The Impact of Organizational Legitimacy on Product Innovation: A Comparison Between New Ventures and Established Firms

Hai Guo, Rui Shen, and Zhongfeng Su

***Abstract*—What is the impact of organizational legitimacy (OL) on the firm innovation? The extant literature shows ambiguous answers. This study argues that such an ambiguity stems from two neglected facts. First, OL is audience dependent. Second, OL varies across firm life cycle stages. This study clarifies political legitimacy (PL) and market legitimacy (ML) as two key types of OL, and distinguishes them in resources they provide access to and firm behaviors they result in. Then, it examines the impact of PL and ML on the product innovation in new ventures and established firms, respectively. Drawing on the data of 211 firms, this study finds that the relationship of PL to product innovation is inverted U-shaped in new ventures, while negative in established firms, and the linkage between ML and product innovation is positive in new ventures but inverted U-shaped in established firms. This study not only draws a more comprehensive picture about the impact of OL on the product innovation, but also lays down a threshold over which to elaborate the implications of OL. In addition, it guides new ventures and established firms in taking advantage of OL to foster the product innovation.**

***Index Terms*—Established firms, market legitimacy (ML), new ventures, political legitimacy (PL), product innovation.**

I. Introduction

WHAT is the impact of organizational legitimacy (OL) on the product innovation? This question has significant theoretical and practical values in that its answer not only enriches our knowledge on the implications of OL but also guides firms leveraging OL to foster the product innovation. Yet, the extant research shows mixed answers. Some scholars argue that as a generalized perception that an organization's actions are desirable and proper in a socially constructed system of norms, beliefs, values, and definitions [1], OL aids firms in acquiring external resources to satisfy the resource requirements of the product innovation [2], [3]. It, thereby, facilitates the product innovation [4], [5]. In contrast, others scholars argue that an emphasis on OL makes a firm highlight "being the same," which suppresses its entrepreneurship [6], [7]. As a result, OL has a negative impact on the product innovation [8], [9]. In addition, still others integrate both perspectives and argue for a nonlinear relationship [10], [11]. Overall, our understanding about the effect of OL on the product innovation remains ambiguous, making it imperative to probe deeper into this effect.

This study argues that the aforementioned ambiguity is caused by two limitations in previous studies. First, previous studies "tend to employ a narrow, unidimensional view of legitimacy" [12, p. 59]. They assume the audiences, who judge a firm's OL, are homogeneous [13]. Yet, the fact is that different groups of audiences hold different norms and interests and in turn assess OL differently [14], [15]. Thus, studies should distinguish different types of OL by the groups of audiences and test their implications individually [16]. The second limitation is that scholars highlight the contribution of OL in overcoming the liability of newness [3]. Therefore, the extant research focuses on OL in the new venture context, while studies conducted in established firms are lacking [17]. Since established firms have escaped from the liability of newness, the value of OL varies in established firms and new ventures [1], [18]. For instance, OL generally contributes new ventures to obtaining external resources, which can support the product innovation; however, since OL highlights "being the same," it may lock established firms in extant organizational routines, which impedes challenging these routines to develop new products [3], [19]. Consequently, OL may play different role in the product innovation among new ventures and established firms.

This study aims at surmounting these two limitations to probe deeper into the impact of OL on the product innovation. In particular, to survive and succeed, a firm needs to meet rules devised by the government and interplay with market players, and the firm can acquire resources from both the government and market players [20], [21]. Thus, the government and market players are two critical groups of audiences who judge the OL of the firm, generating two types of OL—political legitimacy (PL) and market legitimacy (ML) [22]. This study distinguishes PL and ML, and then, examines their effects on the product innovation in new ventures and established firms, respectively. It finds that PL and ML have strong but diverse effects on the product innovation in these two types of firms. Such findings not only draw a more comprehensive picture about the impact of OL on the product innovation, and thereby, shed light on

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extant ambiguity on this impact, but also lay down a threshold over which to elaborate the implications of OL. As a result, this study contributes to the research on OL. Moreover, this study has profound practical value, as its findings can guide both new ventures and established firms taking advantage of OL to promote the product innovation.

The rest of this paper is organized as follows. In the next section, we review relevant studies on OL and the relationship between OL and product innovation. Then, we hypothesize the roles played by the PL and ML on the product innovation in new ventures and established firms, respectively. In the fourth section, we introduce our methods in terms of sample and data collection, measures, as well as reliability and validity. Then, we report the analyses results. In the sixth section, we discuss our theoretical contribution, managerial implications, and limitations and future directions. At the last, we offer a conclusion to finish this paper.

II. Literature Review

A. OL

To survive and succeed in the market, a firm must be recognized as legitimate [6]. Thus, OL emerges as an important research topic [12], [23]. The OL is defined as a generalized perception that an organization's actions are desirable and proper in some socially constructed system of norms, values, beliefs, and definitions [1], and it reflects "a congruency between the values, norms, and expectations of the society and the activities and outcomes of the organization" (see [3, p. 416]).

Scholars have paid substantial attention to OL, especially its implications. They suggest that because an organization is a part of the environment, it must conform to rules and norms prevailing in the environment [24]. Ensuring the organization to meet these rules and norms, OL aids the organization in being recognized as legitimate and acquiring external resources [23], and in turn is viewed as a critical source of firm competitive advantage. For instance, Zimmerman and Zeitz (2002) highlighted OL as a key means to foster the survival and growth of new ventures (see [3]).

