</strong></td>
<td></td>
</tr>
<tr>
<td>Below 20 years</td>
<td>27 (6.80)</td>
</tr>
<tr>
<td>20 – 25 years</td>
<td>69 (17)</td>
</tr>
<tr>
<td>26 – 30 years</td>
<td>103 (25.94)</td>
</tr>
<tr>
<td>31 – 35 years</td>
<td>91 (22.92)</td>
</tr>
<tr>
<td>36 and Above</td>
<td>88 (22.17)</td>
</tr>
</tbody>
</table>
The results for the aggregation within team agreement (rWG(J)) for the current study surpassed 0.70 which indicates the adequate level of aggregation among team members hence justified the aggregation process (Dunlap, Burke, & Smith-Crowe, 2003). Further estimation of Intraclass coefficients (ICC) to determine date aggregation reliability suggested by (Bliese & Halverson, 1998) was calculated for all team level construct to justify the aggregation process. The results for the three team-level constructs are presented in table 2.

Table 2: Data Aggregation

<table>
<thead>
<tr>
<th>Constructs</th>
<th>Mean</th>
<th>rWG(J)</th>
<th>ICC(1)</th>
<th>ICC(2)</th>
<th>F- Statistics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Knowledge Sharing</td>
<td>3.89</td>
<td>0.749**</td>
<td>0.257</td>
<td>0.734</td>
<td>3.871**</td>
</tr>
<tr>
<td>Team Culture</td>
<td>5.41</td>
<td>0.857**</td>
<td>0.277</td>
<td>0.843</td>
<td>7.234**</td>
</tr>
<tr>
<td>Team performance</td>
<td>5.77</td>
<td>0.877**</td>
<td>0.321</td>
<td>0.881</td>
<td>8.263**</td>
</tr>
</tbody>
</table>

Note: ***p<0.001; **p<0.01; *p<0.05

The research instrument development

The current study applied a systematic approach to design and develop research instrument. A comprehensive literature review provides a foundation for the construct operationalization. The measures of this research were adopted from well-established measures. More specifically, all measurement items were adopted from previously validated scales from the literature of knowledge sharing, team performance, and team culture. Several researchers have proposed to use higher order latent variable models instead of models composed solely of lower-order factors (Johnson, Rosen, Djurdjevic, & Taing, 2012). This study operationalized team performance and team culture as a higher order formative constructs and knowledge sharing as a reflective construct.

Knowledge Sharing

To capture the knowledge sharing perceptions of team members amongst teams; an eight-item scale developed by Bartol et al. (2009) was utilized by using 5-point Likert Scale. This scale measures explicit as well as tacit knowledge sharing in teams. The internal reliabilities presented by Bartol et al. (2009) for KS was 0.816.

Team Culture
The current study operationalized team culture by adopting “Team Climate for Inventory” for healthcare institutions based on the model of Farr and West (1990), which consists of four factors. According to this, the performance of the teams depends upon: “vision”, “participative safety”, “support for innovation” and “task orientation.

**Team Performance**

The performance in teams was evaluated utilizing 11 items, embraced from (Shortell et al., 1991) This instrument is generally utilized for measuring team performance in healthcare services. The adopted scales measure three features of team performance: overall team effectiveness which incorporates how successfully colleagues address family issues and gives quality arrangements and judging the turnover.

**Data Analysis**

This research study analyzed the collected data by employing Partial Least Square - Structural Equation Modeling (PLS-SEM) in Smart-PLS 3 software. The Smart-PLS is a powerful SEM modeling software for estimating path coefficients in the hypothetical model. SEM aims to test the hypotheses developed from the literature by analyzing relationships between the variables, the direction of the relationships and their significance (Hair Jr, Hult, Ringle, & Sarstedt, 2016). In PLS-SEM consists of two stages In Stage 1, the outer model is evaluated by establishing an adequate level of reliability and validity (Chin, 2010). In stage 2, the structural (inner) model is assessed by utilizing repeated indicator approach to test the proposed research hypothesis. The significance of the path coefficients, the coefficient of determination ($R^2$), effect size $F^2$, and predictive relevance ($Q^2$) was assessed in the path model.

