Knowledge sharing, shared leadership and innovative behaviour: a cross-level analysis

Rama Krishna Kishore Vandavasi and David C. McConville

Institute of Human Resource Management, National Sun Yat-sen University, Kaohsiung, Taiwan

Jin-Feng Uen

National Chiao Tung University, Taipei Campus, Taipei, Taiwan, and

Prasanthi Yepuru

Institute of Information Management, National Sun Yat-sen University, Kaohsiung, Taiwan

Abstract

Purpose – The purpose of this study is to investigate the effect of knowledge sharing among team members on the development of shared leadership and innovative behaviour.

Design/methodology/approach – Data were collected from 64 management teams and 427 individuals working in 26 different hotels in the hospitality industry in Taiwan.

Findings – The results show that knowledge sharing has both direct and indirect effects on the development of shared leadership and individual innovative behaviour.

Research limitations/implications – Results suggest that knowledge sharing supports the occurrence of shared leadership, leading to an increase in innovative behaviour. The authors infer from the findings that encouraging a culture of knowledge sharing can have a positive impact on the creativity of teams.

Originality/value – This study advances knowledge of shared leadership as a mediator using a multilevel approach to test antecedents of innovative behaviour in the Taiwan hotel industry.

Keywords Knowledge sharing, Shared leadership, Innovative behaviour

Paper type Research paper

Introduction

In recent decades, many firms have changed from formal administrative structures to team-based designs (Mathieu *et al.*, 2008). Consequently, there is a need to understand the capacity of individuals to function effectively in teams and share responsibilities. In the current knowledge-based economy, resources and competencies among organizations are critical factors for industries to remain competitive (Subramaniam and Youndt, 2005). In a fast-paced, customer-facing environment, such as the hotel industry, the role and importance of team work and knowledge are critical to success. In this study we focus on the hotel industry in Taiwan. It has been stated that "the government of Taiwan has always listed the tourism industry as one of the key industries" (Chen, 2018, p. 67), proactively promoted tourism

development policies in recent years (Wang *et al.*, 2017). Possibly as a consequence, Taiwan has seen a growth in the number of international tourist hotels (Chen *et al.*, 2018, p. 67). In their study (of Taiwanese hotels), Espino-Rodríguez *et al.* (2017, p. 17) observe that while Taiwan is a small island, "it plays a significant role in the global economy, as well as being the showcase and connection to the growing Asian market". The authors state that "the business and industrial development of Taiwan have made it an outpost in the prominent Asian and Chinese business environment" and "relevant Taiwan hotel industry research provides novel insights and reflections on the developing economy in Asia".

With regard to our area of focus, we contribute to a specific type of leadership literature to argue that, in contexts such as the hotel industry – where team work is paramount, effective knowledge sharing can lead to a particular type of leadership. While it may be assumed that leadership is performed by a single individual leader, Stogdill (1974) argues that more than one person can have an influential leadership role within a group. This, when it occurs, has been defined as shared leadership. Shared leadership has been described as a "dynamic, interactive influence procedure among individuals in groups for which the objective is to lead one another to the achievement of team or organizational goals, or both" (Pearce and Conger, 2003, p. 1). Muethel *et al.* (2012) explain that when shared leadership occurs, team members develop expectations of other team members and are likely to share tasks and show an interest in the progress of all aspects of a team project. Following our review of research literature, we propose that this will have a positive effect on the team's innovative behaviour.

The first objective of this study is to test the relationship between knowledge sharing and individual innovative behaviour. The second objective is to investigate the mediating effect of shared leadership on the relationship between knowledge sharing and individual innovative behaviour. To the author'(s) knowledge, this is the first study to use a multi-level approach to investigate relationships between "knowledge sharing" (at the team level), "shared leadership" (at the team level) and "innovative behavior" (at the individual level). Hierarchical linear modelling (HLM) is used to examine relationships between variables (see Figure 1).

Theoretical background

Knowledge sharing

Drawing on previous studies, Yu *et al.* (2013, p. 148) define knowledge sharing as occurring when "people who possess knowledge are willing to transfer their work experience, techniques, and opinions to others in a concrete manner and expect that others will practically apply such knowledge at work". According to Yu *et al.* (2013, p. 145), "when employees are
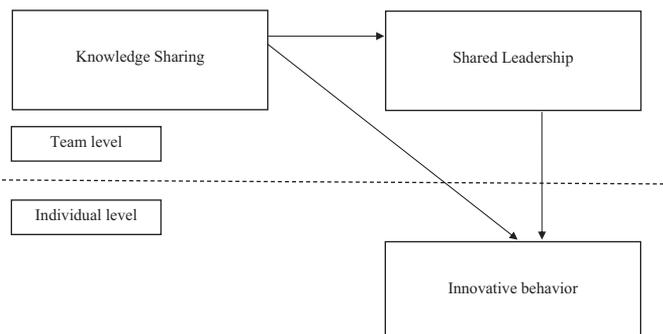