However, OL is not costless [23]. On the one hand, a firm needs to commit substantial time and resources to ensure its legitimacy [12], [24]. For example, to conform to rules and norms of being green, the firm must change manufacturing processes and purchase new devices to reduce pollutant emission [25]. On the other hand, OL can generate adverse effects [9]. For example, an over emphasis on OL can make the firm highlight "being the same," which increases its strategic similarity but decreases its competitive distinctiveness, lowers its adaptabilities to environmental changes, suppresses its entrepreneurship, and likewise [6], [7].

Overall, OL serves as "a double-edged sword" and its implications rely on both resources it offers the access to and the cost associated with it [12], [23]. Hence, to elaborate the implications of OL, scholars must take factors and conditions, which affect resources OL provides the access to and/or the cost of OL, into consideration [12].

B. OL and Product Innovation

Product innovation has been acknowledged as a source of competitive advantage and higher performance for both new ventures and established firms [26]. Hence, a large number of scholars have tested its antecedents and parts of them have linked it with OL. Yet, they have mixed views about the impact of OL on the product innovation. Specifically, some scholars contend that since OL enables firms to obtain external resources [2], [3], it helps firms satisfy the resource requirements of the product innovation, and thus, plays a facilitating role [5], [18]. In contrast, others emphasize the other "edge" of OL. They argue that OL has a negative impact on the product innovation [8], [9], in that an over emphasis on OL suppresses a firm's entrepreneurship [6]. Still others integrate both views and suggest a nonlinear relationship of OL to the product innovation [10], [11]. Overall, our understanding about the impact of OL on the product innovation remains ambiguous.

This study suggests that this ambiguity is primarily caused by two research limitations. First, scholars tend to postulate that the audiences, who judge the properness and desirability of a firm, are homogeneous [13], they "employ a narrow, unidimensional view of legitimacy" (see [12, p. 59]). However, different groups of audiences possess different norms and interests; they have different requirements on the firm to ensure its legitimacy and make the firm take different actions [14]. In addition, resources the firm acquires from different groups of audiences are different [15]. Hence, different types of OL distinguished by the groups of audiences may play different role in the product innovation. Scholars, accordingly, should identify different types of OL and explore their effects on the product innovation, respectively.

Second, because of the "liability of newness" argument, extant studies on the implications of OL focus on new venture contexts, whereas few investigations are conducted in established firms [17]. The OL is important for both new ventures and established firms [1], and established firms must ensure their legitimacies as well [23], [25]. However, the value of OL varies in new ventures and established firms [19]. First, the resources new ventures and established firms aim at and acquire are different. For example, because new ventures are resource lacking, they need to obtain a wide range of resources, including physical, human, and financial resources; instead, established firms have accumulated various types of resources, they, therefore, focus on resources that are urgent for them [4], [27]. Hence, the resources OL provides the access to are different for new ventures and established firms. Second, OL generates different cost in new ventures and established firms. On the one hand, it is often with lower cost for established firms to ensure OL than new ventures. For instance, established firms usually are better at manipulating the environment to ensure their legitimacies than new ventures [25]. On the other hand, because OL highlights "being the same" [3], it may lock established firms in extant organizational routine and suppress entrepreneurship [6], [7], generating additional cost for established firms [19]. In summary, since the value of OL vary in new ventures and established firms, it may have different impact on the product innovation in these two types of firms. As a result, further elaboration should

examine the impact of OL on the product innovation in new ventures and established firms, respectively.

III. Hypotheses Development

A. PL and ML

To survive and succeed, a firm interacts with various market players such as industry peers, retailers, customers, and suppliers [28], [29]. It must be recognized as legitimate by these market players; otherwise, no one will interact with them [30]. Hence, ML, which reflects a consistency of a firm's actions with prevailing rules and norms in the market [12], is a critical type of OL. It exhibits the degree to which what a firm does are recognized and accepted by market players [3]. Moreover, the expansion of government regulations makes the government play critical role in a firm's behaviors and outcomes [31]. The firm should be legitimated by the government, making PL the other key type of OL [20]. The PL, a consistency of a firm's actions with relevant laws, rules, regulations, and standards set forth by various levels of the government [23], demonstrates to which degree what a firm does are authorized, appraised, and recommended by the government [3].

Due to the difference in their groups of audiences, PL and ML function differently in a firm. The PL and ML differ primarily from two aspects. First, they provide the access to different types of resources. Governments control regulatory resources such as land, tax breaks, and subsidies [21]. A firm recognized as legitimate by the government holds shortcuts to these regulatory resources [32], [33]. Hence, PL aids in obtaining regulatory resources. In contrast, ML provides the access to market resources. For example, a firm, who is accepted by customers, is likely to improve its knowledge of customers, the abilities to predict and capture the market demand changes, and so on; a firm recognized by its suppliers can acquire technological knowledge and resources, superior materials and services, and other benefits from suppliers [27], [28].

Second, PL and ML result firms in behaving and acting in different manners. Given that the government generally places more emphasis on nonprofit maximization goals, such as reducing unemployment rate [34], to build and maintain its PL, a firm may deliberately conduct behaviors and actions to meet the government's interests such as hiring more people than it actually needs [35]. Yet, such behaviors and actions may hurt the firm's competitiveness [36]. For instance, an over emphasis on PL may damage a firm's adaptabilities to environmental changes and suppress its entrepreneurship [6], [7]. Rather, as market players highlight maximizing profits, they respect and admire firms with strong competitive advantages. They utilize competitiveness and profits as key criteria to judge a firm's legitimacy [23]. To ensure its ML, the firm needs to take behaviors and actions that help strengthen its competitiveness and improve its performance, such as being entrepreneurial and keeping sensitive to environmental changes [25].

