The Impact of Shared Leadership on Open Innovation

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Abstract: **This study introduced leader exchange member theory and proposed that shared leadership predicts open innovation to address this gap. The researcher used voice behavior (team voice), moderate shared leadership, and open innovation association.**

The researcher used a case study research design and obtained information from Skol Brewery Limited (SBL) in Rwanda. Questionnaires were designed and administered to employees online. The paper used a correlation matrix and hierarchical regression to examine the direct and indirect effects.

The study indicated that shared leadership was significantly and positively related to team voice and open innovation. The interaction term (shared leadership-team voice) contributed an additional 22.7% of open innovation. Moreover, the study showed that shared leadership was positively and significantly related to open innovation at high team voice. In comparison, the association between shared leadership and open innovation is weak at low team voice.

Keywords: **Shared leadership; Team voice; Open innovation.**

I. INTRODUCTION

The traditional model that companies use to cope with industrial research and development (R&D) is over in most industries. However, that does not mean that internal origination itself has become obsolete. What organizations need is a new logic of innovation to substitute the rationality of the prior epoch (Alberti et al., 2017). One best approach is open innovation, which offers a diverse and new managerial paradigm. With an open innovation model, firms encourage workers to use external ideas as well as internal ideas. To accomplish this, companies are continuously searching for the correct elements to promote open innovation. For instance, countries like China, Germany, Canada have introduced talent visas and entrepreneurship visas to attract the best people and form a team or shared leadership to achieve open innovation concepts. Likewise, Delaware-based W.L Gore Associates is a 9000-employee firm that makes Gore-Tex, among other products. The company uses it, employees, collective knowledge to develop ideas and workflow. Also, giant companies like Huawei, Samsung, Coca-Cola persistently recruit international candidates to fill the open innovation hole.

Giusti et al. (2020) posited that shared leadership positively influences the way a company operates, while the individuals feel that they impact the organization. According to a Forbes survey, employees engaged in shared leadership or teams are 95% happy. Similarly, Wu et al. (2018) established that organizations with shared leadership have less conflict, more consensus, trust, cohesion, and innovative new ideas.

Given this background, it must be noted that innovations are crucial to organizations. Innovation at the individual and firm-level has been accorded greater attention, and it is time more focus is directed to teams with shared leadership. Studies into shared leadership are critically needed because "teams can be hotbeds of creativity and innovation" (Pirola-Merlo & Mann, 2004). Across the globe, multinational corporations are steadily facing today's complex, dynamic, and competitive business environments organizations by relying on shared leaders as their fundamental building blocks for achieving innovation and competitive advantage. Therefore, the report investigates the impact of shared leadership on open innovation among modern organizations. Also, the paper examines when team voice moderates the relationship between shared leadership and open innovation.

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II.   LITERATURE REVIEW

A. Shared leadership Style

Leadership is essential for every organization setting, and the type of leadership style adopted by managers is a vital variable having a significant impact on the success of an organization. It has been described as the position, personality, responsibility, and influence process, an instrument to achieve a goal, behaviors, and interaction. Most definitions have a common aim of directing a group towards a goal (Ozsahin & Sudak, 2015; Sun & Leithwood, 2017). Goffin and Mitchell (2016) define a leader as a person who can influence or command others. Tal and Gordon (2016) also define leadership as a process whereby leaders interact and influence their employees in fulfilling a common goal. Silva (2016) defines leadership as the process of controlling the activities of an organized group in efforts towards goal setting and goal achievement, and researchers consider this definition as accurate and concise.

Historically, leadership has been described as the influence exerted by a single person or group of people. Individuals, often the hierarchical superior over a group of subordinates (Bass, 1990; Yukl, 2006). Shared leadership (also known as distributed or collective leadership) is an attractive outlook for decentralized structures such as large departments (Müller et al., 2018; Wu et al., 2018). Bergman et al. (2012) revealed that "shared leadership occurs when two members or more engage in the leadership team to influence and direct fellowship members to maximise team effectiveness." As an influencing process, shared leadership is "multidirectional, dynamic, simultaneous and on-going" (Bergman et al., 2012). Shared leadership is also characterized by "serial emergence" (Peloza & Falkenberg, 2009), whereby two members or more interact with one another to become multiple leaders that influence a project team over its life (Denis et al., 2012). Morgeson et al. (2010) described Shared leadership as internal, informal team leadership and requires the delivery of leadership influence through dissimilar individuals (Carson et al. 2007). Conger and Pearce (2003) define shared leadership as "a dynamic, interactive inspire process between individuals in groups for which the objective is to chief one another to the attainment of group or organizational aims or both."

