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EMPIRICAL ARTICLE

Team innovation in retail services: the role of ambidextrous leadership and team learning

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Abstract

Drawing upon the ambidextrous leadership theory for innovation, this study investigates the role of opening and closing leadership behaviors in both exploratory and exploitative learning in teams, and subsequently, in team innovation in the context of retail services. Results based on a survey data set collected from 296 team leaders in retail services in two major cities in Vietnam show that opening leadership behavior positively affects team exploratory learning and closing leadership behavior underlies team exploitative learning. Further, the interaction between opening and closing leadership behaviors positively affects both team exploratory and exploitative learning. Finally, these two types of team learning enhance team innovation. Our findings extend the existing literature on ambidextrous leadership, learning, and innovation to the team level in a transitioning economy and suggest possible ways for team leaders to enhance team innovation performance.

Keywords Ambidextrous leadership · Team exploratory learning · Team exploitative learning · Team innovation · Vietnam

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1 Introduction

Understanding how teams innovate is critical for the survival and growth of contemporary organizations. The importance of this issue has driven a continuing interest in the subject of team innovation by academic researchers and practitioners alike (West and Farr 1990; Hülsheger et al. 2009; Anderson et al. 2014; van Knippenberg 2017; Hughes et al. 2018). The breadth of research in this area is indicated by the diversity of topics including team structure, team composition, team climate, team processes, and team knowledge integration to team leadership (Anderson et al. 2014; van Knippenberg 2017). In recent years, research on team innovation has shifted its focus to the team leadership approach to innovation, specifically ambidextrous leadership (Rosing et al. 2011; Anderson et al. 2014; Zacher and Rosing 2015; van Knippenberg 2017).

Ambidextrous leadership can be defined as "the ability to foster both explorative and exploitative behaviors in followers by increasing or reducing variance in their behavior and flexibly switching between those behaviors" (Rosing et al. 2011, p. 957). Prior studies that link ambidextrous leadership behaviors to innovation have shown a variety of mediating mechanisms including employee exploration and exploitation behaviors, when analyzed at the individual level (Zacher et al. 2016). At the team level, various researchers have empirically explored how differences in team performance can be explained by team leadership, team learning, and team psychological safety with some attempt to explain team innovation by way of team social processes and leadership (Hülsheger et al. 2009; Anderson et al. 2014; van Knippenberg 2017). For example, Edmondson (1999) investigated the effect of team learning behavior on team performance. Kostopoulos and Bozionelos (2011) investigated the role of team exploratory and exploitative learning on team performance. Zacher and Rosing (2015) examined the relationship between the interaction between opening and closing leadership behaviors and team innovation. To the best of our knowledge, research on the role of ambidextrous leadership in team learning and team innovation, not only in transitioning economies like Vietnam but also in advanced economies, has largely been ignored. In addition, a new trend in the retail service industry is to shift its focus on building long-term customer relationships instead of short-term sales. Retail service teams may be able to go out of their way to enhance their service quality such as providing individualized attention to their customers, thus, opening opportunities for team innovation (Subramony and Pugh 2015).

Accordingly, this study, employing the ambidexterity theory of leadership for innovation (Rosing et al. 2011), investigates the impact of ambidextrous leadership by team leaders on both team exploratory and exploitative learning and, subsequently, on team innovation in the retail service industry. The results, based on an analysis of survey data collected from a sample of 296 team leaders in retail services in Vietnam, confirm the relationships between team leadership, team learning, and team innovation. Such findings contribute to the literature on team innovation by shedding light on new facilitators of team innovation, that is, team exploratory and exploitative learning. The study findings also provide further

empirical evidence for the predictive power of the ambidexterity theory of leadership in explaining team innovation in a transitioning economy. The remainder of the paper presents the theoretical background and hypotheses, research method, data analysis and results, discussion and implications, and conclusions together with limitations and directions for future research.

2 Theoretical background and hypotheses

2.1 Theoretical background

The role of leadership in innovation has been investigated by a number of researchers during the past several years (Eisenbeiss et al. 2008; Hoch 2013; Hughes et al. 2018). At the team level, prior research has also confirmed the relationship between leadership styles and team innovation. Regarding the leadership–innovation relationship, among various leadership styles (such as ambidextrous leadership, authentic leadership, transformational leadership, transactional leadership), the ambidextrous leadership style has received less attention. Table 1 summarizes some key empirical studies on the relationship between leadership styles and innovation at the team level.

The theory of ambidextrous leadership for innovation posits that opening and closing behaviors of team leaders and the interaction between them are determinants of team innovation (Rosing et al. 2011). Opening leadership behaviors reflect "a set of leader behaviors that includes encouraging doing things differently and experimenting, giving room for independent thinking and acting, and supporting attempts to challenge established approaches" (Rosing et al. 2011, p. 967), thus fostering exploration activities. Closing leadership behaviors refer to a set of leader behaviors to reduce the variation in team members' behaviors, including "taking corrective action, setting specific guidelines, and monitoring goal achievement" (Rosing et al. 2011, p. 967), thus fostering exploitation activities. The ambidextrous leadership theory has been widely applied in business research during the past few years. For example, Zacher and Rosing (2015) employed the ambidextrous leadership theory to study team innovation in the context of the architecture industry and found that closing leadership behavior did not have a significant effect on team innovation while opening leadership behavior and the interaction between closing and opening leadership behaviors were positively related to team innovation. Zacher et al. (2016) applied the ambidextrous leadership theory to study how the interaction between exploration and exploitation behaviors influences employee innovation performance. The findings from this study reflected that leader opening and closing behaviors were positively related to employee exploration and exploitation behaviors, respectively. Employee exploration and exploitation behaviors and the interaction between them were, in turn, positively related to employees' self-reported innovative performance.

