

Ambidextrous orientation and performance in corporate venture units: A multilevel analysis of CV units in emerging market multinationals

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Abstract:

The aim of this article is to examine absorptive capacity and innovation-oriented corporate culture as moderators of the relationship between the ambidexterity of a CV unit and its performance. Accordingly, we propose that the absorptive capacity of a CV unit and an innovation-oriented, corporate culture positively moderate the effect of a CV unit's ambidexterity on its performance. We test our hypotheses with data from 180 CV units and their Taiwanese parent firms. Our paper contributes to a more fine-grained understanding of the role of ambidexterity in the CV units of emerging-market MNCs.

Keywords: corporate venture units | corporate ambidexterity | multinational | MNCs

Article:

Introduction

Ambidexterity is critical for the success and survival of firms (Junni et al., 2013; Simsek et al., 2009). For corporate venture (CV) units, ambidexterity is important because it allows CV units to aim at developing novel resources and capabilities (exploration) while ensuring that their work builds on and is integrated with current resources and capabilities (exploitation) (Hill and Birkinshaw, 2014).

Although prior research has established that CV-unit ambidexterity can improve CV-unit performance (Hill and Birkinshaw, 2014), such performance benefits may be difficult to achieve because of challenges related to ambidextrous designs, such as managing different mindsets (Gibson and Birkinshaw, 2004; Smith and Tushman, 2005) and implementing different or even “paradoxical” leadership styles (Lewis et al., 2014). Thus, researchers have called for

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examinations of the conditions and mechanisms under which ambidexterity enhances performance (Cao et al., 2009; Junni et al., 2013; O'Reilly and Tushman, 2013).

Accordingly, the aim of this article is to examine CV-unit absorptive capacity and an innovation-oriented corporate culture as key moderators of the relationship between a CV unit's ambidexterity and its performance. These factors represent important organisational aspects that support value creation from innovation processes (Crossan and Apaydin, 2010). We test our model empirically in the dynamic context of 180 Taiwanese CV units.

This article contributes to a more fine-grained understanding of the role of ambidexterity in the CV units of emerging-market MNCs and thereby addresses calls to examine organisational aspects under which ambidexterity enhances performance (Cao et al., 2009; Junni et al., 2013; O'Reilly and Tushman, 2013). Specifically, we point to CV-unit absorptive capacity (Zahra and George, 2002; Jansen et al., 2005) as a key factor in boosting the positive performance effect of CV-unit ambidexterity. We also focus attention on the importance of culture in enhancing the benefits of ambidexterity (O'Reilly and Tushman, 2013) by showing that an innovation-oriented corporate culture can amplify the benefits of CV unit ambidexterity. Furthermore, CV-unit absorptive capacity and an innovation-oriented corporate culture interact to enhance the performance benefits of CV-unit ambidexterity, thereby testifying to the combined effect of these supportive organisational aspects.

Moderators of ambidexterity in CV units

Researchers have conceptualised ambidexterity in a variety of ways (see Birkinshaw and Gupta, 2013; Junni et al., 2013, for reviews). Building on March (1991), some scholars have regarded exploration and exploitation as mutually exclusive activities and argued that ambidexterity aims at a balance between exploration and exploitation (balanced ambidexterity) (Cao et al., 2009, Keller and Weibler, 2015; Fu et al., 2016). In turn, others have defined ambidexterity as an orthogonal construct where exploration and exploitation are pursued simultaneously (simultaneous ambidexterity) (Jansen, Tempelaar, Van den Bosch and Volberda, 2009).

In this study, we follow the theoretical approach to orthogonal ambidexterity and apply it in the context of the CV unit (Gibson and Birkinshaw, 2004). CV units are distinct business units that focus on development of opportunities for future growth (Block and MacMillan, 1993; Hill and Birkinshaw, 2014; Sharma and Chrisman, 1999). Accordingly, CV-unit ambidexterity refers to focusing on building new capabilities (exploration) while simultaneously focusing on exploiting existing capabilities (exploitation) (Hill and Birkinshaw, 2014). Expanding on prior research that shows that CV-unit ambidexterity relates positively to performance (Hill and Birkinshaw, 2014), we will propose in the following that absorptive capacity and an innovation-oriented corporate culture are key organisational moderators that further enhance the positive performance effect of ambidexterity.

The moderating role of absorptive capacity

Cohen and Levinthal (1990) define absorptive capacity as the firm's ability to recognise, assimilate and apply new knowledge from the environment to the firm's benefit. Later

conceptualisations (Zahra and George, 2002) and operationalisations (Jansen et al., 2005) have expanded absorptive capacity to include knowledge combination. In line with this, we understand absorptive capacity as an overall construct (Engelen et al., 2014) that involves interrelated elements concerning the recognition, assimilation, combination and application of new knowledge from the environment to benefit the firm (Cohen and Levinthal, 1990; Jansen et al., 2005; Zahra and George, 2002). Absorptive capacity combines outward- and inward-looking elements because it allows not only identifying and understanding external knowledge, but also understanding how it can be combined with existing firm-internal knowledge to benefit the firm (Cohen and Levinthal, 1990; Engelen et al., 2014). Hence absorptive capacity involves the CV unit's efforts to understand both the external (market) environment and the internal (firm) environment, and how they can be combined.

CV-unit ambidexterity can improve CV-unit performance because it allows the CV unit to aim not only at building new capabilities (exploration) but also at exploiting existing capabilities (exploitation) to better address current and future market opportunities (Hill and Birkinshaw, 2014). We suggest that CV-unit absorptive capacity further strengthens the positive performance effects of CV-unit ambidexterity. First, absorptive capacity involves continuous efforts by a CV unit to recognise new external market opportunities and to obtain knowledge from external stakeholders such as customers, trade partners and consultants (Jansen et al., 2005; Zahra and George, 2002). This increases the CV unit's awareness of state-of-the art technological and market developments so that exploration efforts can be better targeted to focus on the most value creating capabilities. In addition, absorptive capacity facilitates the frequent identification and acquisition of key internal MNC knowledge and resources. This is necessary for understanding the current internal resources and needs of the "internal corporate market"; more valuable opportunities can be identified and created for exploiting current resources and current and future market opportunities can be addressed more effectively. In contrast, when a CV unit has limited absorptive capacity, it risks focusing its efforts on activities that have a weaker fit with the needs of the external market and the firm's capabilities, making such efforts less likely to enhance CV-unit performance. We therefore propose the following:

Hypothesis 1. A CV unit's absorptive capacity positively moderates the relationship between its ambidexterity and performance.

