JUSTICE PERCEPTIONS, INDIVIDUAL CENTRALITY, AND KNOWLEDGE CONTRIBUTION DISTINCTIONS IN A GLOBAL ORGANIZATION

Zhi Wei Ho  
National University of Singapore, hozhiwei@gmail.com

Klarissa Chang  
National University of Singapore, changtt@comp.nus.edu.sg

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Abstract

Distributed workgroups are increasingly adopted by global organizations, enabled by the use of advances in collaborative technologies. While the informal networks and performance of such workgroups have been examined, the paths that led to the distinctions in knowledge sharing practices remains blurred. Our research model examines the effects of individual advice and friendship networks on knowledge contribution through the lens of justice perceptions. We collected the data from distributed workgroups of a global knowledge intensive organization. Findings demonstrate that individuals with high advice centrality and moderate (neither high nor low) friendship centrality consistently contributed product and expertise knowledge. Distributive justice perception mediated advice centrality and product knowledge contribution while procedural justice perception mediated advice centrality and expertise knowledge contribution. Informational justice perception mediated friendship centrality and expertise knowledge sharing. These findings illustrate that depending on the network, different paths are taken towards product and expertise knowledge sharing.

Keywords: Knowledge Contribution, Advice Centrality, Friendship Centrality, Organizational Justice, Distributed Workgroups
INTRODUCTION

The importance of knowledge contribution has long been recognized as crucial to the success of the organization (Schultze & Leidner, 2002). Performance benefits include improved productivity, quality (Haas & Hansen, 2007). Motivations to contribute knowledge have been studied using social capital, social exchange, and organizational support (Bock & Kim, 2002; Wasko & Faraj, 2005; Kankanhalli et al., 2005). Similarly, justice (i.e., fairness) perceptions of employees also play a crucial role in the organization (Greenberg, 1990). Employees conclude about the nature of their organization and superiors based on perceptions of fair treatment and which in turn impact work-related outcomes. Considering the ability of justice perceptions to distinguish between basic rule compliance and discretionary work behavior (Simons & Roberson, 2003), our study will consider the relatively unexplored role of justice perceptions in the knowledge contribution of distributed workgroups.

JUSTICE PERCEPTIONS AND CONTRIBUTION DISTINCTIONS

We extend from prior research (e.g. Ahuja et al., 2003; Brass et al., 2004) to propose that individual centrality within informal network structure impact the type of knowledge contributed (product and expertise). The literature surrounding the relationships between individual centrality, justice perceptions, and knowledge contribution remains undeveloped. Considering the ability of justice perceptions to explicate between different degrees of work performance, we further suggest that the justice perceptions (distributive, procedural, interpersonal and procedural) mediate the relationship between the individual centrality and knowledge contribution.

2.1. Individual Centrality and Knowledge Contribution Distinctions

An individual central in his/her advice network refers to the degree to which he/she is linked to others through giving or receiving work-related advice. Similarly, an individual central in his/her friendship network refers to the extent to which he/she is linked to others through reporting or receiving friendship. Individual centrality within the organization has been shown to influence a variety of outcomes including job satisfaction and performance in both conventional and distributed workgroups. For example, highly connected individuals have been positively associated with complex jobs and knowledge-intensive work performance (Mehra et al., 2001; Cross & Cummings, 2004).

Knowledge Contribution Distinctions. Of the information systems theories available in current literature, the exchange and expressive theory of information sharing as proposed by Constant et al. (1994) provide a close fit in our research model. Constant et al. (1994) categorized knowledge as "product" and "expertise". Employees see product knowledge as knowledge that is owned by the organization, such as project information, while expertise knowledge is unique to the individual, such as personal advice. The individual perceives personal ownership of expertise knowledge and thus individual perceptions guide contribution behavior whereas employees contribute product knowledge to fulfill minimum job expectations. These different attitudes associated with product and expertise knowledge contribution relate to justice perceptions through theories such as social exchange theory, equity theory, and group-value theory.