**Evaluation of Outer Model**

**Reliability Analysis**

In order to evaluate the outer model, a sequential confirmatory factor analysis was conducted to satisfy the conditions of reliability and validity as presented in Figure 2. The reliability of the reflective constructs was established by estimating Cronbach’s Alpha (CA) and Composite Reliability (CR). Cronbach’s Alpha values between 0.7 and 0.9 are generally accepted as acceptable threshold values (Nunnally, 1978). In addition, composite reliability is suggested to evaluate the internal consistency of the latent variables. This measure of internal consistency is more robust than Cronbach’s Alpha (Fornell & Larcker, 1981) which may over- or underestimate scale reliability (Raykov, 1998). Table 3 presents the reliability estimates for the reflective constructs.
Validity Analysis

The validity deals with how well the concept is defined by the measures (Joseph Hair, Tatham, Anderson, & Black, 2006). The convergent and discriminant validity are two types of validity that are relevant to assess reflective measures. The first type of validity evaluates the extent to which two measures of the similar concept are correlated. On the other side, the second type of validity is the extent to which measures of different concepts are distinct (Joseph Hair, Anderson, Babin, & Black, 2010). The convergent validity was evaluated by calculating Average Variance Extracted (AVE) values. To confirm convergent validity, the value of AVE should be more than 0.5. Table 3 reports the AVE values for research variables. The results show that AVE values for all latent variables were above the required threshold of 0.5.

Table 3: Constructs Reliability and Validity Analysis

<table>
<thead>
<tr>
<th>Variable</th>
<th>Items</th>
<th>Loadings</th>
<th>CA</th>
<th>CR</th>
<th>AVE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Knowledge Sharing (KS)</td>
<td>KS1</td>
<td>0.774</td>
<td>0.819</td>
<td>0.873</td>
<td>0.531</td>
</tr>
<tr>
<td></td>
<td>KS2</td>
<td>0.730</td>
<td></td>
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<td></td>
</tr>
<tr>
<td></td>
<td>KS3</td>
<td>0.679</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>KS8</td>
<td>0.727</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Team Culture Vision (VIS)</td>
<td>VIS2</td>
<td>0.799</td>
<td>0.775</td>
<td>0.831</td>
<td>0.535</td>
</tr>
<tr>
<td></td>
<td>VIS3</td>
<td>0.689</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>VIS4</td>
<td>0.704</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Participative Safety(PS)</td>
<td>PS1</td>
<td>0.791</td>
<td>0.826</td>
<td>0.897</td>
<td>0.543</td>
</tr>
<tr>
<td></td>
<td>PS2</td>
<td>0.716</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Measure</td>
<td>PS3</td>
<td>PS4</td>
<td>SIN1</td>
<td>SIN2</td>
<td>SIN4</td>
</tr>
<tr>
<td>---------------------------------------------</td>
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<tr>
<td><strong>Support for innovativeness (SIN)</strong></td>
<td></td>
<td></td>
<td>0.798</td>
<td>0.781</td>
<td>0.835</td>
</tr>
<tr>
<td><strong>Task orientation (TOR)</strong></td>
<td></td>
<td></td>
<td>0.778</td>
<td>0.774</td>
<td>0.811</td>
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<tr>
<td><strong>Team Performance (TP)</strong></td>
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<tr>
<td><strong>Absolute Technical Quality (ABTQ)</strong></td>
<td></td>
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</tr>
<tr>
<td>ABTQ1</td>
<td>0.842</td>
<td>0.905</td>
<td>0.921</td>
<td>0.704</td>
<td></td>
</tr>
<tr>
<td>ABTQ2</td>
<td>0.871</td>
<td>0.799</td>
<td></td>
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<tr>
<td>ABTQ3</td>
<td>0.841</td>
<td></td>
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<tr>
<td>ABTQ4</td>
<td></td>
<td></td>
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<tr>
<td><strong>Meeting family need (MFN)</strong></td>
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<td></td>
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</tr>
<tr>
<td>MFN1</td>
<td>0.819</td>
<td>0.820</td>
<td>0.899</td>
<td>0.695</td>
<td></td>
</tr>
<tr>
<td>MFN2</td>
<td>0.849</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td><strong>Turnover (TO)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TO1</td>
<td>0.728</td>
<td>0.790</td>
<td>0.814</td>
<td>0.556</td>
<td></td>
</tr>
<tr>
<td>TO2</td>
<td>0.767</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TO3</td>
<td>0.742</td>
<td></td>
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</tr>
</tbody>
</table>