The moderating role of an innovation-oriented corporate culture

We suggest that CV units supported by an innovation-oriented corporate culture benefit more from ambidexterity. An innovation-oriented corporate culture is a corporation-wide culture oriented toward innovation and initiated by top management; it supports openness, new ideas and risk-taking (Hurley and Hult, 1998; Lin et al., 2013) within the entire MNC. Because corporate culture embodies the deeply embedded assumptions, values, and norms of the corporation that guide behaviour, attention, and actions (Schein, 2004), corporate culture influences work activities, problem-solving, and relationship behaviour within the MNC (Chatman et al., 1998; O'Reilly and Chatman, 1996).

Hence, corporate executives at MNC headquarters who have instituted a strong innovation-oriented corporate culture are likely to better understand, appreciate and support the use of

existing capabilities (exploitation) and development of new capabilities (exploration) by their CV units (Raisch and Tushman, 2016). This may induce MNC headquarter executives to pay more attention to their CV units, give them more priority in the MNC strategic agenda and provide them with more resources, thereby enabling more effective use of current capabilities (exploitation) and creation of new capabilities that are more promising and valuable (exploration). Thus, the strategic importance and support gained from the greater strategic priority (Thornhill and Amit, 2001) stemming from an innovation-oriented corporate culture is likely to enhance the positive effect on performance of CV-unit ambidexterity.

In addition, CV units often depend on the resources of regular business units and may compete for resources with them (Raisch and Tushman, 2016). If the corporate culture does not support innovation and knowledge-sharing, social conflict is likely to prevent successful collaboration (Badguerahanian and Abetti, 1995; Hill and Birkinshaw, 2014). Under an innovation-oriented corporate culture, it is more likely that innovation is understood as a corporate-wide endeavour across the CV units and regular business units. Accordingly, regular business units are less likely to fear that exploration and exploitation by the CV unit will cannibalise their existing resources and mandates (Raisch and Tushman, 2016). In fact, under an innovation-oriented corporate culture, sharing knowledge and updating old practices instead of protecting them is encouraged (Hurley and Hult, 1998). Thus, when guided by a strong innovation-oriented corporate culture, regular units are less likely to resist and more likely to support the CV-unit by sharing more high-quality assets, technologies and intellectual capital. This in turn improves the quality of CV-unit exploitation and also promotes CV-unit exploration of novel technological opportunities on the market. Without an innovation-oriented corporate culture, regular business units are more likely to engage in political games that hinder CV-unit value creation, such as sharing lower quality resources and knowledge with the CV unit to sabotage the value of CV unit exploitation or highlighting the dangers and risks of new technologies to undermine exploratory efforts. Furthermore, when a corporate culture is innovation-oriented, failure is less likely to be penalised (Hurley and Hult, 1998). Hence, regular units also perceive collaboration with CV units as less risky and are more likely to want to share existing capabilities (exploitation) and build new capabilities (exploration) with the CV unit (Raisch and Tushman, 2016). Taken together, these arguments lead us to propose the following:

Hypothesis 2. An innovation-oriented corporate culture positively moderates the relationship between the ambidexterity of a CV unit and its performance.

The moderating roles of absorptive capacity and an innovation-oriented corporate culture

Finally, we argue that the combination of a high level of CV-unit absorptive capacity and an innovation-oriented corporate culture will further enhance the positive relationship between CV-unit ambidexterity and performance. As argued in the first hypothesis, a high level of absorptive capacity enhances the CV unit's ability to use existing capabilities (exploitation) and build new capabilities (exploration) to address current and future business opportunities more effectively. As stated in the second hypothesis, an innovation-oriented corporate culture can enhance the ability and motivation of the MNC headquarters and regular business units to share high quality existing capabilities (exploitation) with the CV unit and to support its efforts to develop new capabilities (exploration). We propose that the value added by interaction between an

innovation-oriented corporate culture and CV-unit absorptive capacity is based on knowledge sharing. An innovation-oriented corporate culture encourages developing and sharing diverse ideas, interests and mental maps (Huber, 1991; Lee et al., 2017). As a result, when the MNC is under the umbrella of an innovation-oriented corporate culture, the MNC headquarters and regular business units will be better able and more motivated to advise the CV unit regarding the potential value of external opportunities. Accordingly, when supported by an innovation-oriented corporate culture, CV units with a higher level of absorptive capacity will find it easier to absorb knowledge and ideas from the MNC headquarters and from regular business units to guide their exploration. Because such guidance from the MNC headquarters and other units can significantly increase the usefulness and relevance of the external knowledge absorbed by the CV unit (Song et al., 2018), an innovation-oriented corporate culture can further amplify the moderating effect of absorptive capacity on the ambidexterity-performance relationship.

Furthermore, under an innovation-oriented corporate culture, risk tolerance and the desire to invest in new ideas are corporate-wide characteristics (Hurley and Hult, 1998). As a result, the MNC headquarters and regular business units are more motivated to provide CV units with their best resources for exploitation, thereby increasing the potential for creating value. A CV unit with a higher level of absorptive capacity will be better able to put these resources to good use because it will have a better understanding of how the rest of the MNC and its resources work. Also, the aligning effect of an innovation-oriented corporate culture (Huber, 1991) makes it less likely that the resource contributions (e.g. knowledge, technology and human resources) shared by the MNC headquarters and the regular business units will be “distant”. If the CV unit has a high level of absorptive capacity it will be easier to combine these resources with those of the CV unit to enhance the effectiveness of CV-unit exploitation (Zahra and George, 2002). Taken together, an innovation-oriented, corporate culture therefore makes knowledge and resources in the firm's internal environment more useful and accessible for the CV unit, which is likely to boost the positive effect of a CV unit's absorptive capacity on the relationship between its ambidexterity and performance. We therefore hypothesise the following:

Hypothesis 3. An innovation-oriented corporate culture increases the moderating effect of a CV unit's absorptive capacity on the relationship between its ambidexterity and performance.