Overall, as two key types of OL, ML and PL, differ significantly from each other in terms of both resources they help acquire and firms' behaviors and actions they result in. Such differences strongly affect their implications in new ventures and established firms. Hence, drawing on these differences, this study explores the effects of PL and ML on the product innovation in new ventures and established firms, respectively.

B. Impact of PL on the Product Innovation

This study expects that PL has an inverted U-shaped relationship with product innovation in new ventures. Product innovation is resource consuming [37]. To develop it, a firm should meet its resource requirements [38]. Yet, new ventures are often resource lacking [39]. Extant studies have indicated that a key reason for the new ventures' high failure rate is that they lack resources [40]. Hence, to support the product innovation, new ventures need to acquire external resources [41], [42]. By ensuring access to regulatory resources, PL helps satisfy the resource requirements of the product innovation [43], [44], thus it contributes new ventures to developing new products.

However, a very high level of PL has a hostile effect on the product innovation in new ventures, for two reasons. First, PL is not cost effective for new ventures when it is at a very high level. On the one hand, because of the high failure rate and relatively small size, new ventures are weak at satisfying the interests of the government [36]. Correspondingly, the government would not offer too many regulatory resources to new ventures, generating an upper limit of regulatory resources new ventures can access to through PL [27]. On the other hand, PL is associated with a high cost and this cost increases dramatically in new ventures [23]. To ensure its PL, a new venture spends substantial time and resources on conforming to laws, rules, regulations, and standards set forth by the government [3]. Moreover, the time and resources spent on PL increase at an accelerating rate, as it is more complicated and harder to better satisfy the interests of the government [25]. In summary, limited regulatory resources PL offers the access to and dramatically increased cost of PL make a too high level of PL be cost ineffective in new ventures, which reduces resources new ventures commit for the product innovation. As a result, the contribution of PL to the product innovation weakens when PL is at a very high level.

Second, as indicated previously, to ensure its PL, a firm may deliberately conduct behaviors and actions, which are often not profit maximization, to satisfy the government's interests [34]. Such behaviors and actions caused by PL play adverse role in the product innovation in new ventures. On the one hand, these behaviors and actions consume resources, decreasing resources new ventures can spend on the product innovation. On the other hand, these behaviors and actions may counteract product innovation. For example, Guo *et al.* [6] has indicated that an overemphasis on legitimacy suppresses entrepreneurship in new ventures.

Overall, PL helps new ventures acquire regulatory resources to meet resource requirements of product innovation and fosters new ventures to develop new products. But, when PL exceeds a certain level, its adverse effects prevail, weakening its contribution to the product innovation in new ventures. Thus, this study argues that the linkage of PL to product innovation is inverted U-shaped in new ventures.

> ***H1****: PL has an inverted U-shaped relationship with product innovation in new ventures.*

In terms of the linkage between PL and product innovation in established firms, it is argued as negative, for three reasons. First, compared with new ventures, established firms usually hold more resources [39]. While established firms also need to acquire external resources for the product innovation, they focus mainly on resources that are highly relevant to the innovation. Regulatory resources acquired from the government are remote from business operations, and thus, are weak at promoting the product innovation [21], [45]. Consequently, the contribution of PL in accessing to regulatory resources to fostering the product innovation is at a weak level in established firms.

Second, PL encounters a high cost in established firms. On the one hand, to ensure its PL, an established firm should spend time and resources on keeping conform to laws, rules, regulations, and standards set forth by the government, especially when there are changes in such laws, rules, and others [3]. On the other hand, the government has nonprofit maximization goals [34]. It will allocate a larger proportion of such goals to established firms and put more pressures on them to achieve such goals. Established firms have to commit resources to fulfill political goals, strongly increasing the cost of PL [46], [47]. The high cost of PL impedes established firms investing in innovation activities, and thereby, inhibits these firms developing new products.

Third, PL counteracts the product innovation in established firms. In its ongoing operations, an established firm has framed organizational routines to ensure its PL. Hence, PL leads a tendency within the firm to follow such routines [7]. Yet, when developing new products especially radical ones, the firm should challenge and even renew its organizational routines [48], [49]. Thus, there are tensions between PL and product innovation in established firms. On the other hand, an overemphasis on PL suppresses a firm's entrepreneurship and lowers its sensitivity to environmental changes, both of which inhibit the firm developing the product innovation [6], [9]. And, this impact is particularly significant in established firms in that they often lack entrepreneurship [50].

Overall, PL contributes weakly to meeting resource requirements of the product innovation in an established firm. Moreover, in addition to generating a high cost that distracts the firm's resource commitment to innovation activities [45], PL directly counteracts to develop new products. Thus, the linkage of PL to product innovation is expected as negative in established firms.