Advice Centrality. Compared to isolated individuals, individuals with high advice centrality through the ability to gain greater access to and control over resources, gaining influence (Burt, 1992) and quality information (Salancik & Pfeffer, 1978; Roberts & O'Reilly III, 1979; Ahuja et al., 2003). These individuals are cognitively aware of the organization, such as social norms (Rogers & Kincaid, 1981; Walker, 1985; Krackhardt, 1990), and knowledge sources (Wong, 2008). Individuals highly central to the communication and advice networks are associated with important work outcomes such as power (Burkhard & Brass, 1990; Brass & Burkhardt, 1993), cognition (Rice & Aydin, 1991), elevated status (Brass, 1984), and work performance (Ahuja et al., 2003).

We propose that individuals high in advice centrality are more inclined than others to participate in organization initiatives and contribute both product and expertise knowledge. Considering that such individuals may be overwhelmed by knowledge requests (Brass et al., 2004), they are likelier to contribute knowledge to a knowledge repository, reducing their workload.
Hypothesis 1a. Advice centrality is positively related to product knowledge contribution.

Hypothesis 1b. Advice centrality is positively related to expertise knowledge contribution.

Friendship Centrality. Friendship in the workplace allows employees to achieve greater work performance, status, and influence compared to acquaintances (Brass, 1984; Jehn & Shah, 1997; Klein et al., 2004; Mehra et al., 2006). Individuals high in friendship centrality are known to be agreeable, open, and approachable (Mehra et al., 2001; Klein et al., 2004), benefiting from being sensitive to the organizational culture, and greater access to resources and knowledge (Brass, 1984; Casciaro, 1998).

High centrality is not always associated with benefits. Individuals high in centrality may experience lower job satisfaction due to overwhelming requests for work resources (Brass, 1981). Considering that high friendship centrality may not lead to influence (Ibarra & Andrews, 1993), we argue that such individuals in friendship networks may not be in a position to reject requests for resources. Thus, individuals who are moderately central (neither highly central nor isolated) in the friendship network are likelier to attain greater job satisfaction and performance.

Hypothesis 2a. Moderate (neither high nor low) friendship centrality is positively related to product knowledge contribution.

Hypothesis 2b. Moderate (neither high nor low) friendship centrality is positively related to expertise knowledge contribution.

2.2. Justice Perceptions

Justice perceptions examine the perceived fairness of outcomes and processes (Skarlicki & Folger, 1997; Roberson, 2006; Choi, 2008). In our study, we find outcomes such as organization citizenship (Niehoff & Moorman, 1993; Lavelle et al., 2007), job satisfaction (Wesolowski & Mossholder, 1997), rule compliance, commitment and helping behavior (Colquitt et al., 2001) to be particularly important. There are four dimensions of justice: distributive, procedural, interpersonal, and informational justice perceptions (Colquitt, 2001).

Distributive Justice. Social exchange theory was introduced to evaluate fairness of outcomes as equity theory (Adams, 1965). In addition to equity theory, other means such as equality and need have been identified in the formation of distributive justice perception (Colquitt et al., 2001). Distributive justice perception has been identified with outcomes such as commitment (Aryee et al., 2002).

Procedural Justice. Fair process and the ability to voice one's opinions or arguments during the decision process (Lind & Tyler, 1988) represent the cornerstone of procedural justice (Folger & Cropanzano, 1998), and is associated with effects such as citizenship behavior (Pillai et al., 1999).

Interpersonal and Informational Justice. Interpersonal justice refers to the extent individuals are treated with dignity and respect by third parties executing processes, while informational justice considers the explanations used to arrive at processes and outcomes (Colquitt et al., 2001).

2.3. Justice Perceptions as a Mediator

In addition to the direct effects of individual advice and friendship centrality on product and expertise knowledge contribution, our model also proposed indirect effects through organizational justice perceptions.

Individual Centrality and Justice Perceptions. Given the individuals’ position and personality characteristics, they are also likely to be treated with respect and dignity. Thus, individuals high in advice centrality experience positive distributive, procedural, interpersonal and informational justice perceptions. With greater access to work-related resources and information (Casciaro, 1998) through peers, it is also likely for individuals with moderate friendship centrality to experience informational justice perceptions. As friendships endure across geographical constraints (Gupta et al., 2007), these individuals are able to exchange procedural and interactional justice information (Chia et al., 2006).