B. Open innovation

The Open Innovation (OI) process merges thoughts and knowledge internal and external to the firm to arrest worth from the outside. The business model built on this process establishes internal mechanisms to garner this value. Chesbrough et al. (2006) define Open Innovation as purposive arrivals and discharges of knowledge to hurry internal innovation and expand the markets for external use of innovation. Von-Hippel (2005) defines Open User Innovation (hereafter User Innovation) as innovation models where economically important innovations are built up by users and other agents who divide up the tasks and cost of innovation development and then freely reveal their results. Thus, he emphasizes the importance of users in the creation of value and its dissemination as free information. Researchers have defined innovation in organizations as a complex process that comprises at least two different stages: the generation of new and functional ideas (also known as "creativity") and their application in the association (Amabile 1996; Huelsheger et al. 2009; West, 1990). For the second stage, the two sets of idea promotion and idea realization have been identified. Different individuals can perform other behaviors at various team innovation processes concerning the overall team innovation process and its phases. Open innovation allows external thoughts to enter the firm's stream of innovation at any phase – external resources (e.g., theses, patents, etc.) receive the same importance as internal ideas. Similarly, interior ideas can be sent outside the firm's boundaries, mainly if they cannot be exploited inside. Chesbrough et al. underline the importance of using the term Open Innovation precisely. Chesbrough defines open as a flowing and direct conversation of knowledge from one entity to another. Open can also be referred to as free as in gratuitous; though, Open Innovation frequently exists with market transactions such as licensing fees.

 In the OI context, thoughts flow freely to and from an entity without interference. While the flow is unhindered, OI always involves several actors. One or more actors issue their research to one or more dissimilar actors, who engross it. The process may happen without the explicit partnership among these entities: an entity can mix, on its own, freely accessible resources to reach a solution. If the method involves connecting two entities going back and forth, they can explicitly cooperate (in a two-way coupled process). In other words, OI does not automatically imply explicit teamwork, cooperation, and co-creation – though if one company engrosses knowledge or ideas, another entity must have produced them.

C. Impact of shared leadership on open innovation

A recent meta-analysis (Huelsheger et al., 2009) abridged the research on team innovation antecedents. Huelsheger et al.'s (2009) meta-analysis point out the importance of team-level variables such as team unity, conflict, vision, and support for innovation as antecedents for innovation in teams. Precisely, Huelsheger et al. (2009) found a more substantial impact of process-related variables and behaviors, such as vision, duty orientation, and external communication, as antecedents of team innovation feebler effects from the effects of team composition and structure. Accordingly, we expect that shared leadership behaviors may be more important than the team composition when predicting team innovation concerning shared leadership.

Furthermore, in line with this, it has been shown that external team leaders can promote innovation, directly and indirectly, for example, by applying a climate that aids the development and is helpful, of new thoughts (Amabile et al., 2004; Edmondson, 1999; Choi & Chang, 2009; Hunter & Cushenbery, 2011) or by being indirectly supportive of those who implement new ideas with a focus on the organization, instead of their own separate goals. The first stage of the innovation process, creativity or idea generation, describes new ideas, techniques, or instruments as a constituent of innovation (Janssen, 2000; Kanter, 1988; Huelsheger et al., 2009).

In other words, if team members have varied knowledge and information and these will be shared, this will lead to a competitive benefit for the team and the complex task of innovation. Information sharing will be encouraged by a supportive social climate and collective goals (Morgeson et al., 2010). Below higher levels of shared leadership, team members are more likely to give ideas and make their sole information available to the other team members. This is beneficial for two motives. Foremost, as the team members sharing the lead will give their ideas, the team will possess more ideas and develop higher creativity and idea generation levels.

Additionally, as team members current information, the team members might also shape their thoughts. This may appear in informal internal leadership behaviors of planning and providing reply and sense-making and emerging problem solutions (Morgeson et al., 2010). When it derives to shared leadership, this will lead to higher stages of creativity and idea generation.