H2: *PL has a negative relationship with product innovation in established firms.*

C. Impact of ML on the Product Innovation

This study has two reasons to argue that ML is positive related to the product innovation in new ventures. First, ML offers new ventures the access to market resources, which helps them satisfy resource requirements of the product innovation [51]. New ventures are resource lacking and do not possess all resources needed by the product innovation. Thus, to develop new products, they need to acquire external resources [41], [42]. The ML not only contributes new ventures to obtaining market resources from various market players to support the product innovation [3], [51], but also aids them in cooperating with market players to develop new products [52]–[54]. Hence, ML has a positive impact on the product innovation in new ventures.

Second, ML facilitates new ventures taking innovative behaviors and actions. As indicated previously, to ensure its ML, a new venture needs to conduct behaviors and actions that strengthen its competitiveness and improve its performance, such as being sensitive to environmental changes and being entrepreneurial [25]. Being sensitive to environmental changes enables the venture to identify opportunities for the product innovation, and being entrepreneurial encourages it capturing such opportunities [39], both of which are critical for this new venture to develop new products. As a result, ML plays a facilitating role in the product innovation in new ventures.

Overall, ML helps new ventures obtain market resources to support the product innovation, and it also motivates new ventures to identify and capture innovation opportunities. Hence, this study argues for a positive relationship of ML to the product innovation in new ventures.

H3: *ML has a positive relationship with the product innovation in new ventures.*

As to the relationship of ML to product innovation in established firms, it is argued to be an inverted U-shaped one. As indicated previously, to develop product innovation, established firms also need to obtain resources that are relevant to product innovation [12], [29]. ML helps firms obtain market resources, such as technological resources, information on market demand, knowledge of customers, and likewise [27], [28]. These resources contribute to meeting the resource requirements of the product innovation, and thereby, facilitate developing new products [55], [56]. In addition, ML helps established firms build R&D collaborations with market players to develop new products [51], [53]. Thus, ML plays a facilitating role in the product innovation in established firms.

However, ML does not always promote product innovation; rather, its contribution weakens when it is at a very high level. This is true with two reasons. First, to develop product innovation, firms should invest in heterogeneous resources [57], [58]. Yet, because an overemphasis on ML results in the firm "being the same" [3], a high level of ML only helps established firms acquire additional homogeneous market resources and builds R&D collaborations with "similar" firms. Such homogeneous resources and collaborations are redundant for the product innovation and have few additional contributions to product innovation. As a result, the high cost associated with the high level of ML may outweigh its contributions to product innovation in established firms. It is noteworthy that while this impact also exists in new ventures, it is insignificant as new ventures own fewer resources and have wider resource requirements than established firms.

Second, given that ML underlines "being the same" [3], a very high level of ML often locks established firms in extant organizational routines [59], [60]. However, to develop new products especially radical ones, a firm needs to challenge or even renew its routines [48], [49]. Thus, a high level of ML may counteract to develop the product innovation. Because established

firms often lack entrepreneurship [50], this role played by ML is enlarged among established firms. Instead, new ventures lack organizational routines and are rich in entrepreneurship [61], making the role of a high level of ML in inhibiting product innovation not significant.

In summary, ML promotes established firms to develop the product innovation through offering the access to market resources. But, when ML becomes very high that exceeds a certain level, its adverse effects on the product innovation become more significant and much stronger, weakening its contribution to the product innovation in established firms. Hence, this study expects that the linkage between ML and product innovation is inverted U-shaped in established firms.

H4: *ML has an inverted U-shaped relationship with product innovation in established firms.*

IV. Methods

A. Sample and Data Collection

We utilized the questionnaire survey method to collect data. First, we developed a draft of questionnaire drawing on prior literature and modified it according to Chinese actual conditions. Then, we conducted a pilot test through requesting some top managers and product managers to carefully check each item in the questionnaire. We further revised the questionnaire using their feedbacks. The questionnaire was prepared in English, translated into Chinese, and finally, back-translated by a third party. No substantial difference in the meanings of scales was found, which ensures the accuracy of these two translations.

We collected our data in several provinces in China, such as Beijing, Henan, Hubei, Jiangsu, Shandong, and Zhejiang. Given that coastal areas are more developed than inland areas in China, provinces in both areas were selected to ensure the representativeness. We first obtained a firm list with the assists of local governments and the alumni. Then, we randomly selected firms from the list to build our sample. Third, we made a telephone inquiry with sampled firms to seek their participation. We collected answers to our questionnaire using the on-site interview. The method enables us to clarify respondents' queries on the spot, avoid a manager asking the secretary to fill in the survey, and ensure responses are complete. We asked two managers in each firm to answer scales that were related to their work responsibilities respectively. Two managers were a general manager such as CEO and a product manager who was in charge of the product innovation.

Our survey was administered based on following guidelines: first, we explain the objectives, procedures, and key constructs of the survey to ensure participants make an informed decision on possible involvement; second, participation is voluntary and participants can withdraw whenever they want; and third, we inform respondents that only aggregated responses would be utilized for academic research and confidentiality is guaranteed.

Our survey was conducted in 2012 and 2013. The final sample was composed of 211 firms. Among these 211 firms, 84 firms (39.81%) were high-tech firms, and 117 firms (55.45%) were located in coastal areas. The same as Jin *et al*. [62], we defined new ventures as firms had been operating for no more than ten years. Accordingly, we had 99 new ventures (46.92%) and 112 established firms (53.08%) in our sample.

To check for nonresponse bias, we compared responding and nonresponding firms along major attributes such as firm size, age, and its region by the *T*-test [63]. The results showed that all *t*-statistics were not significant. In addition, no significant difference in major attributes was found between firms whose data were collected in 2012 and firms whose data were obtained in 2013. Thus, our data do not encounter nonresponse bias.