Fig. 1 illustrates the hypothesised model.

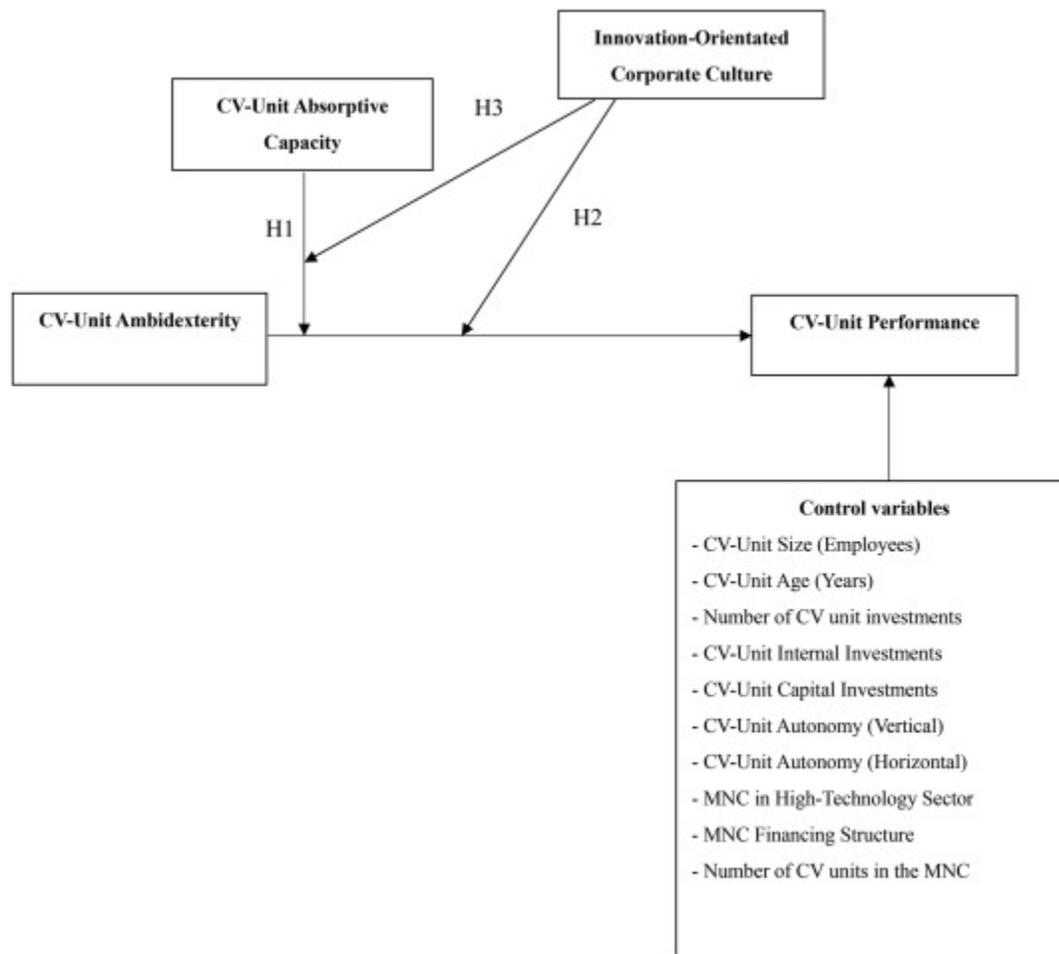


Fig. 1. A multilevel model of CV-unit ambidexterity.

Method

Sample

We collected our data in Taiwan in three industry sectors: high technology (38.0%), manufacturing¹ (36.7%) and electrical engineering (25.3%). Emerging-market MNCs in these sectors are likely to be active in corporate venturing because they invest heavily in a technology portfolio (Zahra et al., 2000). Data from the Taiwan Economic Journal (TEJ) database show that there were 90 diversified MNCs in these sectors in 2013. One of the authors contacted the CEO of each MNC. The CEOs provided a list of the CV units and their top management team members. This resulted in a list of 237 CV units with 1440 CV-unit directors. The CV units were profit centres with their own management team and located in different geographic regions.

We conducted two surveys for temporary separation of the key variables of the study. Furthermore, to separate the sources of key variables, we used archival data to measure the dependent variable (CV-unit performance). In the first round of data collection in early 2014, we

¹ Taiwanese manufacturing firms are also under pressure to generate new product innovations that pave the way for economic growth through industrial transformation (Ministry of Economic Affairs, 2017).

contacted the CV-unit directors and asked them to rate their CV-unit's absorptive capacity. After four weeks and three reminders, we had collected responses from 1160 directors of CV units (an 80.6% response rate) in 198 CV units. To be able to test for interrater reliability, we excluded 18 CV units from which we received complete responses from only one director. As a result, our final sample in the first data collection round included responses from 1142 directors of CV units (a response rate of 73.9%) in 180 CV units.

In the second survey, which took place 6 months later, we contacted the same 1142 CV-unit directors and asked them to rate CV-unit ambidexterity. To collect corporate level information regarding the innovation-oriented corporate culture, we also contacted corporate-level executives at the MNC headquarters. We received responses from 180 corporate-level executives in 79 MNCs. Our final sample consisted of responses from 79 MNCs to 180 CV units.

We reduced common method variance *ex ante* by collecting the independent and dependent variables from separate sources. In addition, to reduce common method variance *ex post*, we used complex statistical methods that included multilevel analyses and interaction terms to test our hypotheses (Chang et al., 2012). Furthermore, we conducted Harman's one-factor test, which showed that no single factor explained the majority of the variance. We also examined the potential effects of common method variance by identifying a suitable marker variable (socially desirable response) and applying a partial correlation procedure (Podsakoff et al., 2003). The socially desirable response variable did not correlate with the constructs in the model.