Figure 1.
Conceptual model: knowledge sharing, shared leadership and innovative behaviour

more involved in knowledge sharing, they internalize a greater amount of knowledge. Such conditions benefit innovative behaviour". Knowledge refers to an individual's ideas, facts and expertise (Bartol and Srivastava, 2002), and knowledge sharing involves providing knowledge to other employees (explicit and tacit knowledge). Explicit knowledge is defined as formulas and processes, and tacit knowledge is defined as sharing experiences and know-how to help others execute goals, cooperate with each other to solve problems and develop new ideas (Cummings, 2004).

Shared leadership
Shared leadership is defined as a "simultaneous, ongoing, mutual influence process within a team that is characterized by 'serial emergence' of official as well as unofficial leaders" (Pearce, 2004, p. 48). Shared leadership is conceptually different from rotated leadership. In rotated leadership (Erez *et al.*, 2002), it is mentioned that multiple leaders emerge depending on the task and who the team members feel is most appropriate to lead at that time. What both shared leadership and rotated leadership have in common is that during the project, there may not be one consistent leader. In other words, more than one person can lead. The difference is that in rotated leadership there is only one designed leader at a time. In shared leadership, leadership is constantly shared. Shared leadership has been described as an interactive influence process (Pearce and Conger 2003, p. 1), where leadership is shared among team members rather than focussing on a single individual (Carson *et al.*, 2007). Pearce and Conger (2003, p. 1) state that "This influence process often involves peer or lateral influence and. . . upward or downward hierarchical influence".

There is evidence to suggest that shared leadership has many organizational advantages. Furthermore, according to Pearce and Conger (2003), shared leadership minimizes the turnover or attrition rate of employees because ideas are maximized, bottlenecks are minimized and, in turn, the quality of the production improves and (in certain industries) production or processing times are reduced. However, there is a lack of empirical evidence exploring these links and the individual and contextual factors affecting these outcomes. Some studies have made an attempt to examine the conditions required for shared leadership to be effective. In other studies, it has been found that when age diversity is low, there are strong effects of shared leadership on team performance, and when age diversity is high, shared leadership is less likely to influence team performance (Hoch *et al.*, 2010). Overall, enhanced knowledge is needed to understand the prerequisites for a successful shared leadership environment. Currently, little is known about how individuals in shared leadership environments engage in open communication or transparency; how individual personality, values and culture may influence attitudes towards others in groups; or how constructive feedback can be provided in a way that is conducive to effective shared leadership.

Social network theory and social exchange theory have, in some studies, been used to explain the process of shared leadership (Muethel and Hoegl, 2011). According to Homans (1958, p. 606), in social exchange theory, "social behavior is not only an exchange of properties and materials but also of non-material ones, such as the symbols of approval or prestige". From a social exchange perspective, shared leadership involves appropriate exchanges of influence (Cox *et al.*, 2003).

Knowledge sharing and innovative behaviour
Knowledge sharing is the basic means through which employees can commonly exchange their knowledge and contribute to innovation (Wang and Noe, 2010). Knowledge sharing can transfer individual and team knowledge into organizational knowledge (Wang and Wang, 2012). Effective knowledge management can lead to a competitive advantage as organizations improve creativity, innovation and reputations, which, in turn, increases organizational profits (Wang and Noe, 2010). Knowledge management can be described as

the process of (1) knowledge acquisition, (2) organizing knowledge, (3) knowledge leverage, (4) knowledge sharing and (5) organizational memory (Nonaka and Takeuchi, 1995). In this study, we focus on knowledge sharing. In team knowledge sharing, members share their ideas, suggestions and information with one another (Srivastava *et al.*, 2006).

Van de Ven (1986) defined innovation as the process of generating and implementing fresh ideas. Individual innovative behaviour has been defined as "the intentional creation, introduction, and application of new ideas within a work role, group or organization, in order to benefit role performance, the group, or organization" (Janssen, 2004, p. 202). According to Janssen (2000), innovative behaviour consists of three different behaviours: (1) idea generation, (2) idea promotion and (3) idea realization. The first type of innovative behaviour is idea generation, defined as "free-flowing activity where applications, implications, and consequences are identified and then shaped through refinement into a new idea or set of ideas" (Mumford, 2000). Idea generation is a process by which new ideas in any field can be created (Amabile *et al.*, 1996). The second type of innovative behaviour is idea promotion, which is when an employee has created an idea and he/she needs to find sponsors, friends and funds required to analyse the idea (Janssen, 2004). The final type of innovative behaviour is idea realization, which indicates the development of sufficient information and time to execute new ideas (Young, 2012). In this study, we combine all three types of innovative behaviours into one, to hypothesize the following:

H1. Knowledge sharing is positively related to innovative behaviour.