B. Measures

All questionnaire items, unless stated otherwise, were measured using a five-point scale with "1" indicating "strongly disagree" and "5" indicating "strongly agree." In addition, the mean value of all items method, which has been widely used by prior studies, is employed to operationalize multiitem constructs [64].

Drawing on the prior literature such as Suchman [1] and Zimmerman and Zeitz [3], we utilized three and four items to measure PL and ML, respectively. To measure PL, general managers in each firm were asked to rate on the following.

1) What we do is authorized by the government.
2) What we do is appraised by the government.
3) What we do is often recommended by the government as industrial templates.

Moreover, to measure ML, general managers were asked to rate on the followings.

1) What we do is recognized by industry peers.
2) What we do is accepted by customers.
3) What we do is recognized by suppliers.
4) What we do is recognized by retailers.

Product innovation was measured by four items in terms of the followings.

1) We invested heavily on new product development.
2) We developed lots of new product lines.
3) We accelerated to introduce new products to the market.
4) We escalated our commitment on new product development and promotion.

These items were scored by product managers in each firm.

To rule out the impact of other factors on the product innovation, several individual-level, firm-level, and industry-level variables were adopted as control variables. First, we controlled general manager's education level and working experience. Education level was coded as "1" for junior school and below, "2" for senior school, "3" for college diploma, "4" for bachelor degree, "5" for master degree, and "6" for doctor degree. We utilized the squared root of general manager's working experience to ensure normal distribution. Second, firm size and age were controlled. As the number of employees was skewed (skewness statistic = 3.94), the logged employees number was used as the indicator of the firm size [65]. Firm age was calculated as log (2012/2013–founding year+1). Because high-tech firms generally develop more new products, we controlled such an effect using a dummy with "1" means "high-tech firm." Third, we controlled industrial variables in terms of technology tur-

TABLE I
MEASURES AND VALIDATION

Construct	Items	Loading
Full Sample (N = 211)		
Product innovation (Cronbach's $\alpha = 0.85$; CR = 0.90; AVE = 0.69)	1) Invested heavily on new product development.	0.75
	2) Developed lots of new product lines.	0.84
	3) Accelerated to introduce new products to the market.	0.87
	4) Escalated commitment on new product development and promotion.	0.86
PL (Cronbach's $\alpha = 0.88$; CR = 0.93; AVE = 0.82)	1) What we do are authorized by the government.	0.90
	2) What we do are highly appraised by the government.	0.90
	3) What we do often become industrial templates as recommended by the government.	0.91
ML (Cronbach's $\alpha = 0.85$; CR = 0.90; AVE = 0.70)	1) What we do are recognized by industry peers.	0.78
	2) What we do are accepted by customers.	0.88
	3) What we do are recognized by suppliers.	0.89
	4) What we do are recognized by retailers.	0.80
New Ventures (N = 99)		
Product innovation (Cronbach's $\alpha = 0.83$; CR = 0.89; AVE = 0.67)	1) Invested heavily on new product development.	0.68
	2) Developed lots of new product lines.	0.84
	3) Accelerated to introduce new products to the market.	0.87
	4) Escalated commitment on new product development and promotion.	0.86
PL (Cronbach's $\alpha = 0.89$; CR = 0.93; AVE = 0.82)	1) What we do are authorized by the government.	0.90
	2) What we do are highly appraised by the government.	0.91
	3) What we do often become industrial templates as recommended by the government.	0.91
ML (Cronbach's $\alpha = 0.80$; CR = 0.87; AVE = 0.63)	1) What we do are recognized by industry peers.	0.81
	2) What we do are accepted by customers.	0.82
	3) What we do are recognized by suppliers.	0.83
	4) What we do are recognized by retailers.	0.70
Established Firms (N = 112)		
Product innovation (Cronbach's $\alpha = 0.86$; CR = 0.91; AVE = 0.71)	1) Invested heavily on new product development.	0.80
	2) Developed lots of new product lines.	0.83
	3) Accelerated to introduce new products to the market.	0.88
	4) Escalated commitment on new product development and promotion.	0.85
PL (Cronbach's $\alpha = 0.88$; CR = 0.93; AVE = 0.81)	1) What we do are authorized by the government.	0.91
	2) What we do are highly appraised by the government.	0.89
	3) What we do often become industrial templates as recommended by the government.	0.90
ML (Cronbach's $\alpha = 0.90$; CR = 0.93; AVE = 0.77)	1) What we do are recognized by industry peers.	0.76
	2) What we do are accepted by customers.	0.93
	3) What we do are recognized by suppliers.	0.94
	4) What we do are recognized by retailers.	0.87

Notes: CR = composite reliability; AVE = average variance extracted.

bulence, demand uncertainty, competitive intensity, economic support, and resource accessibility. They were measured by following items, respectively.

1) Technology changes dramatically in the market place.
2) It is very difficult to predict demand changes in the market place.
3) Our firm faces very fierce competition.
4) Economic development plan offers a strong support to our firm.
5) Our firm can easily obtain various resources for operation and expansion.

All these items are answered by general managers in each firm.