The ambidextrous leadership theory deals with direct and frequent interactions between team leaders and team members (Rosing et al. 2011). In the present study, team leaders in retail service stores are argued to have the ability to

Table 1 A summary of empirical studies on the relationship between leadership styles and team innovation

Authors	Sample	Main findings
Černe et al. (2013)	Twenty-three team leaders and 289 team members of a Slovenian manufacturing and processing firm in Slovenia	Perceived authentic leadership was positively related to team innovation, but self-ascribed authentic leadership was not
Chen et al. (2013)	Ninety-five research and development team (R&D) leaders and 428 team members of 33 firms from various industries in China	Transformational leadership was positively related to support for innovation climate, but was not significantly related to team innovation. Support for innovation climate was positively related to team innovation
Eisenbeiss et al. (2008)	Thirty-three R&D team leaders and 188 team members of one research institute and four international R&D companies engaged in the automotive, semiconductor, packaging, and scientific instruments industries (country was not reported)	Transformational leadership was positively related to support for innovation, which in turn interacted with climate for excellence to enhance team innovation
Hoch (2013)	Forty-three team leaders and 184 team members of 43 teams in the fields of product development and training in two different companies (country was not reported)	Shared leadership and vertical transformational and empowering leadership were positively related to team innovative behavior
Jiang and Chen (2018)	Sample 1: 44 teams in a biopharmaceutical firm in China Sample 2: 76 teams (76 team leaders and 414 team members) in 29 companies from various industries in China	An integrative mechanism (i.e., cooperative norms within-team knowledge sharing) mediated the influence of transformational leadership on team innovative performance
Liu et al. (2011)	Eighty-five team leaders and 450 team members of eight organizations from various fields in China	The interaction between transactional leadership and emotional labor negatively affected team innovativeness
Liu and Phillips (2011)	Fifty-two team leaders and 301 team members of 52 firms from various industries in Taiwan	Team knowledge sharing intention fully mediated the impact of transformational leadership climate on team innovation
Mitchell and Boyle (2019)	Sixty team leaders and 280 team members in the healthcare industry in United Kingdom	Inspirational leadership only had a positive impact on team innovation through positive mood when professional salience was high and had no impact on team innovation through positive mood when professional salience was low
Ye et al. (2019)	Sample 1: 41 team leaders and 163 team members in the fields of medical devices and banking in China Sample 2: 66 team leaders and 406 team members in the field of software development in China	Inclusive leadership was positively related to team innovation. The interaction between inclusive leadership and performance pressure was positively related to team innovation via team voice. Team voice fully mediated the impact of inclusive leadership on team innovation

Table 1 (continued)

Authors	Sample	Main findings
Yoshida et al. (2014)	One hundred and fifty-four team leaders and 425 team members in the fields of finance, heavy manufacturing, and telecommunications in Indonesia and China	Prototypicality fully mediated the impact of servant leadership on team innovation
Zacher and Rosing (2015)	Thirty-three team leaders and 90 team members in the fields of architectural and interior design firms in Australia	Closing leadership behavior did not have a significant effect on team innovation while opening leadership behavior and the interaction between closing and opening leadership behavior were positively related to team innovation

perform two complementary leadership behaviors—opening and closing. Thus, team leaders in retail service stores are likely to enhance innovation among members in their stores. They not only play a role as frontline service employees as they interact with customers, but also are in a position to motivate team members to contribute to the store's goal-setting based on their knowledge of the daily activities required in the workplace. Based on their direct customer interactions, frontline service teams have the opportunity to contribute new knowledge through understanding the evolving needs and preferences of their customers as well as any persistent problems in service delivery. Such firsthand knowledge becomes an inimitable source of competitive advantage (Ye et al. 2012). Consequently, store leaders can enhance communication and interactions among store members for setting and achieving departmental goals and enable team learning for improving team performance. This dual approach enables the capture and transformation of knowledge that can maximize team performance (Wyer et al. 2010; Kostopoulos and Bozionelos 2011; Ye et al. 2012). Drawing upon the ambidextrous leadership theory for innovation, this study argues that leaders' opening and closing behaviors and the interaction between them play an important role in team exploratory and exploitative learning in the retail service workplace that may ultimately assist teams in pursuing innovation.

2.2 Conceptual model and hypotheses

The conceptual model in Fig. 1 depicts the relationships between leadership behaviors and team learning and then between team learning and team innovation. Specifically, this model proposes that opening leadership behavior has a positive impact on team exploratory learning and closing leadership behavior has a positive impact on team exploitative learning. In addition, the interaction between opening leadership behavior and closing leadership behavior has a positive impact on both team exploratory and exploitative learning, and finally, team exploratory and exploitative learning underpin team innovation.