Shared leadership as mediator
Shared leadership is an important resource for teams, which we argue will enhance team innovative behaviour (Hoch, 2013). Shared leadership has been described as a "team process where leadership is carried out by the team, rather than solely by a single designated individual" (Ensley *et al.*, 2006, p. 220). The main aspect of shared leadership at the team level is that team members can share their knowledge with other team members to build ideas (Hoch, 2013). Shared leadership is an important team property that can produce sharing behaviours that will affect multiple team members (Carson *et al.*, 2007). Shared leadership has been mentioned as a system of distributing plans and their execution that will result in performance (Morgeson *et al.*, 2010). When team members are motivated "to lead themselves and share influence with their peers in making decisions, solving problems, and identifying opportunities for the future, widespread creativity and innovation are encouraged" (Pearce and Manz, 2005, p. 136). Shared leadership is mainly considered as a team-based collective phenomenon, and most studies have explained shared leadership at the team level. It occurs when "multiple team members are likely to perform a particular leadership function" (Morgeson *et al.*, 2010, p. 30). Shared leadership is looked at as effective team functioning, information sharing and collaboration among team members (Mehra *et al.*, 2006).

Some empirical evidence has suggested that shared leadership is positively related to teams' level of innovative behaviour (Hoch, 2013). The main role of individual innovative behaviour is to develop ideas and individuals who "develop, carry, react to, and modify ideas" (Van Ven, 1986, p. 592). In this study, we test the relationship of team-level shared leadership as a mediator between knowledge sharing and individual innovative behaviour. This is the first study to discuss shared leadership with individual innovative behaviour and to use shared leadership as a mediator between team knowledge sharing and individual innovative behaviour. As proposed in hypothesis 2, we expect that shared leadership will lead to a higher level of innovation.

H2. Shared leadership mediates the relationship between knowledge sharing and innovative behaviour.

Methods

Sample and procedures

Data were collected from full-time employees employed in 26 hotels in the hospitality industry in Taiwan. Consenting supervisors and managers assisted in distributing questionnaires to employees, with a cover letter describing the purpose of the research and assuring participants that they could respond anonymously and would be unidentifiable. Completed questionnaires were returned to the researchers directly in a sealed envelope. Throughout the process, participation was voluntary.

A total of 500 questionnaires were distributed to employees and 450 were returned. Out of 450 returned questionnaires, 23 contained missing data and were therefore deleted. The valid response rate is relatively high at 85.4% (427/500) from 48 teams in 26 hotels in Taiwan. The non-response rate to the survey was random. In each team, the number of participants ranged from 3 to 11, with an average of 6.18. Of the 427 participants, 42% were male, and 58% were female. The age of employees ranged from 16 to 50 years with a mean of 26.15 years (SD = 7.10 years).

Measures. Originally the measures appeared in English. The measures were translated into Chinese by the co-authors, and a translated version of the measures was reviewed by two bilingual experts. This review was conducted continuously until there were no further mistakes in the translation. This process was intended to ensure the content validity of the measures (Krishna, and Ahluwalia, 2008). All sample items can be found in Appendix 1.

Innovative behaviour. To measure innovative behaviour, Janssen (2000) used Kanter's (1988) stages of innovation. We utilized Kanter's (1988) measures, including three items each for idea generation, idea promotion and idea realization. These were combined into a single variable of innovative behaviour. This was measured on a seven-point scale, ranging from 1 (never) to 7 (always). By combining all three items into a single variable of innovative behaviour, the Cronbach's alpha was 0.95.

Shared leadership. To measure shared leadership we use 18 items from Hoch *et al.* (2010) (e.g. "My team colleagues provide a clear vision of who and what our team is"). Survey participants were asked to provide their response using a five-point scale, ranging from 1 (strongly disagree) to 5 (strongly agree). The Cronbach alpha value for shared leadership was 0.91.

Knowledge sharing. We used the four-item scale developed by Lu and Liang (2006) to measure knowledge sharing (e.g. "In my daily work, we take the initiative to share work-related knowledge with my colleagues"). To measure knowledge sharing, we used a five-point scale to rate all the items, ranging from 1 (strongly disagree) to 5 (strongly agree). Cronbach's alpha for knowledge sharing was 0.95.