The second phase of the implementation of new ideas comprises idea promotion, which includes rallying support for innovative ideas and acquiring endorsement for those ideas within the organization, and idea realization, which consists in transforming creative ideas into practical applications, and developing the support necessary for the new concept (Janssen, 2000; Kanter, 1988; Scott and Bruce, 1994). Idea promotion has been connected to group processes as well (Huelsheger et al., 2009). Indeed, it might be through their stronger ties, team identification, and emphasis on the collective aim(s) (Kouzes & Posner, 2009) that team associates might be more likely to engage in developing each other (i.e., shared collaborative empowering and self-leadership; Pearce and Manz, 2005) and leading each other in attaining their collective aims. Therefore, shared and collective forms of team empowerment will likely inspire team innovation (Spreitzer et al., 1999).

D. Summary of literature

Teams or organizations with shared leadership have less conflict, more consensus, more trust, and more cohesion than groups that share leadership. Shared leadership encourages transparency, provides a safe environment, and supports autonomy, thereby promoting open innovation in the organization. Theoretically, shared leadership is supported by leader exchange members and path-goal theory. In general, the study highlights the importance of shared leadership in team functioning and its relation to team results. Together, the results underline the value of devoting additional research attention to shared leadership, antecedents and consequences of shared leadership, and the indirect role shared leadership plays in contributing to important organizational outcomes such as innovative behavior.

III. METHODOLOGY

A. Conceptual Framework

The leadership style used by SBL company is shared leadership. Thus small teams or groups are formed where leaders are often rotated. Sometimes leaders are appointed for a maximum of six to twelve months. The leaders focus on identifying and nurturing each member of their team's skills and finding strategies to help them work better together. Leaders adopt an inclusive, leading style and are open to each member for opinions. Emphatically, they want to encourage individual employees' growth and success; build teams where each employee has an expertise/ skill in something different (Ye et al.,

2019). In the long run, the leaders focus on creating solid teams that can communicate well and embrace each other's talents to get work done. They also encourage team members to expand on their strengths/ knowledge by learning new skills from other teammates. Based on this observation, the study wants to establish the impact of the shared leadership style on open innovation. This is because some scholars have demonstrated that an available leadership type has contributed to innovation and good performance in the organization. The paper represented the conceptual ideas in figure 1
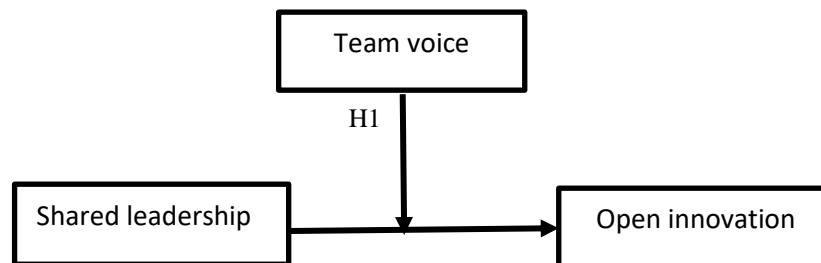

Fig 1: Research model

B. Shared leadership and open innovation

Shared leaders recognize and respect individual differences between team members, invite team members to express their opinions and concerns, listen sincerely to team members' ideas and suggestions, and encourage team members to try different approaches without worrying that they might be criticized and punished (Carmeli et al., 2010; Hollander, 2009). By doing so, inclusive leadership ensures that all team members feel recognized and appreciated in their uniqueness and differences (Hollander, 2009).

Some scholars have established that in comparison to other leadership styles, shared leader behavior of openness sends the strongest signal that different and alternate ideas are welcome (Detert & Burris, 2007). Team members are more likely to develop creative ideas and engage in innovative activities. This is important for provoking team members to generate creative solutions and can, thus, lead teams to perform innovatively (Carmeli et al., 2010). Based on this, the researcher proposed that;

H1: Shared leadership is positively associated with open innovation.