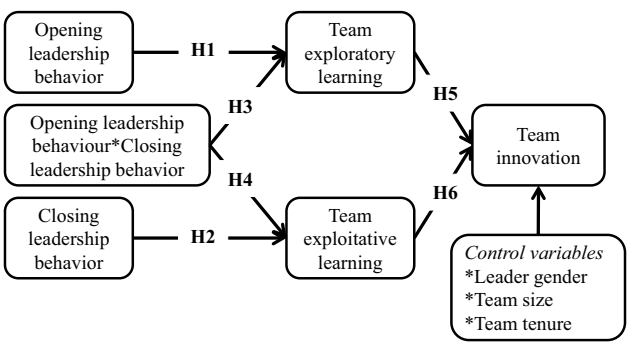

Fig. 1 Conceptual model

2.2.1 Opening leadership behavior and team exploratory learning

As posited by the ambidextrous leadership theory, team leaders with opening leadership behaviors may encourage their teams to do things differently and experiment to transform new knowledge generated in frontline services into useful explicit knowledge (Ye et al. 2012). Thus, in retail services, store leaders' opening behaviors are likely to enhance team exploratory learning to gain competitive advantage. Store leaders with higher levels of opening leadership behaviors are more likely to equip their teams with more effective learning strategies that facilitate the acquisition of knowledge from their valued customers through customer interactions (Ye et al. 2012). Store leaders are frontline employees themselves as well as persons in a position of power that face the challenge of improving in order to meet customer expectations. Hence, team leaders are mandated to extend beyond the current knowledge and search for new knowledge from customers and to improve team performance. Thus,

H1 Opening leadership behavior has a positive effect on team exploratory learning.

2.2.2 Closing leadership behavior and team exploitative learning

Teams with overemphasized exploration activities that aim to transform knowledge from evolving customer needs may suffer the costs of experimentation without gaining concrete benefits (March 1991). A leader's closing behaviors may signal team members to focus on accomplishing the routine tasks by implementing their current knowledge and skills without risk-taking behaviors. Thus, in retail services, a store leader's closing behaviors are likely to enhance team exploitative learning. Store leaders with higher levels of closing leadership behaviors are more likely to equip their teams with more efficient learning strategies that facilitate the acquisition of knowledge through combining and recombining their current knowledge and skills. Such store leaders are likely to be satisfied with the current knowledge and are not willing to make errors. Thus,

H2 Closing leadership behavior has a positive effect on team exploitative learning.

2.2.3 The interaction effect between opening and closing leadership behaviors

The ambidextrous leadership theory for innovation highlights "the need for specific leadership behaviors and the requirement to match the complex nature of innovation processes" (Rosing et al. 2011, p. 957). In our conceptual model, the interaction between opening and closing leadership behaviors is predicted to enhance followers' explorative and exploitative activities. This is because team leaders are required to switch flexibly between opening and closing leadership behaviors to help their teams meet different innovation requirements (Rosing et al. 2011). This combination of

opening and closing leadership behaviors is consistent with the notion of ambidexterity, which has been linked to high levels of innovation when teams are analyzed (Zacher and Rosing 2015). Thus,

H3 The interaction between opening and closing leadership behaviors has a positive effect on team exploratory learning.

H4 The interaction between opening and closing leadership behaviors has a positive effect on team exploitative learning.

2.2.4 Team exploratory learning and innovation

Innovation refers to "the intentional introduction and application within a role, group or organization of ideas, processes, products or procedures, new to the relevant unit of adoption, designed to significantly benefit the individual, the group, organization or wider society" (West and Farr 1990, p. 9). Based on this definition, team innovation can be explained as "a team's capability to generate novel and original ideas (i.e., creativity) as well as the capability to put these ideas into practice such that they yield beneficial outcomes (i.e., implementation)" (Zacher and Rosing 2015, p. 56). In the context of this study, retail service leaders of stores are likely to be the best suited to make the determination of whether team members' ideas should be regarded as novel and original, as well as nurturing their teams and the surrounding work context to ensure that creative outcomes can and do occur (Shalley and Gilson 2004). For that reason, like other team members, team leaders have prior knowledge about store services because they have been trained in the position and are currently working and supervising in the area. Such prior knowledge assists them in evaluating and utilizing outside knowledge, that is, the knowledge provided by their valued customers (e.g., evolving customer needs) (Crevani et al. 2011; Ye et al. 2012). Thus, by articulating and updating two distinct forms of the above knowledge through learning activities (Kostopoulos and Bozionelos 2011), store leaders are in an ideal position to work as ambidextrous leaders.

Teams are considered to be the primary learning and knowledge creation units within modern organizations (Edmondson and Nembhard 2009). In the team context, Kostopoulos and Bozionelos (2011) postulated that team learning contains two distinct learning activities—exploratory and exploitative learning. Team exploratory learning is defined as "activities that facilitate a team to search, experiment with, and develop new ideas and task-related capabilities" (Kostopoulos and Bozionelos 2011, pp. 388–389). Those teams with high team exploratory learning are willing to break the established routines by searching for novel knowledge from outside sources. In the context of the uncertainties that exist in retail services, store leaders may focus on the benefits of exploratory learning rather than on potential risks (Edmondson and Nembhard 2009; Kostopoulos and Bozionelos 2011; Doloreux et al. 2019). Store leaders are likely to utilize the knowledge they acquire to deepen their understanding of evolving customer needs in order to enhance customer satisfaction, service efficiency, and revenue generation, which in turn lead to follow-on benefits to these stores (Cho et al. 2011; Ye et al. 2012).