Product Knowledge Contribution. Existing studies have demonstrated that outcome favorability motivates general knowledge contribution behavior (Wasko & Faraj, 2005; Kankanahalli et al., 2005). With a fair view of the organization through work outcomes, individuals fulfill job obligations
through contributing product knowledge based on the norms of social exchange (Constant et al., 1994). Similarly, distributive justice perception draws upon social exchange and equity theories to influence work outcomes such as organizational commitment (Aryee et al., 2002), rule compliance (Kim & Mauborgne, 1998). Thus, we hypothesize that the following:

**Hypothesis 3a.** Distributive justice perception mediates the relationship between advice centrality and product knowledge sharing.

Like distributive justice perceptions, procedural, interpersonal and informational justice perceptions have been further associated with positive outcomes such as organizational commitment, citizenship behavior (Roch & Shanock, 2006; Chiaburu, 2007), as well as helping behavior and rule compliance (Colquitt, 2001).

**Hypothesis 3b-3c.** (b) Procedural, (c) Interpersonal, (d) Informational justice perceptions mediates the relationship between advice centrality and product knowledge contribution.

Building upon the premises established in the earlier sections we expect that while being less salient, moderate friendship centrality will take on similar outcome characteristics as advice centrality in terms of procedural, interpersonal and informational justice perceptions.

**Hypothesis 4a-4c.** (a) Procedural, (b) Interpersonal, (c) Informational justice perceptions mediates the relationship between advice centrality and expertise knowledge contribution.

**2.3.1. Expertise Knowledge Contribution**

Procedural justice perception influences voluntary behavior (Colquitt, 2001; Spitzmüller et al., 2006) and discretionary service behavior (Simons & Roberson, 2003). In the knowledge contribution context, we propose that instead of distributive justice perception, procedural justice perception enables individuals to contribute more than just basic work knowledge (Kim & Mauborgne, 1997). When individuals are filled with a sense of moral obligation to contribute to the public good, community interests take priority over narrow self-interests (Wasko & Faraj, 2000).

**Hypothesis 5a.** Procedural justice perception mediates the relationship between advice centrality and expertise knowledge contribution.

**Hypothesis 6a.** Procedural justice perception mediates the relationship between friendship centrality and expertise knowledge contribution.

Interpersonal and informational justice perceptions reinforce employee perceptions of decision-makers and the organization depending on how employees are treated when processes are executed (Colquitt, 2001; Roch & Shanock, 2006). Interpersonal justice was also found to achieve discretionary service behavior, albeit taking a path based on supervisor satisfaction (Simons & Roberson, 2003). Other studies confirm the effects employee treatment had over work behavior and commitment (Roch & Shanock, 2006; Jones, 2008).

**Hypothesis 5b.** Interpersonal justice perception mediates the relationship between advice centrality and expertise knowledge contribution.

**Hypothesis 6b.** Interpersonal justice perception mediates the relationship between friendship centrality and expertise knowledge contribution.

Informational justice perception has been largely been associated with the issue of trust through timely and accurate communication (Lavelle et al., 2007; Turel et al., 2008). These result in the manifestation of perceived organization support (Colquitt, 2001), service adoption (Turel et al., 2008) and most crucially, voluntary behavior (Ellis et al., 2009).

**Hypothesis 5c.** Informational justice perception mediates the relationship between advice centrality and expertise knowledge contribution.

**Hypothesis 6c.** Informational justice perception mediates the relationship between friendship centrality and expertise knowledge contribution.

**DATA AND METHOD**
3.1. Participants

The research was conducted within distributed workgroups in a global knowledge intensive organization with its headquarter in Germany. Our participants included team members from the IT division that supported the development and maintenance of a collaborative platform adopted by the organization. The IT division provided a good site for us to test our research model because of its accurate representation of the organization as well as its high degree of work collaboration and use of knowledge collaboration and contribution tools, such as wikis.

3.2. Procedures

We examined knowledge contribution in terms of the quantity and quality of contributions to the workgroup wikis. The wikis represent a relatively established platform adopted by the workgroups to collaborate across spatial and temporal boundaries. This was particularly applicable in the context of expertise knowledge contribution, which is dependent on the individual attitudes (Constant et al., 1994), representing a voluntary action on the part of the individual. This contrasts against direct requests for help that may influence helping behavior (Flynn & Lake, 2008).