*Note: ***significant at 0.01 level of significance*

**Legend:** ABTQ: absolute technical quality, KS: knowledge sharing, MFN: Meeting family needs, PS: participative safety, SIN: support for innovativeness, TO: Turnover, TOR: task orientation, VIS: vision

Further, discriminant validity is the extent to which measures of various concepts are distinct (Hulland, 1999). This type of validity can be evaluated by comparing the square root of AVE with the correlation of that construct with all other constructs. As it can be seen in Table 4, all square roots of AVEs are greater than constructs correlations. Therefore, discriminant validity was verified for all constructs.
Table 4: Discriminant Validity

<table>
<thead>
<tr>
<th></th>
<th>ABTQ</th>
<th>KS</th>
<th>MFN</th>
<th>PS</th>
<th>SIN</th>
<th>TO</th>
<th>TOR</th>
<th>VIS</th>
</tr>
</thead>
<tbody>
<tr>
<td>ABTQ</td>
<td>0.839</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>KS</td>
<td>-0.207</td>
<td>0.728</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MFN</td>
<td>0.439</td>
<td>0.007</td>
<td>0.834</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PS</td>
<td>-0.292</td>
<td>0.501</td>
<td>-0.205</td>
<td>0.737</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SIN</td>
<td>-0.100</td>
<td>0.513</td>
<td>-0.037</td>
<td>0.661</td>
<td>0.737</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TO</td>
<td>0.415</td>
<td>-0.122</td>
<td>0.469</td>
<td>-0.162</td>
<td>-0.064</td>
<td>0.746</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TOR</td>
<td>-0.222</td>
<td>0.455</td>
<td>-0.040</td>
<td>0.536</td>
<td>0.495</td>
<td>-0.137</td>
<td>0.732</td>
<td></td>
</tr>
<tr>
<td>VIS</td>
<td>-0.269</td>
<td>0.355</td>
<td>-0.174</td>
<td>0.524</td>
<td>0.519</td>
<td>-0.185</td>
<td>0.468</td>
<td>0.731</td>
</tr>
</tbody>
</table>

Note: The diagonal bold values are the square root of AVE values shared between the latent variables and all other variables.

Legend: ABTQ: absolute technical quality, KS: knowledge sharing, MFN: Meeting family needs, PS: participative safety, SIN: support for innovativeness, TO: Turnover, TOR: task orientation, VIS: vision

Formative Measures Validity

In this study, the constructs of Team Culture and Team Performance is operationalized as higher order formative constructs. To evaluate convergent validity of formative measures collinearity issues and the significance and relevance of the formative indicators (outer weights) were evaluated as recommended by (Hair et al., 2016). A high collinearity between formative indicators may negatively influence the weights and statistical significance of the indicators (Hair, Hult, Ringle, & Sarstedt, 2016). The value of tolerance VIF can be used to estimate the level of collinearity. The value of VIF is required to be less than 10 which indicates that there is no multicollinearity issue. The collinearity statistics (VIF) and the estimation of the significance of the outer weights by applying bootstrapping approach are assessed to identify whether formative indicators significantly contributed to the higher-order construct (Hair et al., 2016). The results presented in table 5 reveals that all first-order indicators contribute significantly positively to the respective higher order study variables.