As posited by the ambidextrous leadership theory, team exploratory learning may predict team innovation (Rosing et al. 2011). Teams with higher levels of acquired knowledge from team exploratory learning are likely to apply it to their services, that is, they transfer knowledge gained from experimentation to daily tasks to yield better service outcomes. The ultimate goal of their role is to foster team innovation which is one of the most valuable high-performance criteria of teamwork. For this reason, the more the knowledge a team acquires from its exploratory learning, the greater the innovative performance the team achieves in its operations. Thus,

H5 Team exploratory learning has a positive effect on team innovation.

2.2.5 Team exploitative learning and team innovation

Exploitative learning refers to the "activities that help a team refine, recombine, and implement existing knowledge and skills" (Kostopoulos and Bozionelos 2011, p. 389). In retail services, team members have opportunities to exploit the available knowledge and skills through formal training and informal knowledge sharing (Kostopoulos and Bozionelos 2011). As frontline service employees, store leaders are able to exploit their knowledge, expertise, experience, and responsibility to deliver the best services to their customers. Store leaders can enhance team performance through team exploitative learning activities to reduce errors and delays in delivering services, which in turn brings benefits to the stores (Kostopoulos and Bozionelos 2011). As posited by the ambidextrous leadership theory, team exploitative learning may predict team innovation (Rosing et al. 2011); thus, teams with higher levels of recombined knowledge from team exploitative learning are likely to use it in their services, that is, to transfer knowledge from improvements in services. For that reason, as teams acquire more knowledge from exploitative learning, improvements in operations increase. Therefore,

H6 Team exploitative learning has a positive effect on team innovation.

3 Research methods

3.1 Research context

Vietnam is a welcome case for the study of retail services. The retail sector of the economy has been focusing on the development of modern trade channels including physical channels (e.g., commercial centers, convenience stores) as well as digital channels (e.g., digital platforms) (Deloitte 2019). The compound annual growth rate (CAGR) of Vietnam's retail sector from 2013 to 2018 is about 10.97% with the total revenue of around US$ 142 billion in 2018 (Deloitte 2019). Vietnam has recently been forecasted to be the fastest growing market for convenience stores in Asia by 2021, with the CAGR of 37.40%. Ho Chi Minh City and Hanoi are two key cities of Vietnam which account for approximately 33% of total retail sales (Deloitte

2019). These two metropolitan cities have some major characteristics of modern trade channels such as store expansion, intense competition between local and foreign retailers, and the popular of mini-supermarkets make their convenience markets ripe for growth (Maruyama and Le 2012).

3.2 Design and sample

This study adopted a phased approach by undertaking a pilot study and a main survey in Ho Chi Minh City, the major business center, and in Hanoi, the capital of Vietnam. Survey respondents were team leaders with at least 6 months' experience in the current position. In the pilot study, we first conducted two in-depth interviews with store leaders in Ho Chi Minh City to evaluate the contents of the measures and to examine how respondents described existing ambidexterity leadership and team exploratory and exploitative learning. Although the measures of all constructs in this study were available in the literature, this step was crucial to ensure the appropriateness of the measures to the retail service context in Vietnam. In the subsequent quantitative phase of the pilot study, face-to-face interviews with 100 team leaders were undertaken to refine the scales. Cronbach's alpha reliability and exploratory factor analysis (EFA) were used for preliminary assessment of the scales. The main survey was also undertaken by using face-to-face interviews. A sample of 302 team leaders working in the retail service industry in Ho Chi Minh City and Hanoi were interviewed to validate the measures and to test the structural model and hypotheses. Confirmatory factor analysis (CFA) was utilized to assess the measures and structural equation modeling (SEM) was employed to test the theoretical model and hypotheses.

3.3 Measurement

Constructs examined in this study included ambidextrous leadership (opening and closing leadership behaviors), team exploratory and exploitative learning, and team innovative performance as rated by team leaders (i.e., the use of key informants as suggested in Kumar et al. 1993). Opening and closing leadership behaviors, team exploratory and exploitative learning, and team innovation were all first-order constructs. Team innovation was measured by three items borrowed from Welbourne et al. (1998) with a seven-point scale ranging from one (needs much improvement) to seven (excellent). Opening leadership behavior was measured by three items and closing leadership behavior was measured by six items, adapted from Rosing et al. (2011). These items were measured by a seven-point scale ranging from one (not at all) to seven (frequently). Team exploratory and exploitative learning were measured by four items each with a seven-point Likert scale ranging from one (strongly disagree) to seven (strongly agree), borrowed from Kostopoulos and Bozionelos (2011).

The questionnaire was initially prepared in English and then translated into Vietnamese by an academic fluent in both languages. This procedure was undertaken because English is not well understood by all team leaders in Vietnam.

Back translation was conducted to ensure that English and Vietnamese versions were comparable and any discrepancies were resolved.