C. Reliability and Validity

Composite reliability is estimated using Cronbach's *alpha*, with 0.70 as the benchmark [66]. As reported in Table I, the *alpha* for each construct is above 0.70. Construct validity is assessed by factor loading. All loadings shown in Table I are higher than the 0.70 cutoff point with only one exception (0.68). Hence, our items have good construct validity [67]. In addition, at 0.87 or higher, the composite reliability (CR) for each construct exceeds the 0.70 cutoff point [67]. The average variance extracted (AVE) for each construct is 0.63 or higher, exceeding the benchmark of 0.50 [67]. Composite reliability and convergent validity both are demonstrated. We assessed discriminant validity through conducting chi-square difference tests on all multiitem constructs in pairs. We collapsed each pair of constructs into a single model, and then, compared its fit with that of a two-construct model [68]. In each case, the chi-square value is significant, which offers evidence for discriminant validity.

We adopted two ways to avoid common method bias (CMB). First, we collected data of key variables from general managers and product managers, respectively. Second, we placed product innovation preceding PL and ML, which neutralizes some CMB by controlling the retrieval cues prompted by the ques-

TABLE II
DESCRIPTIVE STATISTICS AND CORRELATIONS

	1	2	3	4	5	6	7	8	9	10	11	12	13
Full Sample (N = 211)													
1. Product innovation	1												
2. PL	0.02	1											
3. ML	0.20**	0.49**	1										
4. High tech	0.00	−0.05	−0.08	1									
5. Firm age (log)	0.12*	0.11	−0.01	−0.09	1								
6. Firm size (log)	0.06	0.18**	0.11	0.05	0.28**	1							
7. Education	0.02	−0.03	−0.11	0.15**	0.10	0.25**	1						
8. Working experience	0.03	0.05	0.02	0.01	0.13*	0.06	−0.24**	1					
9. Tech turbulence	0.18**	0.19**	0.21**	0.13*	0.03	0.20**	0.03	0.06	1				
10. Demand uncertainty	0.07	0.03	0.00	−0.02	0.07	0.02	−0.01	0.03	0.11	1			
11. Competitive intensity	0.07	0.25**	0.30**	−0.01	0.12*	0.20**	−0.10	0.10	0.36**	0.00	1		
12. Economic support	0.22**	0.42**	0.45**	−0.07	−0.02	0.06	−0.14**	0.03	0.27**	0.08	0.27**	1	
13. Resource accessibility	0.12*	0.28**	0.25**	0.07	−0.16**	−0.06	0.00	−0.18**	0.27**	0.10	0.02	0.38**	1
Mean	3.50	3.74	3.92	0.40	1.03	2.35	3.69	4.48	3.23	3.19	3.88	3.53	2.94
S.D.	0.75	0.94	0.70	0.49	0.26	0.60	1.07	0.97	0.93	1.03	0.83	0.87	1.00
New Ventures (N = 99)													
1. Product innovation	1												
2. PL	0.03	1											
3. ML	0.22**	0.42**	1										
4. High tech	−0.02	−0.04	−0.03	1									
5. Firm age (log)	0.05	0.15	−0.05	0.09	1								
6. Firm size (log)	0.00	0.23**	0.21**	0.04	0.12	1							
7. Education	−0.07	0.07	−0.11	0.22**	0.17*	0.23**	1						
8. Working experience	0.06	0.10	0.12	−0.03	0.08	0.12	−0.16	1					
9. Tech turbulence	0.03	0.27**	0.25**	0.12	−0.12	0.17	0.03	0.10	1				
10. Demand uncertainty	0.03	0.06	−0.07	0.13	0.00	0.05	−0.05	0.20*	0.20**	1			
11. Competitive intensity	0.11	0.34**	0.39**	−0.01	0.04	0.24**	−0.05	0.17*	0.30**	0.04	1		
12. Economic support	0.17*	0.36**	0.38**	−0.06	−0.01	0.04	−0.17*	−0.03	0.38**	0.07	0.31**	1	
13. Resource accessibility	−0.04	0.37**	0.20**	0.09	−0.18*	−0.10	0.00	−0.18*	0.27**	0.06	0.11	0.37**	1
Mean	3.39	3.69	3.92	0.35	0.82	2.21	3.61	4.42	3.18	3.09	3.81	3.51	2.98
S.D.	0.71	0.96	0.70	0.48	0.20	0.54	1.10	0.95	0.99	0.95	0.83	0.91	1.06
Established Firms (N = 112)													
1. Product innovation	1												
2. PL	0.01	1											
3. ML	0.20**	0.55**	1										
4. High-tech	−0.01	−0.07	−0.13	1									
5. Firm age (log)	0.01	0.05	0.07	0.00	1								
6. Firm size (log)	0.05	0.13	0.04	0.02	0.26**	1							
7. Education	0.07	−0.15	−0.10	0.08	−0.06	0.24**	1						
8. Working experience	−0.02	0.01	−0.07	0.04	0.18*	−0.01	−0.33**	1					
9. Tech turbulence	0.31**	0.10	0.18*	0.14	0.14	0.23**	0.03	0.02	1				
10. Demand uncertainty	0.07	−0.01	0.05	−0.14	0.00	−0.03	0.01	−0.11	0.02	1			
11. Competitive intensity	0.01	0.16*	0.22**	−0.03	0.14	0.14	−0.16	0.04	0.42**	−0.05	1		
12. Economic support	0.25**	0.47**	0.51**	−0.07	−0.17	0.06	−0.12	0.07	0.13	0.08	0.23**	1	
13. Resource accessibility	0.28**	0.19*	0.30**	0.05	−0.21**	−0.02	0.00	−0.17*	0.28**	0.15	−0.07	0.39**	1
Mean	3.59	3.79	3.92	0.44	1.21	2.47	3.76	4.53	3.27	3.28	3.95	3.56	2.91
S.D.	0.78	0.92	0.71	0.50	0.15	0.62	1.04	1.00	0.87	1.09	0.83	0.84	0.94