Table 5: Formative Measures Validity

<table>
<thead>
<tr>
<th>Formative Constructs</th>
<th>Dimensions</th>
<th>VIF</th>
<th>Outer weights</th>
<th>T-Statistics</th>
<th>P-Values</th>
</tr>
</thead>
<tbody>
<tr>
<td>Team Culture (TC)</td>
<td>VIS</td>
<td>1.558</td>
<td>0.264</td>
<td>11.943</td>
<td>0.000</td>
</tr>
<tr>
<td></td>
<td>PS</td>
<td>2.136</td>
<td>0.405</td>
<td>18.313</td>
<td>0.000</td>
</tr>
<tr>
<td></td>
<td>SIN</td>
<td>2.078</td>
<td>0.266</td>
<td>13.451</td>
<td>0.000</td>
</tr>
<tr>
<td></td>
<td>TOR</td>
<td>1.612</td>
<td>0.293</td>
<td>12.456</td>
<td>0.000</td>
</tr>
<tr>
<td>Team performance (TP)</td>
<td>ABTQ</td>
<td>1.413</td>
<td>0.617</td>
<td>17.831</td>
<td>0.000</td>
</tr>
<tr>
<td></td>
<td>MFN</td>
<td>1.454</td>
<td>0.284</td>
<td>14.456</td>
<td>0.000</td>
</tr>
<tr>
<td></td>
<td>TO</td>
<td>1.387</td>
<td>0.342</td>
<td>12.087</td>
<td>0.000</td>
</tr>
</tbody>
</table>

Legend: ABTQ: absolute technical quality, KS: knowledge sharing, MFN: Meeting family needs, PS: participative safety, SIN: support for innovativeness, TO: Turnover, TOR: task orientation, VIS: vision

Evaluation of Structural Model

After demonstrating the reliability and validity of the construct the next stage is to proceed with the assessment of the structural model path coefficients. According to Hair Jr et al. (2016) the following steps are employed to evaluate the structural model: (1) assessment of the significance and relevance of the structural model relationships, (2) Assessing the coefficient of determination (R²), (3) Evaluating the effect sizes (f²), (4) Estimating the predictive relevance Q² and the q² effect sizes. The bootstrapping procedure by using (5,000) bootstrap resampling technique was used in order to test the significance of path coefficients in PLS path model (Hair et al., 2016). Hair and colleagues further suggested that path coefficients that are higher than 0.20 are significant, while path coefficients that are lower than 0.10 are not significant. Path coefficients (closer to +1) have a strong positive relationship and are statistically significant, and the similar argument can be applied to the negative relationships (Hair et al., 2016). Table 6 reports the findings of the hypothesis testing using
Furthermore, the values of $R^2$ for this study for the endogenous variables are presented in Table 6 which are considered moderate for team performance (0.282) and weak (0.190) for team culture.

**Table 6: Hypotheses Testing**

<table>
<thead>
<tr>
<th>Hypotheses No.</th>
<th>Relationship</th>
<th>Path Coefficients</th>
<th>T – Statistics</th>
<th>P Values</th>
<th>Sig. Level</th>
<th>$R^2$</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>KS → TP</td>
<td>0.373</td>
<td>3.789</td>
<td>0.000</td>
<td>***</td>
<td>0.282</td>
</tr>
<tr>
<td>2</td>
<td>KS → TC</td>
<td>0.436</td>
<td>4.914</td>
<td>0.000</td>
<td>***</td>
<td>0.190</td>
</tr>
<tr>
<td>3</td>
<td>TC → TP</td>
<td>0.250</td>
<td>2.480</td>
<td>0.013</td>
<td>***</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>KS → TC → TP</td>
<td>0.109</td>
<td>2.230</td>
<td>0.026</td>
<td>***</td>
<td></td>
</tr>
</tbody>
</table>

Note: ***p<0.001; **p<0.01; *p<0.05; nc: not significant at p>0.05

Legend: ABTQ: absolute technical quality, KS: knowledge sharing, MFN: Meeting family needs, PS: participative safety, SIN: support for innovativeness, TO: Turnover, TOR: task orientation, VIS: vision