Cautions against common method bias. We used a self-report approach in this study, as used in a previous study of shared leadership (Serban and Roberts, 2016). Respondents rated the measures as the dependent variable (individual innovative behaviour) and the independent (knowledge sharing) and mediating (shared leadership) variables concurrently. We used statistical remedies to overcome common method bias, as recommended by Podsakoff *et al.* (2003). We also tested Harman's one-factor test to evaluate the extent of common method bias in these data. This shows that common method bias was not a serious issue in this study.

We also used a counterbalanced approach to measure the predictor and control variables, recommended in Podsakoff *et al.* (2003), to overcome common method bias. Similar to Serban and Roberts (2016) study on shared leadership, we also used a counterbalanced approach. Innovative behaviour was assessed first, knowledge sharing (independent variable) was assessed second and finally, the mediator shared leadership was assessed. We also used different scale formats and open-ended questions. The independent variable (knowledge sharing) and mediator (shared leadership) were both assessed at the team level and

innovative behaviour at the individual level. Because of their multi-level nature, examining the relationships among independent, dependent and mediating variables requires a cross-level study (Morgeson and Hofmann, 1999). Given that this is a multi-level study, we argue that there is a low probability of common method bias.

Data analysis. We used HLM to test our hypotheses (Raudenbush and Bryk, 2002). HLM version 6.02 with the restricted maximum likelihood (RML) approach was applied. We followed Hofmann and Gavin's (1998) recommendations, and for all the independent, dependent and mediator variables, we used grand-mean cantering.

Results

Validity of the measures

We have provided confirmatory factor analysis (CFA) results for the one-factor, two-factor and three-factor models in Table 1. When we tested a one-factor model, the model did not fit the data well (χ^2/df = 9.38, comparative fit index (CFI) = 0.58, RMSEA = 0.14). In the three-factor model, knowledge sharing, shared leadership and innovative behaviour were specified as three separate constructs. This three-factor model had a better fit (χ^2/df = 3.38, CFI = 0.87, RMSEA = 0.08) and was a significant improvement on the one-factor model. Analysis was conducted using modification indices.

Aggregation of the measures of shared leadership

To create the team-level measures of shared leadership, the participants from each team completed survey questions for shared leadership at the individual level. These were later aggregated at the team level (Chan, 1998). This approach uses the average of the individual-level measures to obtain the team-level measures. To do this, we followed James *et al.*'s (1993) approach in calculating the within-group agreement (r_{wg}) for knowledge sharing and shared leadership behaviours.

The r_{wg} values for the 64 teams were 0.87 for knowledge sharing and 0.95 for shared leadership. All the variables were greater than 0.70, which is within the acceptable range suggested by James *et al.* (1993). Bliese (2000) suggested intra-class correlations for the aggregated measures ICC (1) and ICC (2). ICC (1) measured the variance in the individual level and was aggregated at the team level, and ICC (2) measured the reliability of the team-level measures. The ICC (1) and ICC (2) values for knowledge sharing were 0.12 and 0.49, for shared leadership were 0.23 and 0.67. The results showed that the ICC (1) within-group agreement was reliable for knowledge sharing and shared leadership, and the ICC (2) values also show that the group-level assessment was reliable for knowledge sharing and shared leadership.

Correlation. The means, standard deviations and correlations for all the variables are shown in Table 2. Knowledge sharing is positively correlated to shared leadership ($r = 0.63$, $p < 0.01$).

Hypothesis testing. This study predicted that the hypothesis of knowledge sharing would be significantly related to shared leadership (both team-level) and innovative behaviour (individual-level). As seen in Table 3, the control variables were placed in Model 1 as the

Model	χ^2	df	χ^2/df	CFI	RMSEA
1. One-factor model	4071.13	434	9.38	0.58	0.14
2. Two-factor model	2956.60	433	6.82	0.71	0.12
3. Three-factor model	1439.29	425	3.38	0.87	0.08
Note(s): N = 427. CFI = comparative fit index; RMSEA = root-mean-square error of approximation					

Table 1.
Confirmatory factor analysis

baseline model. The results indicate that the effect of gender of employees on their innovative behaviour was not significant, and effect of age of employees on their innovation behaviour is significantly related. The results for Model 2 showed that knowledge sharing related significantly to innovative behaviour ($\gamma_{01} = 1.14$, $p < 0.001$). Therefore, H1 was supported which means that knowledge sharing directs employees to innovative behaviour. Second, the results for Model 3 revealed that shared leadership related significantly to innovative behaviour ($\gamma_{01} = 1.45$, $p < 0.001$). The effects of knowledge sharing on shared leadership were tested via ordinary least squares (OLS) estimation (Krull and MacKinnon, 2001). The regression analysis of knowledge sharing on shared leadership was significant and had a regression coefficient of 0.63 ($p < 0.001$).