3.4 Control variables

Prior research has demonstrated that team innovation may be predicted by the gender of team leaders (e.g., Cady and Valentine 1999), team size (e.g., Laughlin et al. 2006), and team tenure (Hülsheger et al. 2009). For that reason, this study controls these team characteristics. Dummy coding (1: male, 0: female) was used for the gender of team leaders. Team size was measured by the number of employees in a team and team tenure was measured by months in operation.

3.5 Measurement refinement

The measures were refined via Cronbach's alpha reliability and EFA, using the data collected from 100 team leaders in the pilot study. Specifically, EFA (principal components with promax rotation) extracted five factors with 70.48 percent variance at an eigenvalue of 1.03. The Cronbach's alphas for these scales were 0.91 (opening leadership behavior), 0.85 (closing leadership behavior), 0.82 (team exploratory learning), 0.84 (team exploitative learning), and 0.84 (team innovation). In addition, all factor loadings were high (≥ 0.50). In sum, the results of the preliminary assessment indicated that all scales satisfied the requirement for reliability. Accordingly, these measures were used in the main survey.

3.6 Sample characteristics

Through the screening process, six questionnaires were removed because they contained more than 10% of missing values. Consequently, the final sample size was 296 and included 182 (61.49%) female and 114 (38.51%) male team leaders. There were 198 (66.89%) working in HCM City and 98 (33.11%) team leaders working in Hanoi. In terms of age, 213 (71.96%) team leaders were under 30 years old and 83 (28.04%) were over 30 years old. In terms of education, 271 (91.55%) team leaders had an undergraduate university degree; 10 (3.38%) had a postgraduate university degree, and 15 (5.07%) had high school education. In terms of team size, 150 (50.68%) teams had less than or equal to 9 employees and 146 (49.32%) had more than 9 employees. In terms of team tenure, 149 (50.34%) teams had more than 18 months in operation and 147 (49.66%) teams had less than or equal to 17 months. In terms of types of retail service stores, 107 (36.15%) were convenience stores, 85 were (28.72%) food and beverages, 40 (13.51%) were electronics; the rest 64 (21.62%) were comprised of pharmacy, women's and children's apparel, fashion, and cosmetics.

4 Data analysis and results

4.1 Measurement validation

The five constructs investigated were opening leadership behavior, closing leadership behavior, team exploratory learning, team exploitative learning, and team innovation. The scales measuring these constructs were refined via Cronbach's alpha and EFA using the data set ($n = 100$) collected in the pilot study. These scales were then assessed using CFA based on the data set ($n = 296$) collected in the main survey.

4.1.1 Saturated model

The saturated model (final measurement model) was formed by incorporating the CFA model of the five first-order constructs (opening leadership behavior, closing leadership behavior, team exploratory learning, team exploitative learning, and team innovation). The final CFA model yielded an acceptable fit to the data: $\chi^2_{(157)} = 292.17$ ($\chi^2/\text{df} = 1.86$), GFI = 0.91, CFI = 0.95, and RMSEA = 0.05. The factor loadings of items measuring these five constructs were high (≥ 0.65) and significant ($p < 0.001$). The composite reliability of each construct was also high (≥ 0.79; Table 3). Further, the average variance extracted of each construct was greater than 0.50 (Table 3), supporting construct convergent validity. Moreover, the correlation between any pair of constructs was always less than the square root of the average variance extracted of each construct in the pair (Table 3), supporting the discriminant validity among opening leadership behavior, closing leadership behavior, team exploratory learning, team exploitative learning, and team innovation (Fornell and Larcker 1981). The CFA loadings of items, composite reliability (CR), and average variance extracted (AVE) of all scales are shown in Tables 2 and 3.

4.1.2 Common method bias

This study used a survey data set collected from a single respondent (i.e., team leaders), which may raise the problem of common method biases. To assess this problem, we followed a procedure proposed by Podsakoff et al. (2003). We first conducted a CFA Harman's single factor model test and then undertook an unmeasured latent variable test (i.e., to allow an unmeasured latent variable to load on all items in the trait model). The results of the Harman's test showed that the CFA Harman's single factor model yielded a very poor fit to the data ($\chi^2_{(167)} = 1612.93$, GFI = 0.60, CFI = 0.46, and RMSEA = 0.17), compared to the trait model ($\chi^2_{(157)} = 292.17$, GFI = 0.91, CFI = 0.95, and RMSEA = 0.05). The results from the unmeasured latent variable test indicated that all item loadings on the unmeasured latent variable were not significant and that each item loading in the final CFA model with and without the unmeasured latent variable was nearly identical. Thus, common method bias was not a pervasive problem in this study (Podsakoff et al. 2003).