3.3. Measurement

Eight variables were adapted from prior studies with the items reworded using the organization as the referent. Two variables were used to measure individual centrality, four variables were used for organizational justice perceptions and two variables were used for wiki knowledge contribution. As we were examining the effects of individual network structure and justice perceptions in our model, we used an individual level of measurement and analysis, including individual knowledge contribution.

**Individual Centrality.** Degree centrality refers to the number of direct referents to and from an individual. The more referents an individual have, the higher the centrality. We adopted the use of in-degree centrality as our study concerns the extent to which particular individuals are the objects of other workgroup members’ advice- and friendship-seeking ties (Mehra et al., 2006; Wong, 2008).

**3.3.1. Justice Perceptions**

Measures involving organizational justice perceptions were adapted from Colquitt (2001)'s factor-confirmation study on the four-factor justice model (distributive, procedural, interpersonal and informational). The items used in the measures were adapted to fit the nature and culture of the organization we were studying.

**Knowledge Contribution.** We requested workgroup members to report the type and frequency of product and expertise knowledge contribution. The types of knowledge contribution adapted from Cummings (2004) and Constant et al. (1994) based on interviews with respondents.

**Control Variables.** We included three other variables to eliminate alternative explanations for the effects of justice perceptions. We controlled for the effects arising from job status (e.g. manager vs. non-manager), as this has been shown to influence centrality (Ahuja et al., 2003), and in turn performance. We also controlled for tenure, associated with knowledge contribution in the form of generalized reciprocity (Wasko & Faraj, 2000). Finally, we controlled for the workgroup as the structure and leadership differences within workgroups has been shown to impact performance and knowledge contribution (Cummings & Cross, 2003; Cummings, 2004).

3.4. Research Sample

We designed and developed an intelligent online network survey tool, and administered this survey in the distributed workgroups of a global organization located across 6 countries. The average group size was 17. Due to attrition and non-participation, of the 44 workgroup members we approached, 34 returned the survey results giving us a response rate of 77 per cent. The average tenure of a workgroup member was 6 years and 12 per cent were of a higher status, such as team. In all workgroups, knowledge platform adopted as the knowledge contribution was the wiki.

3.5. Analytical Procedures
We used partial least squares (PLS), a multivariate regression-based technique that utilizes a components-based resampling strategy to estimate and assess structural models (Fornell & Bookstein, 1982; Wold & Jöreskog, 1982; Ahuja et al., 2003). With PLS analysis, we first assess the measurement model, followed by the structural model (Anderson & Gerbing, 1988). The procedures are detailed in the following sections.

RESULTS

4.1. Measurement Model Results

We ran confirmatory factor analysis to ensure that the survey items formed the six variables required before embarking creating single indicators (Masterson, 2001). A final clean set comprising of 14 items were obtained with consistent loadings. The indicators obtained from confirmatory factor analysis were tested for internal consistency (see Table 1). All variables for composite reliability and Cronbach's alphas exceeded 0.70, indicating reliability (Nunnally, 1979). Table 2 provides the discriminant validity results, with the means, standard deviations, reliabilities and intercorrelations.

<table>
<thead>
<tr>
<th></th>
<th>Number of Items</th>
<th>Average Variance</th>
<th>Composite Reliability</th>
<th>R Square</th>
<th>Cronbach's Alpha</th>
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<td>Distributive Justice</td>
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<td>0.99</td>
<td>0.99</td>
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<td>0.99</td>
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<tr>
<td>Expertise Knowledge</td>
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<td>0.83</td>
<td>0.91</td>
<td>0.96</td>
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<td>1.00</td>
<td>1.00</td>
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<td>1.00</td>
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<tr>
<td>Workgroup</td>
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<td>1.00</td>
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<tr>
<td>Informational Justice</td>
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<td>0.14</td>
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<td>0.97</td>
<td>0.17</td>
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<tr>
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<td>0.29</td>
<td>0.95</td>
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<tr>
<td>Product Knowledge</td>
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<td>0.95</td>
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<td>1.00</td>
<td>1.00</td>
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Table 1: Internal Consistency of the Constructs