Measures²

Independent variable: CV-unit ambidexterity. Based on Hill and Birkinshaw (2014), we measured CV-unit ambidexterity by asking the directors of the CV units to rate the importance of exploitative and explorative objectives for their CV units. The exploitative CV-unit objectives related to more effective utilisation of corporate human assets³ (items 1 and 4), more effective utilisation of corporate assets in general (item 2) and monetisation of existing corporate technologies and intellectual capital (item 3). Composite reliability (CR) (0.80) and average variance extracted (AVE) (0.58) were acceptable. The explorative CV-unit objectives included creation of breakthrough technology for the corporation, investment in disruptive technologies that potentially cannibalise existing technologies and provision of a window on emerging technologies (CR = 0.89, AVE = 0.67).

In line with the theoretical notion of “combined” ambidexterity, we conceptually understand CV-unit ambidexterity as a CV unit's focus on both explorative and exploitative orientations that “should be pursued fully and concurrently to attain competitive advantage” (Simsek et al., 2009, p. 867). Accordingly, following Mom et al. (2019), Kristal et al. (2010) and Wang and Rafiq (2014), we used second-order confirmatory factor analysis (Chen et al., 2005) and operationalised CV unit ambidexterity as a second-order formative latent variable with

² A detailed list of survey items is included in Appendix 1

³ In interviews conducted by Hill and Birkinshaw (2014), the head of British Telecom's Brightstar CV unit described how “providing opportunities for talented but frustrated engineers” was an important exploitative activity in CV units. Such activity aims at adding value by making better use of existing corporate human assets.

exploratory and exploitative orientations as its two component factors⁴ (Chen et al., 2005; Wang and Rafiq, 2014). The second-order factor fit the data well with the following fit statistics: $\chi^2/df = 7.23$, $p = 0.007$, root mean square error of approximation (RMSEA) = 0.07, comparative fit index (CFI) = 0.98, goodness-of-fit index (GFI) = 0.99 and Tucker-Lewis index (TLI) = 0.96; CR = 0.92 and AVE = 0.62.

Moderating variable: CV-unit absorptive capacity. Building on the absorptive capacity measure of Jansen et al. (2005), the directors of CV units answered 21 questions that measure CV-unit absorptive capacity (see Appendix 1 for a list of individual items). For the absorptive capacity measure, we aggregated the scores of the 21 questions for each CV unit (CR = 0.97, AVE = 0.58).

Moderating variable: Innovation-oriented corporate culture. Building on Hurley and Hult (1998), we measured innovation-oriented corporate culture by asking the corporate executives in the MNC headquarters to evaluate the following aspects: acceptance of technical innovation, active seeking of innovative ideas, acceptance of innovation, penalisation for new ideas that do not work (reverse coded) and innovation resistance (reverse coded). (CR = 0.94, AVE = 0.74).

Dependent variable: CV-Unit Performance. We obtained CV-unit financial performance data from the Taiwan Economic Journal (TEJ) database, which is the most comprehensive financial database in Taiwan (Chu, 2004; Hwang et al., 2012). TEJ includes information about the profitability of each reportable unit. We used the CV unit's annual gross profit rate as the measure of CV-unit performance, which is calculated as follows: $\frac{\text{sales revenue} - \text{production costs}}{\text{sales revenue}}$. We used performance data for 2017 to allow for a time lag between the dependent variable and the independent and moderating variables collected in the two surveys in 2014.⁵

Control variables. Following Hill and Birkinshaw (2014), we controlled for CV-unit size (number of full-time employees in the CV unit), the age of the CV unit (years), the number of investments undertaken by the CV unit, and the CV unit's internal investments (Sharma and Chrisman, 1999). We obtained this information from the CV-unit managers in connection with the second survey round. In addition, we controlled for CV-unit capital investments based on information from the TEJ database in 2014 (coded 1 where the CV unit had investments recorded in the TEJ database and 0 where it did not). Furthermore, we controlled for the MNC financing structure, the total number of CV units in the MNC and whether the MNC's main business was in the high-technology sector (Hill and Birkinshaw, 2014) with information collected from the corporate-level executives. Finally, following Hill and Birkinshaw (2014), we controlled for the autonomy of the CV unit, including vertical and horizontal autonomy, to assess the extent to which CV-unit managers had the authority to make investment decisions.

⁴ In the robustness tests, we also tested the model using alternative measures for “combined” ambidexterity, the sum of exploration and exploitation (Lubatkin et al., 2006) and the product of exploration and exploitation (Gibson and Birkinshaw, 2004; He and Wong, 2004). These produced consistent results.

⁵ Robustness tests using performance in 2015 and in 2016 also support the hypothesised relationships.

Table 1. Means, standard deviations, and correlations.