Table 2 Means (M), standard deviations (SD), and standardized CFA loadings (λ) of items

Items	M	SD	λ
Opening leadership behavior			
As a team leader, I allow different ways of accomplishing a task	4.51	2.086	0.70
As a team leader, I encourage experimentation with different ideas	5.00	1.928	0.93
As a team leader, I give room for own ideas	5.39	1.869	0.74
Closing leadership behavior			
As a team leader, I monitor and control goal attainment	6.37	1.030	0.80
As a team leader, I establish routines	6.30	1.036	0.66
As a team leader, I take corrective action	6.27	1.066	0.73
As a team leader, I control adherence to rules	6.35	1.024	0.71
As a team leader, I pay attention to uniform task accomplishment	6.39	0.907	0.78
As a team leader, I stick to plans	6.36	0.910	0.65
Team exploratory learning			
Team members were systematically searching for new possibilities	5.73	1.207	0.75
Team members offered new ideas and solutions to complicated problems	5.74	1.208	0.82
Team members experimented with new and creative ways for accomplishing work	5.66	1.281	0.82
Team members evaluated diverse options	5.71	1.153	0.81
Team exploitative learning			
In our team, we primarily performed routine activities	6.06	1.078	0.69
Our team implemented standardized methodologies and regular work practices	6.28	0.826	0.70
Team members improved and refined their existing knowledge and expertise	6.18	0.915	0.77
Team members mainly used their current knowledge and skills for performing their tasks	6.24	0.936	0.71
Team innovation			
My team comes up with new ideas	5.46	1.178	0.75
My team finds improved ways to do things	5.92	0.995	0.77
My team creates better processes and routines	5.67	1.328	0.67

Table 3 Correlations between constructs

	CR	AVE	1	2	3	4	5
1. Team innovation	0.79	0.56	**0.75**				
2. Opening leadership behavior	0.83	0.63	-0.01^{NS}	**0.79**			
3. Closing leadership behavior	0.87	0.52	0.06^{NS}	0.39**	**0.72**		
4. Team exploratory learning	0.88	0.64	0.73**	0.09^{NS}	0.14*	**0.80**	
5. Team exploitative learning	0.81	0.52	0.52**	-0.01^{NS}	0.32**	0.47**	**0.72**

The bold numbers (on the diagonal) are the square roots of average variances extracted which do not have a significant level

CR composite reliability; *AVE* average variance extracted; numbers on the diagonal are square roots of average variances extracted

$^{*}p<0.05$; $^{**}p<0.001$; ^{NS}non-significant

4.2 Structural results and hypothesis testing

4.2.1 Testing the proposed model against its rivals

SEM was used to test the theoretical model and hypotheses. Before estimating the proposed model, following Bollen and Long (1993), this study established two plausible competing models. The first competing model proposed that the interaction between opening and closing leadership behaviors has no effects on both team exploratory and exploitative learning (a more restrictive model). The second competing model proposed a direct effect of the interaction between opening and closing leadership behaviors on team innovation (a less restrictive model). This is because prior research (Zacher and Rosing 2015) showed that the interaction between opening and closing leadership between on team innovation may have an impact on team innovation. Based on Ping (1995), one indicator was used for the interaction between opening and closing leadership behaviors. Because opening and closing leadership behaviors were unidimensional constructs, summated indicators (the sum of all items measuring each construct) were used for calculating the interaction between these two constructs, that is, the product of opening and closing leadership behaviors (Gerbing and Anderson 1988). Mean-deviated variables were used for the interaction to avoid multicollinearity (Cronbach 1987).

To test the proposed model against its rivals, this study employed a Chi-square difference test (Anderson and Gerbing 1988). The results produced by SEM revealed that all three models (the proposed model and two competing models) received an acceptable fit to the data (the proposed model: $\chi^2_{(240)} = 426.013$ ($\chi^2/\text{df} = 1.775$), GFI = 0.896, CFI = 0.934, and RMSEA = 0.051; the more restrictive model: $\chi^2_{(242)} = 436.45$ ($\chi^2/\text{df} = 1.804$), GFI = 0.893, CFI = 0.931, and RMSEA = 0.052; and the less restrictive model: $\chi^2_{(239)} = 426.013$ ($\chi^2/\text{df} = 1.782$), GFI = 0.896, CFI = 0.933, and RMSEA = 0.052). Chi-square difference tests revealed that, compared to the more restrictive model, the proposed model received a better fit to the data ($\Delta\chi^2 = 10.44$, $\Delta\text{df} = 2$; $p < 0.01$), resulting in the selection of the proposed model over the more restrictive model. Compared to the proposed model, the less restrictive model did not received a better fit ($\Delta\chi^2 \sim 0$, $\Delta\text{df} = 1$; $p \sim 1.00$) but consumed one degree of freedom. In addition, the path from the interaction between open and closing leadership behaviors to team innovation was not significant ($p > 0.99$). Accordingly, the proposed model was selected. Note that, because team exploratory and exploitative learning may not be mutually exclusive (Kostopoulos and Bozionelos 2011), a correlation between them may exist. For this reason, a correlation between their residuals was established and the result showed that this correlation was significant (0.46, $p < 0.001$). Note also that no improper solution was found in any model: Heywood cases were absent, all error term variances were significant, and all standardized residuals were less than |2.58|.