*$p < 0.05$, **$p < 0.01$.

tion context [69]. Moreover, we checked for CMB by Harman's one-factor test. The results indicated that the first factor only explains 20.0% of covariance in the variables, no general factor accounting for the majority of covariance. We further applied a marker variable technique to spot CMB [70]. We used demand turbulence as the marker variable, since it did not have significant correlations with other variables. We took the correlation of demand turbulence and product innovation as an estimate of CMB and subtracted it from other pair-wise correlations. The results showed that CMB was unlikely to be a serious problem as well.

V. RESULTS

The descriptive statistics in Table II show basic information on each factor and correlations among them in full sample and two subsamples. We employed the regression method to test our hypotheses. We mean-centered variables to minimize the threat of multicollinearity especially in equations including squared terms [71]. In addition, we checked potential multicollinearity using variance inflation factor (VIF) tests and found that all VIFs were below the benchmark of 5 [72]. Thus, multicollinearity is not a threat to our findings.

TABLE III
REGRESSION RESULTS

	New Ventures (N = 99)		Established Firms (N = 112)	
	Model 1	Model 2	Model 3	Model 4
Constant	2.80*** (0.72)	1.94* (0.91)	2.06* (0.95)	3.22** (1.03)
High tech	0.02 (0.17)	−0.01 (0.16)	−0.12 (0.15)	−0.10 (0.15)
Firm age (log)	0.08 (0.39)	0.01 (0.41)	0.10 (0.53)	−0.09(0.52)
Firm size (log)	−0.03 (0.15)	−0.06(0.16)	−0.04(0.13)	0.03(0.13)
Education	−0.02(0.08)	0.01(0.08)	0.07(0.08)	0.01(0.08)
Working experience	0.02(0.09)	0.04(0.09)	0.01(0.08)	0.03(0.08)
Technological turbulence	−0.03(0.09)	−0.04(0.09)	0.29**(0.10)	0.29**(0.10)
Demand uncertainty	0.02(0.08)	0.05(0.08)	−0.01(0.07)	0.00(0.07)
Competitive intensity	0.06(0.10)	−0.01(0.11)	−0.15(0.10)	−0.20^{+}(0.10)
Economic support	0.16(0.10)	0.10(0.10)	0.20*(0.10)	0.24*(0.11)
Resource accessibility	−0.07(0.08)	−0.04(0.09)	0.09(0.09)	0.06(0.09)
PL		−0.14(0.10)		−0.21*(0.10)
PL square		−0.13^{+}(0.07)		
ML		0.32*(0.14)		0.04(0.10)
ML square				−0.07*(0.03)
F-value	0.43	0.84	2.33*	2.55**
R-square	0.05	0.13	0.20	0.26
R-square change	–	0.08	–	0.06
F-test for R-square change	–	2.70*	–	2.73*
Highest VIF	1.42	2.02	1.58	2.21

$^{+}p < 0.10, ^{*}p < 0.05, ^{**}p < 0.01, ^{***}p < 0.001$.

Table III reports our regression results. Hypothesis 1 argues for an inverted U-shaped linkage of PL to product innovation in new ventures. To test this nonlinear relationship, we included the square of PL in Model 2. This model finds a negative coefficient between PL square and product innovation in new ventures ($\beta = -0.13,\ p < 0.10$), which offers marginal support for Hypothesis 1. Hypothesis 2 argues that PL is negatively related to product innovation in established firms. It is supported by the results of Model 4 ($\beta = -0.21,\ p < 0.05$). In addition, Model 2 indicates that the relationship between ML and product innovation is positive in new ventures ($\beta = 0.32,\ p < 0.05$), offering support for Hypothesis 3. Model 4 finds an inverse U-shaped linkage of ML to product innovation in established firms ($\beta = -0.07,\ p < 0.05$), supporting Hypothesis 4.

VI. DISCUSSION

A. Theoretical Contributions

This study yields to two contributions to the literature. First, it draws a more comprehensive picture about the relationship between OL and the product innovation. The impact of OL on the product innovation is a research issue with significant theoretical and practical value, yet extant literature has ambiguous views on it. This study suggests that this ambiguity is caused by two limitations: failing in distinguishing OL drawing on the groups of audiences and overlooking the differences between new ventures and established firms. Through investigating the effects of PL and ML on product innovation in new ventures and established firms, respectively, this study surmounts such two limitations. It finds that the relationship of PL to product innovation is inverted U-shaped in new ventures, while negative in established firms, and the linkage of ML to product innovation is positive in new ventures, while inverted U-shaped in established firms. Such findings provide an explanation for extant ambiguity about the relationship between OL and the product innovation, and thereby, enrich our knowledge on this relationship.