To test the cross-level mediating effect, we employed the steps suggested by Baron and Kenny (1986) and Krull and MacKinnon (2001). We followed four conditions suggested by Baron and Kenny (1986). First, the relationship between the independent variable (e.g. knowledge sharing) and the dependent variable (innovative behaviour) should be significant. Second, the effect of the independent variable on the mediator (e.g. shared leadership) should be significant. Third, the mediator should influence the dependent variable. Lastly, when the mediator is entered into the regression model, the main effect between knowledge sharing and innovative behaviour is no longer significant. In Table 3, when shared leadership was included in Model 4, the effect of knowledge sharing on innovative behaviour vanished ($\gamma_{01} = 0.28$, $p > 0.05$). Therefore, knowledge sharing indirectly affected innovative behaviour via shared leadership (i.e. full mediating effect). Hence, H2 was supported.

Post hoc analysis. We tested our data to see whether age, gender and tenure had any impact as a moderator between knowledge sharing and innovative behaviour. We used step-wise multilevel modelling with random slopes and intercepts because this approach takes into

Variable	M	SD	1	2	3
Individual-level measures					
1. Gender[a]	1.57	0.49	–		
2. Age	26.06	7.06	−0.02	–	
3. Innovative behaviour	4.96	1.07	−0.03	0.16**	(0.95)
Team-level measures					
1. Knowledge sharing	4.00	0.31	(0.95)		
2. Shared leadership	4.04	0.33	0.63**	(0.91)	–

Note(s): For individual-level measures, $N = 427$; for team-level measures, $N = 64$. Numbers in parentheses are coefficient alphas. [a] Dummy coded variable: 0 = female; 1 = male. **$p < 0.01$

Table 2.
Means, standard deviations, coefficient, alphas and correlation among variables

	Innovative behaviour			
	Model 1	Model 2	Model 3	Model 4
Level 1				
Intercept	5.01***	5.00***	5.01***	5.01***
Gender	−0.08	−0.07	−0.08	−0.08
Age	0.01*	0.02*	0.01	0.01
Level 2				
Knowledge sharing		1.14***		0.28
Shared leadership			1.45***	1.28***

Note(s): *$p < 0.05$; ***$p < 0.001$

Table 3.
HLM results for the effects of shared leadership on innovative behaviour

account interdependence of both levels (Bryk and Raudenbush, 1992). We centred Level 2 knowledge sharing as the grand mean and Level 1 innovative behaviour as the grand mean. Level 1 (1) age (2) gender and (3) tenure were group-centred to test the moderating effect. Our results show that there is no moderating effect when using (1) age ($\gamma_{11} = -0.03$, $p > 0.05$), (2) gender ($\gamma_{11} = -0.33$, $p > 0.05$) and (3) tenure ($\gamma_{11} = -0.01$, $p > 0.05$) as moderator in the relationship between knowledge sharing and innovative behaviour. According to the results, we can say that age, gender and tenure did not have a moderating effect between knowledge sharing and innovative behaviour.

Discussion

Our results indicate that knowledge is an important factor for innovative behaviour (Kim and Lee, 2013) and knowledge sharing is related to innovative behaviour (Yu *et al.*, 2013). In this study we found that team knowledge sharing is positively related to individual innovative behaviour. We tested shared leadership as a mediator between knowledge sharing and innovative behaviour. We only examined the major effects based on our hypotheses including the age and gender as control variables. We also checked the moderating effects (i.e. potential heterogeneous effects based on age, gender, tenure and education) but did not find any moderating effect between knowledge sharing and innovative behaviour.

The results of this study suggest that knowledge sharing encourages employees to innovate, which implies that employees at the team level (knowledge sharing) are encouraged to be innovative. More specifically, employees with higher levels of knowledge sharing reported higher levels of innovative behaviour. This result implies that sharing knowledge among the employees who are predisposed towards learning and engage in behaviours that authorize them to learn helps them acquire new skills for innovation. These findings contrast those in Kang and Lee (2017), where it was found that knowledge sharing was not related to innovative behaviour. The findings build on a small number of published studies on shared leadership (Hoch *et al.*, 2010b) showing how relationships exist at both the individual and team levels. Our findings reiterate Hoch's (2013, p. 168) expectation, that "shared leadership may have a beneficial impact on team innovation" and "may lead to better quality of shared information leading to higher quality idea generation, subsequent promotion of new ideas among members". Our findings also reinforce and build on the findings of Hoch (2013) by demonstrating that shared leadership can impact individual-level innovative behaviour. Shared leadership becomes key to team goals and effectiveness by improving the use of decision-improving processes in teams (Pearce and Conger, 2003).