4.2.2 Testing the hypotheses

The SEM results showed that all paths in the proposed model were significant, providing support for all of the hypotheses (Table 4). Leader gender, team size, and team

Table 4 SEM results

Hypothesis	Structural path	*B*	SE	*β*	*t*	*p*
H1	Opening leadership behavior → Team exploratory learning	0.11	0.040	0.18	2.76	0.006
H2	Closing leadership behavior → Team exploitative learning	0.33	0.072	0.37	4.62	0.000
H3	Opening leadership behavior* closing leadership behavior → Team exploratory learning	0.09	0.033	0.17	2.61	0.009
H4	Opening leadership behavior* closing leadership behavior → Team exploitative learning	0.07	0.027	0.20	2.67	0.008
H5	Team exploratory learning Team innovation	0.60	0.074	0.62	8.13	0.000
H6	Team exploitative learning Team innovation	0.31	0.086	0.23	3.66	0.000
Control variables	Leader gender Team innovation	0.03	0.090	0.01	0.29	0.772
	Team size Team innovation	−0.00	0.004	−0.04	−0.81	0.421
	Team tenure Team innovation	−0.00	0.002	−0.07	−1.42	0.155

B unstandardized regression weight; *SE* standard error; *β* standardized regression weight; *t* *t*-statistic; *p* *p*-value

tenure, however, did not have a significant effect on team innovation. Table 4 shows the unstandardized estimates, standard errors, standardized estimates, *t*-values, and *p*-values of the structural paths.

On closer investigation of the results, one can see that the relationship between opening leadership behavior and team exploratory learning was positive and significant ($p < 0.01$), supporting hypothesis H1. Consistent with hypothesis H2, a positive relationship between closing leadership behavior and team exploitative learning was confirmed ($p < 0.001$). Further, the study proposed that the interaction between opening and closing leadership behaviors has positive effects on both team exploratory learning (H3) and team exploitative learning (H4). The findings revealed that these two effects were positive and significant ($p < 0.01$), supporting both H3 and H4. In other words, team exploratory learning was highest when both opening and closing leadership behaviors were high (Fig. 2) and team exploitative learning was highest when both closing and opening leadership behaviors were high (Fig. 3). Finally, the relationship between team exploratory learning and team innovation was positive and significant ($p < 0.001$), supporting hypothesis H5. Hypothesis H6 stated that team exploitative learning has a positive effect on team innovation and this hypothesis was also supported by the data ($p < 0.001$).

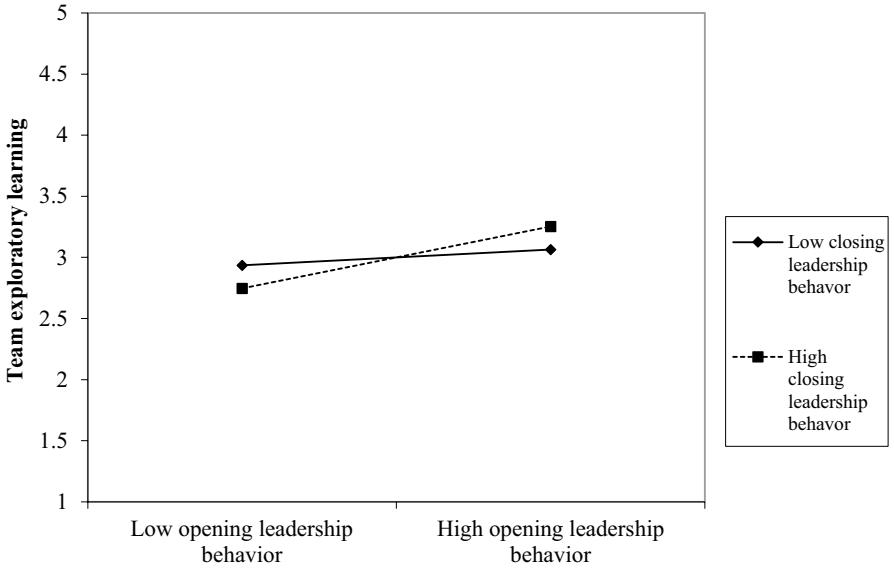

Fig. 2 Interaction effect between opening and closing leadership behaviors on team exploratory learning

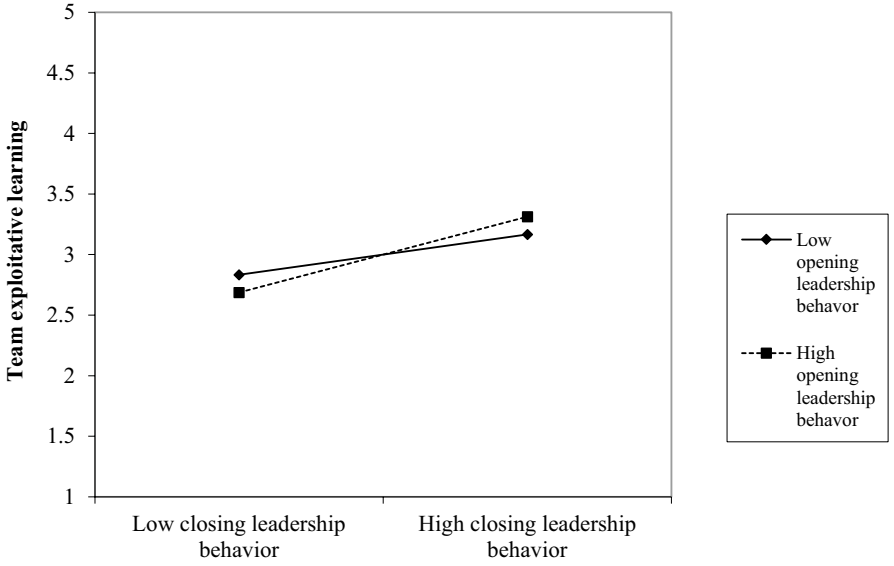

Fig. 3 Interaction effect between opening and closing leadership behaviors on team exploitative learning

5 Discussion and implications

Drawing upon the ambidexterity theory of leadership, this study aimed to investigate the role of opening and closing leadership behaviors of team leaders in both

team exploratory and exploitative learning, and subsequently, in team innovation. Results based on a survey data set collected from 296 team leaders in the retail service industry in Vietnam show that opening leadership behavior positively affects team exploratory learning and closing leadership behavior underlies team exploitative learning. The interaction between opening and closing leadership behaviors also has a positive relationship with both team exploratory and exploitative learning. Finally, these two types of team learning enhance team innovation. These findings offer a number of implications for theory, research, and practice.