	Mean	SD	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
<i>Dependent variable</i>																								
1. CV-unit performance (2015) (used in robustness checks)	1.18	3.00	–																					
2. CV-unit performance (2016) (used in robustness checks)	1.66	0.83	.64***	–																				
3. CV-unit performance (2017) (dependent variable)	1.99	0.39	.63***	.62***	–																			
<i>Independent variables</i>																								
4. CV-unit exploitative orientation	3.62	0.52	.20***	.19***	.18***	–																		
5. CV-unit explorative orientation	3.55	0.73	.21***	.20***	.19***	.61***	–																	
6. CV-unit ambidexterity	3.59	0.57	.20**	.16*	.12	.62***	.63***	–																
7. CV-unit absorptive capacity	3.90	0.62	.19***	.18***	.17***	.34***	.20***	.28***	–															
8. Innovation-oriented corporate culture	3.94	0.55	.06	.05	.04	.45***	.29***	.43***	.63***	–														
<i>Interaction terms</i>																								
9. CV-unit ambidexterity × CV-unit absorptive capacity	14.10	3.58	.02	.00	.02	-.05	.12**	.08	.01	.07	–													
10. CV unit ambidexterity × Innovation-oriented corporate culture	14.23	3.39	.05	.04	.05	.00	.18**	.11*	.10*	.12*	.44***	–												
11. CV-unit absorptive capacity × Innovation-oriented corporate culture	15.58	3.75	.15**	.13**	.14**	.12*	.15**	.17***	.12*	.07	.28***	.20***	–											
12. CV-unit ambidexterity × CV-unit absorptive capacity × Innovation-oriented corporate culture	56.70	19.18	.16**	.14**	.16**	.27***	.34***	.35***	.36***	.37***	.15**	.09	.08	–										
<i>Control variables</i>																								
13. CV-unit age (years)	16.51	13.64	-.07	-.08	-.06	.06	-.07	-.01	-.05	-.08	-.01	.00	-.10	.00	–									
14. MNC high-technology sector ^a	0.40	0.49	.11	.06	.09	-.08	.03	-.01	.33***	.32***	.04	-.08	.11	.10	-.02	–								
15. CV capital investments ^b	0.57	0.50	.07	.08	.02	.01	.17**	.11	-.03	.02	-.03	-.05	.12	-.04	-.14*	-.05	–							
16. Number of CV-unit investments	5.39	2.20	.06	.10	.05	-.08	-.02	-.05	.12	.00	-.03	-.08	-.04	.06	-.13	.01	-.03	–						
17. CV-unit size (number of CV-unit employees)	856.94	2383.44	.07	.02	.09	-.11	.21***	.08	.19**	.21***	.16**	.19***	.10	.00	-.36***	.44***	.04	.20***	–					
18. CV-unit internal investments	4.36	0.42	-.24***	-.22***	-.18**	-.16**	-.03	-.09	-.13*	-.07	.01	-.03	-.08	-.11*	.05	-.26***	.01	-.23***	-.15**	–				
19. MNC financing structure	0.37	0.48	.01	.03	.03	.07	.01	.04	.15**	.19**	-.15*	-.02	.01	-.08	-.01	-.04	.04	-.08	-.04	.00	–			
20. CV-unit autonomy (horizontal)	4.19	0.31	-.19**	-.21***	-.16**	-.34***	-.22***	-.30**	-.21***	-.23***	-.08	.08	-.01	-.19***	.16**	-.02	.08	-.07	.06	.20***	-.17**	–		
21. CV-unit autonomy (vertical)	4.03	0.36	-.21***	-.20***	-.17**	-.37***	-.26***	-.33**	-.27***	-.31***	-.07	.01	-.02	-.23***	.06	-.09	.04	-.07	-.01	.27***	-.20***	.62***	–	
22. Number of CV-units in MNC	2.28	0.58	.04	.02	.06	-.11	.15*	.04	.13	.06	-.03	-.06	-.05	.09	-.07	.26***	.11	.26***	.60***	-.18*	-.06	.05	-.01	–

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. One-tailed tests.

^c 1 = all financing decisions on venture investments made by MNC headquarters, 0 = not all financing decisions on venture investments made by MNC headquarters.

^a 1 = MNC in a high-technology sector; 0 = MNC not in a high-technology sector.

^b 1 = CV unit had investments recorded in the TEJ database in 2014, 0 = CV unit did not have investments recorded in the TEJ database in 2014.

Results

In our research design, we had a hierarchical data structure with two levels of variables, namely variables at the level of the CV units (Level 1, $N = 180$), which were nested within emerging-market MNCs (Level 2, $N = 79$) (Andersson et al., 2014).⁶ The CV units were distinct profit centres with their own management team and located in various regions of the emerging-market MNC. Based on qualitative interviews, we assured that these units indeed had mandates to develop new business opportunities for the MNC such as new products and services. We followed the diagnostics recommended for multilevel models (Aguinis and Culpepper, 2015; Aguinis et al., 2013). We examined our hypotheses using ML-SEM using Mplus (version 7.0) software (Muthén and Muthén, 2015).⁷

Table 1 shows the descriptive statistics and a correlation table, including dependent, independent and control variables as well as interaction terms (Kalnins, 2018). We first built a measurement model to establish construct validity and reliability. The measurement model fit the data well ($\chi^2 = 1607.09$, $p = 0.000$; $df = 403$, RMSEA = 0.05, CFI = 0.98 GFI = 0.91, TLI = 0.98). The construct reliabilities and average variances for the multi-item constructs were acceptable as reported in the 'Measures' section above. Concerning discriminant validity, we verified that the average variance extracted exceeded all corresponding squared pairwise correlations (Shook et al., 2004).

We then proceeded to test the hypothesised structural model. Following the recommendations by Andersson et al. (2014), we examined the direction of cross-level moderation effects.⁸ The hypothesised structural model was compared with four other nested models using the Satorra-Bentler scaled chi-square difference test (Muthén and Muthén, 2015) (see Table 2). When compared with more parsimonious models, the hypothesised model had the best fit, as demonstrated by the positive and significant chi-square difference tests.

Table 3 summarises the results. Although we did not hypothesise a direct effect between CV-unit ambidexterity and CV-unit performance, the results confirmed the direct relationship (estimate = 0.29, $p = 0.000$; 95% confidence interval = CI = [0.02, 0.56], $\Delta R^2 = 16\%$ ⁹; effect size¹⁰ = $f^2 = 0.19$). This effect size value approximately signifies a medium effect size according to Cohen (1988) guidelines (f^2 As to the hypotheses, the results support Hypothesis 1 by showing that CV unit absorptive capacity is a significant positive moderator of the relationship between CV-unit ambidexterity and CV-unit performance (estimate = 1.49, $p = 0.000$; 95% CI = [0.39,

⁶ On average, the MNCs in the sample had 2.28 CV units across a range of two to four units. This is in line with our focus on emerging-market MNCs that are especially active in corporate venturing (Zahra et al., 2000). Our empirical results hold if we test our model in a subsample of 62 MNCs that had only two CV units, while excluding MNCs with more than two units.

⁷ We selected ML-SEM over other methods such as HLM because of its ability to test the hypothesised relationships of a complex moderation model in a single step while incorporating measurement properties and yielding overall fit indices (Aryee et al., 2015; Mathieu and Chen, 2011).

⁸ We used one-tailed p -values because our hypotheses were theory-driven and directional (Gutermann et al., 2017).

⁹ R^2 refers to the numerator in the Cohen's effect size formula below, $R^2(\text{variable included}) - R^2(\text{variable excluded})$, and shows the percentage of variance in CV-unit performance that is uniquely accounted for by the independent variable, i.e. CV-unit ambidexterity (16%) (Selya et al., 2012).