C. The moderating role of team voice

Personality trait research proposed that there are two inherent characteristics of voice behavior. They are discretionary and potentially risky (Ye et al., 2019). Moreover, two core beliefs are underlying whether to adopt discretionarily or potentially risk voice behavior type. Discretionary voice behavior is safe. It is believed that one voice will be heard and valued (Detert & Burris, 2007; Morrison, 2011). In this regard, by emphasizing openness, accessibility, and availability in their interactions with followers, shared leadership is likely to affect both of these core beliefs in a manner that would facilitate a high level of team voice (Ye et al., 2019).

Additionally, shared leaders who are open to their subordinates' ideas and suggestions and encouraging them to express their opinions are likely to develop a safe environment that can ensure team members that negative consequences such as punishment or blame will not result from their challenging behavior or potentially risk voice behavior (Detert & Burris, 2007; Edmondson, 2003). Based on this, members' concerns about the potential costs and risks of voice behavior make them feel free to offer their opinions and ideas for open innovation (Detert & Burris, 2007; Edmondson, 2003). The paper, therefore, posits that; *H2: Team voice moderates the relationship between shared leadership and open innovation, such that the association is stronger under high team voice and weaker under low team voice.*

D. Measure of variables

A five-point Likert scale was used for overall study measures, with one representing strongly disagree and five meaning strongly agree. All measures used were adapted from the existing literature and were already found with good reliability and validity levels, given that all of the steps have initially been developed in the English Language. Table I presents variables (shared leadership, team voice, and open innovation) and their sources. It must be noted that some original items were reframed to suit the current study.

TABLE I: MEASUREMENT OF VARIABLES

Variable	Sample items	Source (s)
Shared leadership	We regularly collaborate among coworkers to achieve goals We all share the same vision with agreed-upon goals I Have no difficulties taking on leadership responsibilities in the company	Brussow, J.A. (2013).
Team voice	Employees in my team speak up in the group with ideas for new projects or changes in procedures. Employees in my team speak up and encourage others in this team to get involved in issues that affect the team. Employees in my team speak up in the group with ideas for new projects or changes in procedures.	(Walumbwa et al., 2012; Ye et al., 2019)
Open innovation	My leader allows me to scan the external environment for inputs such as technology, information, ideas, knowledge, My leader actively seeks out external sources of knowledge and technology (e.g., research groups, universities, suppliers, customers, competitors, etc.) when developing new products. My leader allows members to transform innovative ideas into useful applications.	(Lichtenthaler, 2009; Sisodiya, 2008; Naqshbandi and Tabche, 2018)
Control variables	Education Gender	Ye et al. 2019

E. Data Collection Procedure

The researcher purposively targeted the team employees of Skol Brewery Limited (SBL) in Rwanda. The company produces beer drinks. The company has over five hundred employees who work mostly in teams with more than 1500 indirect distributors and over 3500 bars. The employees work team shifts for a maximum of eight hours a day. SBL is committed to win and win as a team. The survey focused on the teams and mostly supervisors who have ever undertaken the team or coaching leadership for the research purpose. Given this, a hundred and eight (108) participated in the survey.

F. Data collection instrument

A questionnaire was used to gather raw data from the staff of the company. Due to Covid-19 restrictions on movement and personal interactions, the researcher opted for online questionnaire administration. The questions were close-ended type, designed based on the research objectives to seek information. The researcher used a mini-program called "Google Forms" to design the questionnaires. The questions were fill in the app with due diligence. In other ensure the high reliability and validity of the data, the following settings were done. (1) the app was set to anonymous, (2) respondents' answers were strictly private, (3) responses cannot be resubmitted once submitted, and (4) all questions were mandatory; therefore, a complete set of data were obtained in every submission. The researcher sought permission from the management of SBL. The link to the questionnaire was then shared with the manager, who posted in WhatsApp groups of the teams and supervisors.

IV. RESULTS

A. Demographic Characteristic

The study illustrates the biodata of all the respondents in table II. Among the respondents' background information includes gender, age, education, and position.

The study shows that 76 of the respondents, representing 70.4 are males, and 32 of the respondents, representing 29.6%, are females. This indicates that more males participated in the study. With the respondents' age category, 45 of the total respondents, 41.7%, are from 21 to 30 years. This is the highest age group among the respondents. This is followed by those aged 31-40 years, which is 35 (32.4%). Those with age below 20 years is (5) 4.6%, which is the least. Those with more than 50 years are 6.5%, whereas 41-50 years formed (16) 14.8%. Education is an essential factor in the recruitment process into the company. The study revealed that (47) 43.5% of the participants have a degree or university qualification, whereas (16) 14.8% of the remaining have a diploma or high school certificate. Also, (30) 27.8% of respondents have a postgraduate degree.