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<th>Mean</th>
<th>S.D.</th>
<th>1</th>
<th>2</th>
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<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
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<td>1Distributive Justice</td>
<td>5.39</td>
<td>0.98</td>
<td><strong>1.00</strong></td>
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<tr>
<td>2Expertise Knowledge</td>
<td>1.86</td>
<td>0.69</td>
<td>0.25</td>
<td><strong>0.91</strong></td>
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<tr>
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<td>-</td>
<td>-</td>
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<td>-0.04</td>
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<tr>
<td>4Workgroup</td>
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<td>0.68</td>
<td>-0.37</td>
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<td>5Informational Justice</td>
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<td>0.75</td>
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<td>0.27</td>
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<td>6Interpersonal Justice</td>
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<td>-0.09</td>
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<td>0.38</td>
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<td>0.04</td>
<td><strong>0.98</strong></td>
<td></td>
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<tr>
<td>7Procedural Justice</td>
<td>5.49</td>
<td>0.99</td>
<td>0.63</td>
<td>0.29</td>
<td>-0.18</td>
<td>-0.21</td>
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<tr>
<td>8Product Knowledge</td>
<td>2.8</td>
<td>0.73</td>
<td>0.29</td>
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<tr>
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<tr>
<td>11Advice-Seeking Ties</td>
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<td>0.35</td>
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<td>0.54</td>
<td>0.75</td>
<td>0.06</td>
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</table>

Note. Bold diagonal items are the square root of the average variance extracted, and do not apply to single-item constructs.
### 4.2. Structural Modeling Results

The significance of the path coefficients is provided in Figure 1. Hypotheses 1 and 2 test the direct effects of individual centrality on knowledge contribution. Both advice and friendship centrality were significant to both product and expertise knowledge contribution in a positive direction.

Hypotheses 3, 4, 5, and 6 examined the mediating effects of justice perceptions between individual centrality and knowledge contribution. Overall, path coefficients between justice perceptions and knowledge contribution were significant. However, the test of the mediation model revealed no direct significant relationships between moderate friendship centrality to both product and expertise knowledge contribution, suggesting that justice perceptions fully mediate moderate friendship centrality and knowledge contribution.

As predicted, Hypotheses 3a-d and 5a-c were supported. However, advice centrality was positively related to distributive, procedural, and interpersonal justice perceptions, while negatively related to informational justice. The results seem to suggest that high advice centrality leads to positive distributive, interpersonal and especially procedural justice perceptions. In the context of advice centrality, we are able to draw out two distinct paths: high distributive justice perceptions influence product knowledge contribution, and high procedural justice perceptions strongly lead to expertise knowledge contribution.

Hypotheses 4a-c and 6a-c were partially supported. We were not able to find any significant relationships between moderate friendship centrality and procedural justice perception, and hence Hypotheses 4a and 6a were not supported. Moderate friendship centrality strongly predicted positive interpersonal and informational justice perceptions, supporting Hypotheses 4b-c and 6b-c.

In summary, we observe two main patterns emerging. Individuals high in advice centrality contribute product knowledge primarily through positive distributive justice perceptions, and contribute expertise knowledge through positive procedural justice perceptions. Individuals with moderate friendship centrality contribute both product and expertise knowledge through positive informational justice perceptions, with a greater likelihood of contribution expertise knowledge.

![Figure 1: Summary Model of Path Coefficients Results](image)

Note. \( p < 0.1; * p < 0.05; ** p < 0.01 \) at two-tail significance testing. Control variables are omitted for clarity.

**DISCUSSION**

The findings demonstrate support for the mediating effects of justice perceptions upon individual centrality and knowledge-contribution. Overall, we found distinct relationships between advice and friendship centrality toward product and expertise knowledge contribution.

High advice centrality seemed to allow individuals to experience greater amounts of distributive,
procedural and interpersonal justice perceptions. Of these three items, procedural justice perception was consistently the strongest. We find that our study subject was a highly mechanistic organization (i.e. hierarchical and governed by clear procedures), lending support to notion that mechanistic organizations as well as strong work formalization had the strongest influence over procedural justice perceptions (Ambrose & Schminke, 2003; Aryee, 2004). This findings further supports the hypothesis that for individuals high in advice centrality, greater access to work information, procedures and being of a higher status led to stronger perceptions of procedural justice.