Practical implications

Important practical indications from this study are as follows: first, employees in teams are more inclined to be innovate when knowledge is shared and when shared leadership emerges. Employees in teams collaborate with their team members and display greater levels of innovative behaviour. Our findings suggest that managers need not designate individuals as leaders in team work where knowledge sharing is encouraged or likely to occur. Second, shared leadership at the team level improves creativity in individuals and pushes them to innovative. Managers are therefore advised from these findings to encourage and facilitate opportunities for teams to exchange and share knowledge. This, we argue, will be one helpful way to enhance employee levels of innovativeness.

Limitations and future research

Some limitations should be noted. First, we focussed on team and individuals in hotels in Taiwan; thus, our results may not be applicable to other teams or organizations. Future

research should attempt to collect data from virtual teams. Second, in future, data should be collected at different time intervals to overcome problems associated with common method variance. Third, cross-cultural studies may produce different results. For example, no known study has tested shared leadership and innovative behaviour in both collectivistic and individualistic cultural settings. Shared leadership may not produce the same results in cultures where the individualistic inclination is more dominant. It is also important to note that in this study we focus only on the hospitality industry in Taiwan. It is possible that the motives and consequences of knowledge sharing, shared leadership and innovative behaviour are heterogeneous across most organizations. A suggestion for future research is to test this idea and examine a more diverse sample including other industries. Finally, this study focusses on leadership and innovation. In future studies, researchers may wish to focus on other critical variables such as personality traits in addition to other control variables such as education, tenure, income level and personal trait to control the possible impacts.

References

Amabile, T.M., Conti, R., Coon, H., Lazenby, J. and Herron, M. (1996), "Assessing the work environment for creativity", *Academy of Management Journal*, Vol. 39 No. 5, pp. 1154-1184.

Baron, R.M. and Kenny, D.A. (1986), "The moderator–mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations", *Journal of Personality and Social Psychology*, Vol. 51 No. 6, p. 1173.

Bartol, K.M. and Srivastava, A. (2002), "Encouraging knowledge sharing: the role of organizational reward systems", *Journal of Leadership & Organizational Studies*, Vol. 9 No. 1, pp. 64-76.

Bliese, P.D. (2000), "Within-group agreement, non-independence, and reliability: implications for data aggregation and analysis", in Klein, K.J. and Kozlowski, S.W. (Eds), *Multilevel Theory, Research, and Methods in Organizations*, Wiley, San Francisco, pp. 349-381.

Bryk, A.S. and Raudenbush, S.W. (1992), *Hierarchical Models: Applications and Data Analysis Method*, Sage Publications, Newbury Park, CA.

Carson, J.B., Tesluk, P.E. and Marrone, J.A. (2007), "Shared leadership in teams: an investigation of antecedent conditions and performance", *Academy of Management Journal*, Vol. 50, pp. 1217-1234.

Chan, D. (1998), "Functional relations among constructs in the same content domain at different levels of analysis: a typology of composition models", *Journal of Applied Psychology*, Vol. 83 No. 2, p. 234.

Chen, J.L. (2018), "An empirical study of tourist hotels: difference analysis between international tourist hotel and standard tourist hotel in Taiwan", *International Journal of Business and Management*, Vol. 13 No. 3, pp. 67-74.

Cox, J.F., Pearce, C.L. and Perry, M.L. (2003), "Toward a model of shared leadership and distributed influence in the innovation process: how shared leadership can enhance new product development teach dynamics and effectiveness", in Pearce, C.L. and Conger, J.A. (Eds), *Shared Leadership: Reframing the Hows and Whys of Leadership*, Sage, Thousand Oaks, CA, pp. 48-76.

Cummings, J.N. (2004), "Work groups, structural diversity, and knowledge sharing in a global organization", *Management Science*, Vol. 50 No. 3, pp. 352-364.

Ensley, M.D., Hmieleski, K.M. and Pearce, C.L. (2006), "The importance of vertical and shared leadership within new venture top management teams: implications for the performance of startups", *The Leadership Quarterly*, Vol. 17 No. 3, pp. 217-231.

Erez, A., Lepine, J.A. and Elms, H. (2002), "Effects of rotated leadership and peer evaluation on the functioning and effectiveness of self-managed teams: a quasi-experiment", *Personnel Psychology*, Vol. 55 No. 4, pp. 929-948.

Espino-Rodríguez, T.F., Chun-Lai, P. and Gil-Padilla, A.M. (2017), "Does outsourcing moderate the effects of asset specificity on performance? An application in Taiwanese hotels", *Journal of Hospitality and Tourism Management*, Vol. 31, pp. 13-27.

Hoch, J.E., Welzel, L. and Pearce, C.L. (2010b), "The most effective team leadership is shared: the impact of shared leadership, diversity, and coordination on team performance", *Journal of Personnel Psychology*, Vol. 9, pp. 105-116.