¹⁰ The effect size is derived using Cohen (1988) formula for calculating the effect size = $(f^2) [R^2(\text{variable included}) - R^2(\text{variable excluded})] / [1 - R^2(\text{variable included})]$.

2.59], $\Delta R^2 = 14\%$, effect size = $f^2 = 0.18$), which corresponds approximately to a medium effect size according to Cohen (1988) guidelines (f^2). Our findings also support Hypothesis 2 by indicating that an innovation-oriented corporate culture positively moderates the relationship between CV-unit ambidexterity and CV-unit performance (estimate = 0.85, $p = 0.000$; 95% CI = [0.18, 1.52], $\Delta R^2 = 10\%$, effect size = $f^2 = 0.16$). This effect size value can be interpreted as approximately medium according to Cohen (1988) guidelines (f^2). Furthermore, the results support Hypothesis 3 as demonstrated by significant three-way interaction between innovation-oriented corporate culture, CV-unit absorptive capacity and CV-unit performance (estimate = 0.31, $p = 0.000$; 95% CI = [0.06, 0.56], $\Delta R^2 = 8\%$, effect size = $f^2 = 0.15$). This effect size value approximately signifies a medium effect size according to Cohen (1988) guidelines (f^2). For further testing of Hypothesis 3, we plotted CV unit absorptive capacity and innovation-oriented corporate culture following Cohen et al. (2003) and Dawson and Richter (2006) (see Fig. 2). In addition, we conducted simple slope difference tests.¹¹ Finally, we split the sample into “high” and “low” ambidexterity subsamples using the mean as the splitting criterion and examined the effect of the interaction between absorptive capacity and innovation-oriented corporate culture, which was more significant in the “high ambidexterity” sample. These additional tests were in line with Hypothesis 3. The control variables were not significant.

Table 2. Comparison of structural models.

Model	AIC	BIC	Adj. BIC	Log-Likelihood	Model Comparison	Δdf	$\Delta\chi^2$ ^a
Model 1: Null model: All covariances set to zero	744.52	770.06	744.24	-364.26			
Model 2: Baseline model: No hypothesised interaction effects	742.49	771.23	742.73	-362.25	Model 2 vs. 1	1	11.03***
Model 3: Baseline model with Hypothesis 1 interaction	746.22	781.35	746.51	-362.11	Model 3 vs. 2	2	18.07**
Model 4: Baseline model with Hypothesis 2 interaction	746.30	781.42	746.59	-362.15	Model 4 vs. 2	2	17.78**
Model 5: Hypothesised model: Baseline model with Hypotheses 1, 2, and 3 interactions	739.45	787.35	739.84	-354.73	Model 5 vs. 2	6	44.06***
					Model 5 vs. 3	4	26.09***
					Model 5 vs. 4	4	26.28***

All models include the control variables.

Models 2-5 include the appropriate lower order terms for the tested interactions.

AIC = Akaike information criterion; BIC = Bayesian information criterion; Adj. BIC = sample-size adjusted Bayesian information criterion.

^aBased on the Satorra-Bentler scaled chi-square difference test.

Table 3. Hypotheses tests: Two-level, three-way moderation model.

Hypothesis	Model path	Estimate+	LLCI+	ULCI+	Monte Carlo simulation	Monte Carlo simulation
					LLCI	ULCI
	CV-unit ambidexterity → CV-unit performance in 2017	0.29***	0.02	0.56	0.01	0.58
	CV-unit absorptive capacity → CV-unit performance in 2017	0.43***	0.13	0.72	0.12	0.74
	CV-unit age (years) → CV-unit performance (2017)	0.00	-0.01	0.01	-0.02	0.03
	High-technology sector → CV-unit performance (2017)	0.06	-0.12	0.24	-0.13	0.26

¹¹ Results of the simple slope tests are available from the authors by request.

Hypothesis	Model path	Estimate+	LLCI+	ULCI+	Monte Carlo	Monte Carlo
					simulation	simulation
					LLCI	ULCI
	CV capital investments → CV-unit performance (2017)	0.01	-0.01	0.03	-0.02	0.05
	Number of investments → CV-unit performance (2017)	0.01	-0.01	0.03	-0.02	0.05
	Log CV unit-size (Number of CV-unit employees) → CV unit performance (2017)	0.01	-0.02	0.04	-0.03	0.06
	Internal investments → CV-unit performance (2017)	-0.09	-0.23	0.05	-0.25	0.06
	Financing structure → CV-unit performance (2017)	0.02	-0.10	0.14	-0.11	0.16
	CV-unit autonomy (horizontal) → CV-unit performance (2017)	-0.06	-0.22	0.10	-0.24	0.11
	CV-unit autonomy (vertical) → CV-unit performance (2017)	-0.05	-0.25	0.15	-0.27	0.16
	Number of CV units → CV-unit performance (2017)	-0.02	-0.11	0.07	-0.13	0.08
Hypothesis 1	CV-unit ambidexterity × CV-unit absorptive capacity → CV-unit performance in 2017	1.49***	0.39	2.59	0.35	2.65
	Innovation-oriented corporate culture → CV-unit performance in 2017	0.25	-0.01	0.51	-0.02	0.53
Hypothesis 2	CV-unit ambidexterity × Innovation-oriented corporate culture → CV-unit performance in 2017	0.85***	0.18	1.52	0.15	1.57
	CV-unit absorptive capacity × Innovation-oriented corporate culture → CV-unit performance in 2017	0.12	-0.01	0.25	-0.02	0.27
Hypothesis 3	CV-unit ambidexterity × CV-unit absorptive capacity × Innovation-oriented corporate culture → CV-unit performance in 2017	0.31***	0.06	0.56	0.05	0.58

*** $p = 0.000$, one-tailed tests. $n = 180$ at the CV-unit level (level 1); $n = 79$ at the MNC level (level 2).

Innovation-oriented corporate culture measured at the MNC level; other variables measured at the CV-unit level.

Unstandardised estimates.

LLCI = lower level of the 95% confidence interval; ULCI = upper level of the 95% confidence interval.