**Figure 3: Structural Path Model**

**Predictive Relevance ($Q^2$) and Effect Size ($f^2$) Analysis**

The effect size of $f^2$ is the evaluation of $R^2$ in PLS-SEM when a specific exogenous variable is removed from the model. Thereby, it examines the extent to which the omitted construct effects the dependent constructs (Hair et al., 2016). By convention, $f^2$ values of 0.02, 0.15, and 0.35 was defined as small, medium and large effects respectively (Cohen, 1988). The results of $f^2$ effects size in the tested model exhibits that $f^2$ value of KS on TC is 0.234 has a large effect. Further, the $f^2$ value of KS on TP is 0.157 which is identified as a medium effect whereas the $f^2$ value of TC on TP is 0.070 respectively. Further to evaluate the predictive relevance of structural path model a Stone-Geisser’s ($Q^2$) test is performed by utilizing the blindfolding technique in PLS-SEM. The technique of blindfolding in PLS-SEM algorithm omits data points and replaces them using mean value replacement (Chin, 1998; Tenenhaus, Vinzi, Chatelin, & Lauro, 2005). The results of the predictive relevance for exogenous construct is exhibited in Table 7. The value bigger than zero indicates the PLS path model has a certain amount of predictive relevance for that specific construct.
Table 7: Predictive relevance ($Q^2$)

<table>
<thead>
<tr>
<th>Variables</th>
<th>SSO</th>
<th>SSE</th>
<th>$Q^2=1-\frac{SSE}{SSO}$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Team Performance (TP)</td>
<td>106</td>
<td>82.011</td>
<td>0.226</td>
</tr>
<tr>
<td>Knowledge sharing (KS)</td>
<td>106</td>
<td>106.284</td>
<td>0.158</td>
</tr>
</tbody>
</table>

Discussion

The study investigated the effect of knowledge sharing on team performance through the lens of team culture. The results of the study endorsed that knowledge sharing is an important factor for facilitating optimum team performance. It enables team members to get better know how about the team tasks and objectives. The sample of the study is drawn from healthcare teams as such teams are unique in providing services as their central tenacity is to serve superior patient care services. Considering the theoretical paradigm of SET; suggesting knowledge sharing as the reciprocal norms for enhanced team performance. As SET refers to two or more parties who have precious objects and decides to exchange for the mutual benefit (Lawler & Thye, 1999). Team members exchange task-relevant knowledge to support other team members and teams (and generally) in accomplishing their goals. Moreover, the culture at the team level will correspond to the priority exchange relationships.

The findings of the study are in conformity with earlier research (Garavan & McCarthy, 2008; Jamshed et al., 2017; London & Sessa, 2006; Sessa & London, 2015) posing the importance of knowledge sharing in teams. The knowledge sharing in healthcare teams signifies error-free patient care services (Kim, Newby-Bennett, & Song, 2012). Teams with visible performance indicators depict strong team cultures which deemed important for sharing knowledge amongst team members. Previous studies (Jamshed, 2018; Twigg & McCullough, 2014) endorsed the current study findings that team culture effects the team working as it provides clear vision, participation opportunity for the team members. Further the findings of this research study provide evidence that team culture has significant positive direct as well as the mediated effect on team performance. This study assumed that team culture allow members to share beliefs about the team environment which might have positive implications for the overall team performance (e.g. Hu & Randel, 2014; Hussain, Konar, & Ali, 2016; Mueller, 2014). As the team culture mediates the relationship between knowledge sharing and team performance.

Limitations and Future Research Avenues

This study adds value to the literature of knowledge sharing, team culture and team performance in the context of healthcare teams. This study probably is one of the initial attempts investigating the effect of knowledge sharing on the performance of healthcare team through the lens of team culture. The study recognized the behavior of knowledge sharing as an important contributor towards the error-free performance of healthcare teams. As knowledge sharing provides professional support for healthcare professionals leading to the flourishing outcomes. The findings of the study are particularly relevant to the practitioners considering the framework of effective team performance in knowledge-intensive work settings.

The limitation of the study served as future research recommendations. The study is based on cross-sectional study design and utilizes self-reported survey questionnaire. The data was collected within a specific time frame. Consequently, the data might lack to capture possible change over time and represent only one point in time. Future research could use a longitudinal design to elucidate this relationship further. Such research design allows researchers to analyze the patterns that might emerge over time. Furthermore, research may be conducted by collecting data for different variables from different sources which may limit the potential bias of same source data gathering. Moreover, the performance of the team is being measured through subjective survey statements by means of survey questionnaire which suggested positive relationships amongst the study variables. In future team performance, data can be validated by collecting objectively measured team performance indicators.
References


Fornell, C., & Larcker, D. F. (1981). Structural equation models with unobservable variables and measurement error: Algebra and statistics. *Journal of marketing research*, 382-388.