Hoch, J.E. (2013), "Shared leadership and innovation: the role of vertical leadership and employee integrity", *Journal of Business and Psychology*, Vol. 28, pp. 159-174.

Hofmann, D.A. and Gavin, M.B. (1998), "Centering decisions in hierarchical linear models: implications for research in organizations", *Journal of Management*, Vol. 24 No. 5, pp. 623-641.

Homans, G.C. (1958), "Social behavior as exchange", *American Journal of Sociology*, Vol. 63 No. 6, pp. 597-606.

James, L.R., Demaree, R.G. and Wolf, G. (1993), "rwg: an assessment of within-group interrater agreement", *Journal of Applied Psychology*, Vol. 78 No. 2, p. 306.

Janssen, O. (2000), "Job demands, perceptions of effort-reward fairness and innovative work behaviour", *Journal of Occupational and Organizational Psychology*, Vol. 73, pp. 287-302.

Janssen, O. (2004), "How fairness perceptions make innovative behavior more or less stressful", *Journal of Organizational Behavior*, Vol. 25 No. 2, pp. 201-215.

Kang, M. and Lee, M.J. (2017), "Absorptive capacity, knowledge sharing, and innovative behaviour of R&D employees", *Technology Analysis and Strategic Management*, Vol. 29 No. 2, pp. 219-232.

Kanter, R. (1988), "When a thousand flowers bloom: structural, collective, and social conditions for innovation in organizations", in Staw, B.M. and Cummings, L.L. (Eds), *Research in Organizational Behavior*, Vol. 10, JAI Press, Greenwich, CT, pp. 169-211.

Kim, T.T. and Lee, G. (2013), "Hospitality employee knowledge-sharing behaviors in the relationship between goal orientations and service innovative behavior", *International Journal of Hospitality Management*, Vol. 34, pp. 324-337.

Krishna, A. and Ahluwalia, R. (2008), "Language choice in advertising to bilinguals: asymmetric effects for multinationals versus local firms", *Journal of Consumer Research*, Vol. 35 No. 4, pp. 692-705.

Krull, J.L. and MacKinnon, D.P. (2001), "Multilevel modeling of individual and group level mediated effects", *Multivariate Behavioral Research*, Vol. 36 No. 2, pp. 249-277.

Lu, L., Leung, K. and Koch, P.T. (2006), "Managerial knowledge sharing: the role of individual, interpersonal, and organizational factors", *Management and Organization Review*, Vol. 2 No. 1, pp. 15-41.

Mathieu, J., Maynard, M.T., Rapp, T. and Gilson, L. (2008), "Team effectiveness 1997-2007: a review of recent advancements and a glimpse into the future", *Journal of Management*, Vol. 34, pp. 410-476.

Mehra, A., Smith, B.R., Dixon, A.L. and Robertson, B. (2006), "Distributed leadership in teams: the network of leadership perceptions and team performance", *The Leadership Quarterly*, Vol. 17 No. 3, pp. 232-245.

Morgeson, F.P. and Hofmann, D.A. (1999), "The structure and function of collective constructs: implications for multilevel research and theory development", *Academy of Management Review*, Vol. 24 No. 2, pp. 249-265.

Morgeson, F.P., DeRue, D.S. and Karam, E.P. (2010), "Leadership in teams: a functional approach to understanding leadership structures and processes", *Journal of Management*, Vol. 36 No. 1, pp. 5-39.

Muethel, M. and Hoegl, M. (2011), "Shared leadership functions in geographically dispersed project teams", in *Project-Based Organizing and Strategic Management*, Emerald Group Publishing, pp. 289-321.

Mumford, M.D. (2000), "Managing creative people: strategies and tactics for innovation", *Human Resource Management Review*, Vol. 10 No. 3, pp. 313-351.

Nonaka, I. and Takeuchi, H. (1995), *The Knowledge-Creating Company: How Japanese Companies Create the Dynamics of Innovation*, Oxford University Press, New York.

Pearce, C.L. and Conger, J.A. (2003), *All Those Years Ago, Shared Leadership: Reframing the Hows and Whys of Leadership*, Sage, Thousand Oaks, CA, pp. 1-18.

Pearce, C.L. and Manz, C.C. (2005), "The new silver bullets of leadership: the importance of self- and shared leadership in knowledge work", *Organizational Dynamics*, Vol. 34 No. 2, pp. 130-140.

Pearce, C.L. (2004), "The future of leadership: combining vertical and shared leadership to transform knowledge work", *The Academy of Management Executive*, Vol. 18, pp. 47-57.