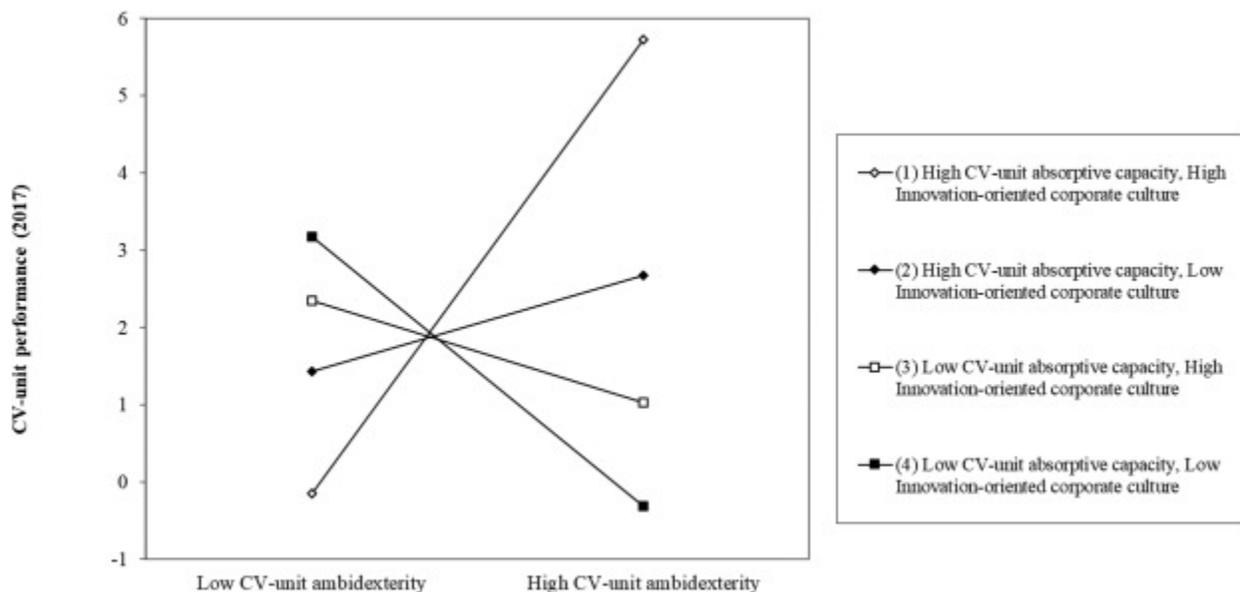


Fig. 2. Plotting of the three-way interaction effect.

Discussion

Our aim in this article was to examine CV-unit absorptive capacity and innovation-oriented corporate culture as key moderators of the relationship between CV-unit ambidexterity and CV-unit performance. Our results showed that a CV unit's absorptive capacity had a positive moderating effect on the relationship between CV-unit ambidexterity and CV-unit performance. This finding suggests that ambidextrous CV units are likely to create more value when they possess learning-oriented capabilities such as absorptive capacity (Zahra and George, 2002; Jansen et al., 2005). In addition, our results showed that an innovation-oriented corporate culture positively moderated the relationship between CV-unit ambidexterity and CV-unit performance. This extends prior research on the role of corporate culture as an important contextual enabler of innovation processes (O'Reilly and Tushman, 2008; Tushman and O'Reilly, 1996) that allows the CV unit to create more value from ambidexterity (Badguerahanian and Abetti, 1995; Narayanan et al., 2009). Finally, we found that an innovation-oriented corporate culture increased the moderating effect of CV-unit absorptive capacity. This result illustrates the role of corporate culture as an underlying corporate-level facilitator (O'Reilly et al., 2009) in MNCs that enhances the effects of CV-unit absorptive capacity. This is in line with research suggesting that culture and absorptive capacity are important organisational aspects (Crossan and Apaydin, 2010) that function as key facilitators and amplifiers of innovation processes.

By illustrating the interaction mechanisms between CV-unit ambidexterity, CV-unit absorptive capacity and an innovation-oriented corporate culture, we contribute to a more nuanced understanding of the role of ambidexterity in the CV units of emerging-market MNCs. While CV-unit ambidexterity can be performance-enhancing on its own (Hill and Birkinshaw, 2014), we identify absorptive capacity, an innovation-oriented corporate culture and their combined effect (interaction) as important factors that help further boost the performance of CV-unit ambidexterity. This contributes by addressing calls for examining when ambidexterity is most performance-enhancing (e.g., Junni et al., 2013; O'Reilly and Tushman, 2013). By enabling a better understanding of external technological and internal corporate developments, CV-unit absorptive capacity can help the CV unit to focus on developing the novel capabilities (exploration) that enhance performance most and to build effectively on current internal resources in order to address market opportunities (exploitation). This enhances the positive effect of CV-unit ambidexterity. In addition, we establish that an innovation-oriented corporate culture is a critical aspect for the CV unit because it facilitates additional support and more engaged participation for exploitation and exploration by other parts of the MNC. Furthermore, an innovation-oriented corporate culture interacts with absorptive capacity to enhance the performance benefits of CV-unit absorptive capacity because absorptive capacity increases the CV unit's ability to achieve optimal allocation of the high quality resources and support it receives from other parts of the MNC as a result of the corporation-wide, innovation-oriented culture. These findings provide empirical support for early studies on ambidexterity that theoretically emphasised the importance of a supporting corporate culture (e.g., O'Reilly and Tushman, 2013; Tushman and O'Reilly, 1996). This suggests that the benefits of CV-unit ambidexterity are increased if supported by an organisation-wide culture (Crossan and Apaydin, 2010; O'Reilly et al., 2009) that enhances the effects of CV-unit ambidexterity and absorptive capacity.

Regarding limitations, our study focuses on Taiwanese MNCs and their CV units, which may have unique characteristics such as a strong emphasis on corporate venturing in emerging market economies in general (Zahra et al., 2000) and in Taiwan in particular (Ministry of Economic Affairs, 2017). Future studies could examine the extent to which the results may vary across various emerging economies and to which extent they apply to MNCs and their CV units in more mature developed countries. Also, our sample included internal CV units within corporations whereas the dynamics of external venturing are likely to be different and require incorporating the role of external parties such as alliance partners. Furthermore, the CV-unit context does not allow for direct generalisation of the impact of ambidexterity on regular business units.