TABLE II: RESPONDENTS BIO-DATA

Bio-data items	Frequency	Percent
Gender		
Male	76	70.4
Female	32	29.6
Total	108	100.0
Age		
below 20 years	5	4.6
21-30 years	45	41.7
31-40 years	35	32.4
41-50 years	16	14.8
above 50 years	7	6.5
Total	108	100.0
Education		
high school	16	14.8
college / university	47	43.5
Postgraduate	30	27.8
No formal education	15	13.9
Total	108	100.0

B. Reliability and validity statistics of the data

Table III illustrates the reliability statistics using Cronbach's Alpha, mean, standard deviation, and the number of items in each category. "Internal consistency reliability is used for multi-item measures. Internal consistency reliability is typically measured by a statistic known as Cronbach's alpha coefficient" (Cortina, 1993). An alpha coefficient greater than 0.70 is acceptable. This study revealed that open innovation ($\alpha=0.89$, N=4), shared leadership ($\alpha=0.93$, N=5), and team voice ($\alpha=0.88$, N=4). Moreover, all the variables have a reliability coefficient higher than 0.7. The aforementioned statistics revealed that the data are reliable for further analysis and conclusion.

TABLE III: RELIABILITY AND VALIDITY STATISTICS

Variables	Mean	Std. Deviation	N	Cronbach's Alpha
Gender	1.2963	.45875	108	
Education	2.4074	.90726	108	
Shared leadership	18.0093	3.63908	108	.926
Team voice	15.3611	3.19596	108	.878
Open innovation	18.4722	3.96352	108	.886

Also, the researcher used KMO and Bartlett test to check the validity of the sample size, in table IV. The study found that individual responses used for the analysis are significant. The sample adequacy is greater than 0.5 (.803, $p<0.05$)

TABLE IV: VALIDITY TEST

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.803
Bartlett's Test of Sphericity	Approx. Chi-Square	1684.235
	Df	45
	Sig.	.000

C. Direct effects

Before testing for the indirect effects of the independent variables, moderators, and dependent variables, a correlation matrix was first conducted to determine the directional relationship between the variables. Using SPSS, all the variables were entered, two-tailed significance correlation was used to flag the significant values. As presented in Table V, shared leadership was significantly and positively related to team voice (R= 0.432, p < 0.01) and open innovation (R= 0.509, p < 0.01). Furthermore, team voice was positively related and significant to open innovation (R= 0.664, p < 0.01).

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TABLE V: CORRELATIONS MATRIX OF THE STUDY VARIABLES

Variables	1	2	3	4	5
Shared leadership	1				
Open innovation	.509**	1			
Team voice	.432**	.664**	1		
Education	.109	.193*	.171	1	
Gender	-.002	-.026	-.055	.044	1

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

D. Indirect effects

Table VI displays the regression results of the study. A three-step model was tested using the entered method. In step 1, the control variables (education and gender) were tested on the dependent variable.

In step 2, the independent factor (shared leadership) was added to the model. Moreover, in step 3, the moderator variable (team voice) was entered. Each case diligently observed and recorded the R-Squared change, F statistics, correlation, and significant level. The coefficient, t-value, and p-value were duly observed as the model entered from 1 to 3.

First, the regression analysis results presented in step 2 supported H1 by showing that shared leadership was significantly related to open innovation (Step 2: β 0.538, $p < 0.05$). The R^2 is 0.258, which means the dependent variable is explained by 25.8% of the predictor.