Podsakoff, P.M., MacKenzie, S.B., Lee, J.Y. and Podsakoff, N.P. (2003), "Common method biases in behavioral research: a critical review of the literature and recommended remedies", *Journal of Applied Psychology*, Vol. 88, p. 879.

Raudenbush, S.W. and Bryk, A.S. (2002), *Hierarchical Linear Models: Applications and Data Analysis Methods*, Sage, Thousand Oaks, CA, Vol. 1.

Serban, A. and Roberts, A.J. (2016), "Exploring antecedents and outcomes of shared leadership in a creative context: a mixed-methods approach", *The Leadership Quarterly*, Vol. 27 No. 2, pp. 181-199.

Srivastava, A., Bartol, K.M. and Locke, E.A. (2006), "Empowering leadership in management teams: effects on knowledge sharing, efficacy, and performance", *Academy of Management Journal*, Vol. 49 No. 6, pp. 1239-1251.

Stogdill, R.M. (1974), *Handbook of Leadership: A Survey of the Literature*, Free Press, New York.

Subramaniam, M. and Youndt, M.A. (2005), "The influence of intellectual capital on the types of innovative capabilities", *Academy of Management Journal*, Vol. 48 No. 3, pp. 450-463.

Van de Ven, A.H. (1986), "Central problems in the management of innovation", *Management Science*, Vol. 32, pp. 590-607.

Wang, S. and Noe, R.A. (2010), "Knowledge sharing: a review and directions for future research", *Human Resource Management Review*, Vol. 20 No. 2, pp. 115-131.

Wang, Z. and Wang, N. (2012), "Knowledge sharing, innovation and firm performance", *Expert Systems with Applications*, Vol. 39 No. 10, pp. 8899-8908.

Wang, I.A., Lee, B.W. and Wu, S.T. (2017), "The relationships among work-family conflict, turnover intention and organizational citizenship behavior in the hospitality industry of Taiwan", *International Journal of Manpower*, Vol. 38 No. 8, pp. 1130-1142.

Young, L.D. (2012), "How to promote innovative behavior at work? The role of justice and support within organizations", *Journal of Creative Behavior*, Vol. 46 No. 3, pp. 220-243.

Yu, C., Yu, T.F. and Yu, C.C. (2013), "Knowledge sharing, organizational climate, and innovative behavior: a cross-level analysis of effects", *Social Behavior and Personality: An International Journal*, Vol. 41 No. 1, pp. 143-156.

Appendix 1

Questionnaire items used to measure Knowledge sharing (Lu and Liang, 2006)

(1) In daily work, we take the initiative to share our work-related knowledge to our colleagues.

(2) We share with others useful work experience and know-how

(3) After learning new knowledge useful to work, we promote it to let more people learn it.

(4) In the workplace we show our knowledge so that we can share it with more people.

Questionnaire items used to measure shared leadership (Hoch *et al.*, 2010)

Transformational leadership

(1) My team colleagues provide a clear vision of whom and what our team is

(2) My team colleagues are driven by higher purposes or ideals

(3) My team colleagues show enthusiasm for my efforts

(4) My team colleagues encourage me to rethink ideas which had never been questioned before

(5) My team colleagues seek a broad range of perspectives when solving problems

(6) My team colleagues encourage me to go above and beyond what is normally expected of one (e.g. extra effort)"

Transactional leadership

(1) My team colleagues and I have clear agreements and stick to those when we work together

(2) If I perform well, my team colleagues will recommend more compensation

(3) My team colleagues give me positive feedback when I perform well

(4) My team colleagues give me special recognition when my work performance is especially good

Directive leadership

(1) My team colleagues decide on my performance goals together with me

(2) My team colleagues and I work together to decide what my performance goals should be

(3) My team colleagues and I sit down together and reach agreement on my performance goals

(4) My team colleagues work with me to develop my performance goals

Aversive leadership

(1) My team colleagues use a harsh tone towards me

(2) My team colleagues try to influence me through threats

(3) My team colleagues focus on my mistakes 18. My team colleagues are quick at leveling criticism against me

Questionnaire items used to measure Innovative behaviour (Janssen (2000))

Idea generation

(1) I create new ideas for difficult issues.

(2) I search out new working methods, techniques, or instruments

(3) I generate original solutions for problems

Idea promotion

(1) I mobilize support for innovative ideas in the organization

(2) I acquire approval for innovative ideas in the organization

(3) I make important organizational member's enthusiasm for innovative ideas

Idea realization

(1) I transform innovative ideas into useful applications

(2) I introduce innovative ideas into the work environment in a systematic way

(3) I evaluate the utility of innovative ideas in this organization

Corresponding author
Rama Krishna Kishore Vandavasi can be contacted at: vramakrishnakishore@gmail.com

Knowledge
sharing, shared
leadership

1233