Concerning future research directions, by focusing on absorptive capacity and an innovation-oriented culture, we demonstrate the importance of these key organisational moderators of ambidexterity in a CV-unit context. We hope that researchers will build on our study to identify and test the effects of other possible moderating factors, such as coordination (Jansen et al., 2005; Van den Bosch et al., 1999) and organisational configuration (Zimmermann et al., 2018). Furthermore, we demonstrate the importance of multilevel considerations, which could be taken further to identify microfoundational moderators of CV-unit ambidexterity such as individual-level capabilities (Chang et al., 2009; Chandrasekaran et al., 2012). This could also be taken to an even higher level to compare the role of capabilities across MNCs from different countries. For instance, emerging economies may benefit from government initiatives around innovation (Ramamurti and Hillemann, 2018). It would be interesting to examine the role of macro-level factors such as moderators of organisational ambidexterity and how they may interact with capabilities at the lower levels of analysis to influence performance. Our point here is that analysing the role of key moderators at different levels of analysis would help broaden our understanding of how they interact with ambidexterity across different levels to influence performance.

Our study provides key takeaways that managers can implement at the CV-unit and corporate levels to enhance the performance benefits of CV-unit ambidexterity. Managers of ambidextrous CV units need to focus on building strong absorptive capacity while executives at MNC headquarters can support ambidextrous CV units by creating and maintaining an innovation-oriented corporate culture.

To conclude, our multilevel study provides novel insights by showing how CV-unit and corporate-level factors interact in determining the performance effects of a CV unit's ambidexterity in emerging-market MNCs. We hope that our study will serve as an inspiration for further multi-level studies on the moderators of CV-unit ambidexterity.

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Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.lrp.2019.101930>.

Appendix 1. Survey items

<p>CV-Unit Ambidexterity (based on Hill and Birkinshaw, 2014; item scales from 1 = not at all important to 5 = very important)</p>	<p>Using existing capabilities (exploitation) <i>How important is this (venture unit) objective to the corporation?</i></p> <ol style="list-style-type: none"> 1. Retention and motivation of our employees 2. Better use of existing corporate assets 3. Creation of spin-out companies 4. Source of funding for internal entrepreneurs <p>Building new capabilities (exploration) <i>How important is this (venture unit) objective to the corporation?</i></p> <ol style="list-style-type: none"> 1. Creation of breakthrough technology for the corporation 2. Investment in disruptive technologies that potentially cannibalise existing technologies 3. Window on emerging technologies
<p>CV-Unit Absorptive Capacity (based on Jansen et al., 2005; item scales from 1 = strongly disagree to 5 = strongly agree)</p>	<ol style="list-style-type: none"> 1. Our unit has frequent interactions with corporate headquarters to acquire new knowledge. 2. Employees of our unit regularly visit other branches. 3. We collect industry information through informal means (e.g. lunch with industry friends, talks with trade partners). 4. Other divisions of our company are hardly visited. (reverse-coded) 5. Our unit periodically organises special meetings with customers or third parties to acquire new knowledge. 6. Employees regularly approach third parties such as accountants, consultants, or tax consultants. 7. We are slow to recognise shifts in our market (e.g. competition, regulation, demography). (reverse-coded) 8. New opportunities to serve our clients are quickly understood. 9. We quickly analyse and interpret changing market demands. 10. Our unit regularly considers the consequences of changing market demands in terms of new products and services. 11. Employees record and store newly acquired knowledge for future reference. 12. Our unit quickly recognises the usefulness of new external knowledge to existing knowledge. 13. Employees hardly share practical experiences. (reverse-coded) 14. We laboriously grasp the opportunities for our unit from new external knowledge. (reverse-coded) 15. Our unit periodically meets to discuss consequences of market trends and new product development. 16. It is clearly known how activities within our unit should be performed. 17. Client complaints fall on deaf ears in our unit. (reverse-coded) 18. Our unit has a clear division of roles and responsibilities. 19. We constantly consider how to better exploit knowledge. 20. Our unit has difficulty implementing new products and services. (reverse-coded) 21. Employees have a common language regarding our products and services.
<p>Innovation-Oriented Corporate Culture (based on Hurley and Hult, 1998; 1 = strongly disagree; 5 = strongly agree)</p>	<ol style="list-style-type: none"> 1. Technical innovation in my organisation is readily accepted 2. Management in my organisation actively seeks innovative ideas 3. Innovation is readily accepted in projects/programmes in my organisation

	<p>4. People are penalised for new ideas that don't work in my organisation (reverse-coded)</p> <p>5. Innovation is perceived as too risky and is resisted in my organisation (reverse-coded)</p>
Control variables	
<p>CV-Unit Internal Investments (based on Hill and Birkinshaw, 2014; 1 = never; 5 = almost always)</p>	<p>Please indicate the extent to which you do the following:</p> <ol style="list-style-type: none"> 1. We invest in internally generated business ideas to promote organic growth 2. We invest in internally generated business ideas with a view to spinning them out as separate businesses 3. We invest in internally generated business ideas to leverage underutilised corporate assets (e.g., IP)
<p>CV-Unit Autonomy (vertical) (based on Hill and Birkinshaw, 2014, 1 = Decision made exclusively by CV-unit managers; 5 = by corporate board/executives; reverse scored)</p>	<p>Please indicate the extent to which you are free to make the following decisions:</p> <ol style="list-style-type: none"> 1. Trade sale of a venture business 2. Closure/termination of a venture business 3. Decision to pursue IPOs for venture business 4. Establishment of investment criteria for new businesses
<p>CV-Unit Autonomy (horizontal) (building on Hill and Birkinshaw, 2014; 1 = Decision made exclusively by CV-unit managers; 5 = by corporate board/executives; reverse scored)</p>	<p>If a potential business venture is in the domain of an existing business unit, to what extent do you do the following?</p> <ol style="list-style-type: none"> 1. Seek their cooperation in working with us on the business venture (reverse coded) 2. Require their approval/sign-off before we make an investment (reverse coded) 3. Try to encourage them to retain ownership of the venture, even if we provide funding (reverse coded)