Second, this study lays down a threshold over which to elaborate the implications of the OL. On the one hand, this study indicates that rather than employing "a narrow, unidimensional view of legitimacy" (see [12, p. 59]), studies should distinguish different types of OL drawing on the groups of audiences. This study clarifies PL and ML as two types of OL and identifies their differences in terms of resources they offer the access to and firms' behaviors and actions they result in. On the other hand, this study argues that although OL is important for new ventures and established firms, its implications vary in such two types of firms. The findings of this study provide support to these two arguments. Accordingly, to probe deeper into the implications of OL, future studies should include both OL audiences and research contexts (new ventures versus established firms) in consideration. In summary, this study represents one of the first attempts to distinguish different types of OL and compare their effectiveness between new ventures and established firms, which sheds light on further investigations on the implications of OL.

B. Managerial Implications

This study has strong practical value, in that its findings can guide firms taking an advantage of OL to promote the product innovation. In particular, this study finds that the relationship between PL and product innovation is inverted U-shaped in new ventures. As a result, new ventures must pay attention to PL when leveraging it to facilitate the product innovation. On the one hand, they should comply with relevant laws, rules, regulations, and standards to be recognized as legitimate by the government [23]. By this way, they can acquire regulatory resources,

and then, use these resources to meet resource requirements of the product innovation. On the other hand, new ventures must keep in mind that a too high level of PL is cost ineffective for them and an overemphasize on PL may generates behaviors and actions that counteract developing new products. Overall, new ventures should take advantage of PL to foster the product innovation, but they cannot excessively rely on it. In addition, this study finds a positive relationship of ML to product innovation in new ventures. Accordingly, new ventures should conform to prevailing rules and norms in the market to ensure that they are recognized by market players [3]. Then, they can acquire market resources from the market players and commit such resources to support the product innovation. Meanwhile, they also enjoy the role played by ML in facilitating them keeping sensitive to environmental changes and being entrepreneurial to identify and capture opportunities for the product innovation.

Moreover, this study finds that PL is negatively related to product innovation in established firms. Hence, it is not wise for established firms to rely on PL to promote product innovation. In particular, established firms should remember that PL can hardly contribute to meeting resource requirements of the product innovation, and it has a high cost that distracts resource commitment to innovations and directly counteracts to develop new products. Hence, when developing product innovation, established firms should not highlight PL; rather, they must isolate PL from product innovation to avoid its adverse effects. This study also reports that the linkage of ML to product innovation is inverted U-shaped in established firms. Established firms, therefore, need to follow prevailing rules and norms in the market to maintain ML. Then, they are able to acquire market resources through access offered by ML to satisfy resources requirements of the product innovation. However, they should keep in mind that a very high level of ML is not cost effective to develop new products and an overemphasis on ML may lock them in extant routines that counteracts to product innovation [59], [60]. Consequently, established firms must not excessively emphasize on ML; otherwise, they would suffer from the impeding role played by a too high level of ML.

C. Limitations and Future Directions

This study mainly has three limitations. First, the cross-sectional data used in this study may discount any causal statements being supported by empirical findings. While product innovation has been suggested as a possible tool for a firm to build and maintain its OL, product innovation does not certainly ensure its OL. For instance, extant studies have found that product innovation does not lead to better performance, unless it is well accepted in the market. Hence, rather than a firm can enjoy the contribution of the product innovation to OL, the firm needs to leverage its OL to introduce product innovation in the market, and then, profit from the innovation [12]. As a result, the impact of the product innovation on OL is much weaker than that of OL on the product innovation, which means that the reverse causality is not a serious issue in this study. Moreover, Sidhu *et al.* [73] has indicated that it is acceptable to utilize contemporaneous measures to test relationships with strong reasons. Thus, the cross-sectional data are acceptable to test our hypotheses. However, a longitudinal data are much appreciated in future studies. Second, our sample size is a little small. Since we asked multiple respondents in each firm to fill out the questionnaires and only retained those firms with complete answers, it is challenging to collect data from a large sample of firms. Although our sample is enough for our statistical analysis, it is more persuasive if further studies can use a larger sample data. Third, the data of OL are collected from firms' managers. It will be better if future research utilizes objective data to measure OL or collects data from the audiences.

This study suggests three directions for future research. First, how does the linkage of OL to product innovation vary in different contexts? This study finds that the linkages of PL and ML to product innovation are different in new ventures and established firms. It is very likely that other factors may moderate the relationship between OL and product innovation. Future studies should identify these factors to enrich our knowledge on the innovation effects of OL. Second, how PL and ML jointly affect product innovation is an interesting question. Further studies should clarify this question, because the answer helps firms integrate these two types of OL. Third, what are the optimal levels of PL and ML for the product innovation in new ventures and established firms? This study finds that both the linkage between PL and product innovation in new ventures and that of ML to product innovation in established firms are inverted U-shaped, inspiring future studies to investigate the optimal levels of PL and ML.

VII. Conclusion

This study elaborates the impact of OL on the product innovation by overcoming limitations of the extant literature in terms of failing in distinguishing OL drawing on the groups of audiences and overlooks the fact that the implications of OL vary among new ventures and established firms. It clarifies PL and ML as two key types of OL, distinguishes them in resources they offer access to and firms' behaviors and actions they result in, and examines their effects on the product innovation in new ventures and established firms, respectively. This study finds that the linkage between PL and product innovation is inverted U-shaped in new ventures, while negative in established firms, and the relationship between ML and product innovation is positive in new ventures but inverted U-shaped in established firms. This study draws a more comprehensive picture about the impact of OL on the product innovation as well as lays down a threshold over which to probe deeper in the implications of OL. Furthermore, it informs new ventures and established firms how to leverage OL to foster the product innovation.

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