5.1 Theoretical implications

The findings of this study provide a number of theoretical contributions to the literature on ambidextrous leadership and team innovation. Prior research in the area has focused heavily on organizational and individual levels and/or in advanced economies (Kostopoulos and Bozionelos 2011; Rosing et al. 2011; Hunter et al. 2018; Ma et al. 2019). This study extends the current research on ambidextrous leadership, team learning, and team innovation in the context of retail services in a transitioning economy, Vietnam. The study findings provide further evidence for the role of leaders' opening behaviors in exploratory learning and leaders' closing behaviors in exploitative learning. The findings further confirm the role of exploratory and exploitative learning in innovation at the team level. The findings suggest that team leaders who engage in opening and closing leadership behaviors will encourage learning activities of their team members and lead to team innovation.

In addition, this study verifies the effect of the interaction between opening and closing leadership behaviors on team exploratory and exploitative learning. Consistent with the ambidextrous leadership theory (Rosing et al. 2011), team exploratory and exploitative learning are found to be the highest when both opening and closing leadership behavior are high. These findings confirm the previously espoused need for further studies to evaluate the theoretical and empirical basis of team exploratory and exploitative learning (Kostopoulos and Bozionelos 2011). An interesting finding of this study is the direct effect of the interaction between opening and closing leadership behaviors on team innovation. When testing a competing model (the less restrictive model) against the proposed model, this study found no relationship between them. This finding is inconsistent with previous findings. For example, Zacher and Rosing (2015) found a significant interaction effect between opening and closing leadership behaviors on team innovation. Note that the Zacher and Rosing's (2015) study did not examine any mediator. These inconsistent findings imply that there may exist some mediators between them such as team exploratory and exploitative learning in this study.

Further, positive and direct effects of both team exploratory and exploitative learning on team innovation provide further evidence for the argument that these two learning activities are distinct but not mutually exclusive (Kostopoulos and Bozionelos 2011). This implies that teams should pursue both for team innovation. The roles of team exploratory and exploitative learning align with Kostopoulos and Bozionelos (2011) who found that team exploratory and exploitative learning underlay

team performance. The findings of the present study confirm the applicability of the ambidextrous leadership theory for innovation to transitioning economies like Vietnam.

5.2 Practical Implications

The findings of this study provide a number of implications for practitioners. The findings identify the importance of firms investing in training team leaders to improve both opening and closing leadership behaviors in order to foster exploratory and exploitative learning activities in their teams. For example, organizational trainers may discuss the importance of allowing errors, giving room for individual's ideas, and encouraging experimentation (i.e., opening leadership behavior) and how these strategies can contribute to creating an environment that encourages team members to search, experiment, and develop new ideas in team exploratory learning activities. In parallel, organizational trainers may also emphasize the complementary role of monitoring and controlling goal attainment, establishing routines, and sticking to plans (i.e., closing leadership behavior) and discuss how such strategies encourage team members to refine, recombine, and implement existing knowledge and skills during team exploitative learning activities. The capacity to flexibly switch between opening and closing leadership behavior has the potential to lead to a higher level of team exploratory and exploitative learning and, consequently, team innovation.

6 Limitations and Future Directions

We are aware of the limitations of our study. First, as the cross-sectional nature of this study does not allow for the interpretation of causality, future research would benefit from examining the effects ambidextrous leadership has on team exploratory and exploitative learning, which in turn leads to team-level outcomes over time. Second, this study focused on the retail service team. Service teams may be different from other types of teams, for example, pipeline operation teams. In the pipeline operation team, team members should follow strict regulations to detect any changes in regular operation such as to protect the environment, to ensure the safety of team members and the systems. Thus, pipeline operation leaders might not encourage their team members to take risks in any cases. A comparison between service teams and other types of teams deserves future research. In addition, there may be several other factors that play a mediating and/or moderating role in the relationship between ambidextrous leadership and team innovation, such as team psychological capital (e.g., Newman et al. 2014,), psychological safety (e.g., Newman et al. 2017), and psychological contract breach (e.g., Kim et al. 2018), which merit future research. Finally, our sample was drawn from the Vietnamese context and as such may not be generalizable to other contexts. Nonetheless, this study sets the stage for future research to replicate, extend, and critically evaluate other transitioning markets (e.g., China) to provide more insight. In conclusion, despite the limitations

described here and the need for continuing research, our study contributes to a better understanding of the innovation process of teams. Specifically, the positive role that opening and closing leadership behaviors play in team exploratory and exploitative learning, which in turn encourage team members to generate and implement novel ideas in the contemporary retail service context in a transitioning economy.

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