TABLE VI: MODERATION ANALYSIS BY TEAM VOICE

Variables	Team voice		
	Step 1	Step2	Step 3
Control variables			
Gender	-.301	-.273	.001
Education	.849**	.613	.314
Main variables			
Shared leadership		.538**	.294**
Team voice		.278**	.478**
Interaction term			.663**
R	.196[a]	.528[b]	.712[c]
R^2	038	.258	.487
F	2.098	13.424**	26.400**
ΔR^2	.038	34.729**	.227**

NB: *$p < 0.05$, **$p < 0.01$; N = 108; Dependent Variable: open innovation; interaction term (shared leadership and team voice)

Furthermore, the researcher performed several tests before conducting the moderation effect on the shared leadership-open innovation relationship. The paper followed Preacher and Hayes's (2008) suggestion by examining the direct effects first. Secondly, a bootstrap is performed. Based on these regression estimates, the researcher used bootstrapping to evaluate the statistical significance of shared leadership's indirect effect on open innovation through team voice (Preacher & Hayes, 2008). According to the bootstrapping result, the indirect effect of shared leadership open innovation via team voice was estimated to be 0.663 with the 95% bias-corrected confidence interval of 0.472 and 0.854. The indirect effect was statistically significant because the confidence interval did not contain zero, providing additional evidence to support H2. Given enough evidence to test the moderation role of team voice, step 3 of table VI indicated that the interaction term was statistically significant. (Step 3: $\beta= 0.663$, $p < 0.05$). The R^2 is 0.487, which means the dependent variable is explained by 48.7% of the predictor. Moreover, the study observed that the interaction term explained an additional 22.7% of the open innovation.

The researcher then employed Hayes's (2012) procedure to plot the significant interaction effects pattern using the below and above mean method. Consistent with the research hypothesis (+H2, -H3), figure 2 showed that shared leadership was positively and significantly related to open innovation at high team voice. In contrast, the association between shared leadership and open innovation is weak at low team voice. This means that H2 was supported.
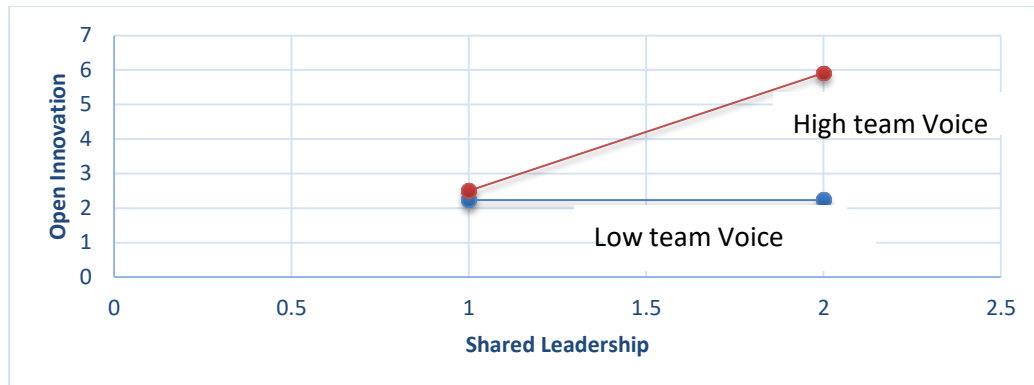

Fig 2: low and high team voice

V. CONCLUSION

This study underwrites the open innovation literature in two ways. First, this study advances our knowledge about the antecedents of open innovation by demonstrating the uniqueness of shared leadership in promoting open innovation. However, both the creation and leadership literature have identified the value of understanding the relationship between leadership and open innovation (Han et al., 2016; Zacher & Rosing, 2015). By focusing on shared leadership, this study represents a significant departure from the extant literature. It provides a deeper understanding of the specific leadership style that is effective to stimulate team innovation.

Second, by revealing the moderating role of team voice, this study highlighted the importance of team processes explaining how shared leadership affects open innovation. Although the existing literature has recognized several team processes that can provide valuable frameworks for understanding team innovation (Hülsheger et al., 2009; Tang & Naumann, 2016), the specific strategies that leaders can use to foster team innovation are ignored mainly (Jiang & Chen, 2018; Kearney & Gebert, 2009). Therefore, by incorporating and theorizing team voice as an underlying team-level mechanism that links shared leadership and open innovation, this study provides support for Hülsheger and colleagues' argument that "team process variables display substantial and generalizable relationships with innovation" and complements Kearney and Gebert's work on the contributions of integrative processes to team performance.

This paper recommends that SBL encourage shared leadership among teams or groups because this paper found a positive relationship between shared leadership and open innovation. Management should regulate the tolerance of members' voices thus ideas during shared leadership. Leaders should be more open, collaborative, and willing to accommodate all views.

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