In the context of advice centrality, the importance of procedural justice is evidenced by its influence over expertise knowledge sharing compared to all other types of justice perceptions. Individuals high in advice centrality also led to perceptions of distributive and interpersonal justice perceptions, although these did not lead to expertise knowledge sharing. The negative relationship between advice centrality and informational justice suggests that high-performance individuals do not necessarily experience greater trust in the workgroups. Considering that individual high in advice centrality are likelier to be greater self-monitors, this personality trait may lead to negative social relationships and lower informational justice (Sasovova, 2006).

The marginal support for positive distributive and informational justice perception, and the negative relationships of procedural and interpersonal justice perceptions seem to suggest that product knowledge sharing is not solely contingent upon positive justice perceptions. We also note the strong negative relationship between distributive justice perception and expertise knowledge sharing. These findings go against what we expected to find, that is positive justice perceptions leading to knowledge contribution. These anomalies may be explained through other theories such as social influence and social identity where workgroups experiencing collective injustice may still contribute knowledge in order to help each other. As we did not consider such behavioral explanations in our research model, this presents opportunities for future exploratory studies.

As we had expected, moderate friendship centrality did not predict distributive justice perception, although procedural justice perception was also not an indicator. This is likely due to the lower status and rank associated with high friendship centrality, and to an even lesser degree with moderate friendship centrality, leading to less power and influence over outcomes and procedures. Compared to advice centrality, moderate friendship centrality had greater significance upon informational and in particular interpersonal justice perception despite the low variances.

CONTRIBUTIONS

Of interest is the finding that the type of knowledge contributed seemed to hinge not only upon the relationships an individual possess but also through the justice perceptions that result. For high performance individuals with a greater number of ties, procedural justice matters the most in eliciting advice and expertise, while among friends it is far more important for the knowledge contributor to perceive a trustworthy environment to contribute both product and expertise knowledge. Future studies should explore the attitudinal mechanisms that lead to these distinct paths that lead to knowledge contribution.

The sample used for this study is limited by size and scope, and its overall generalizability to other workgroups and organizations. Findings such as the relationship between procedural justice and expertise knowledge sharing are strengthened through the corroboration by the conclusions from existing studies in other non-knowledge contribution contexts.

This study was also carried out in an active organizational setting and not a controlled laboratory experiment. Other factors besides the controls may affect the outcomes and interactions used in the research model such as workgroup restructuring or different emphasis on particular collaboration mediums. However, this research contributes findings comprising of actual perceptions and contribution patterns to existing justice literature, which often utilizes findings from experiments.

Regardless of these limitations, this study offers us new insights into the contribution behavior of distributed workgroups on knowledge collaboration platforms. We observed that while high advice centrality leads to performance in terms of knowledge contribution, it was moderate friendship
centrality and not high friendship centrality that mattered in knowledge contribution. Even though individuals with high friendship centrality also led to knowledge contribution, they do not perceive positive justice perceptions. The high degree of dissatisfaction may eventually lead to resentment and poor work performance. This may be contrasted against individuals with high advice centrality that is associated with more positive levels of justice perceptions, in particular procedural justice perceptions.

Decision makers may be inclined to allow for greater face-to-face communications to among distributed employees to build up their work relationships, allowing for more opportunities to contribute knowledge. Other managerial implications include proper treatment of employees, particularly those who are highly central within advice networks. Decision makers might find it tricky to handle individuals who are gradually attaining high friendship centrality and risk dissatisfaction. These highly central individuals may be rotated between different workgroups to reduce unnecessary communication.

In conclusion, these findings offer a new insight into the characteristics of informal structure, justice perceptions, and contribution behavior. As organizations increasingly rely on useful knowledge and adopts greater use of distributed workgroups, there is a greater need to understand the concepts and mechanisms underlying the interactional effects between informal structures, justice perceptions, and advance the literature on the individual contribution behavior.

References


