

The Influence of Learning Orientation and Human Resource Practices on Firm Innovativeness and Innovations: An Application of the Push and Pull Framework

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Innovation is the key to sustainable competitive advantage and prosperity for firms in ever-changing business environments. The purpose of this study is to test the hypothesized model, which focuses on examining how human resource practices and learning orientation affect innovativeness and innovation performance. This study proposes the “learning-orientation-pull” and “HR-practices-push” concepts and tests them after analyzing a survey of 305 general managers or senior executives in Taiwan. The results indicate that learning orientation and HR practices significantly impact firms’ innovativeness, which subsequently has a significant positive effect on product, process, and administrative innovation. This result also revalidates that the push and pull framework is a workable idea for both explanation and prediction of a firm’s potential or possible innovation capabilities. HR practices and learning orientation are important exogenous constructs that influence a firm’s innovation abilities. Thus, an innovative firm appears to adopt HR practices and learning orientations to push and pull on product, process, and administrative innovation.

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1 Introduction

Innovation is one of the key components for organizational effectiveness, with innovative firms being able to create and seek new ways of developing an edge needed for sustainability (Janssen *et al.*, 2004; Yuan & Woodman, 2010; Hana, 2013; Leal-Rodriguez & Albort-Morant, 2016; Lee & Trimi, 2016). Rogers (1983) indicates that innovation can be a practice, an idea, or something new adopted by a firm. In terms of measuring the construct of innovation, many researchers focus on the successful implementations of creative ideas (Amabile *et al.*, 1996; Hurley & Hult, 1998), while several align themselves with innovation typologies that have been developed (Ibarra, 1993; Santos-Vijande & Alvarez-Gonzalez, 2007). Depending on the perspective employed, one can categorize innovation into the following dichotomies: technical vs. administrative (Daft, 1978), product vs. process (Han *et al.*, 1998), and radical vs. incremental (March, 1991). However, as Damanpour (1991) states, “organizational performance may depend more on the congruency between innovations of different types than on each type alone” (p. 582). Therefore, the literature broadly defines innovation as the generation or modification of a service, product, production technology, administrative structure, management strategy, or an operational procedure that is new to a firm (Damanpour, 1991; Calantone *et al.*, 2002; Liao & Wu, 2010; Skerlavaj *et al.*, 2010).

Researchers note that a firm needs to develop and combine a variety of capabilities for the purpose of fostering an innovative environment (Hurley & Hult, 1998; Hult *et al.*, 2004). This view takes innovation as an end result. Therefore, addressing the process of how to reach the end result or, specifically, how a firm becomes innovative in a consistent manner is an interesting task for researchers and practitioners (Meissner & Kotsemir, 2016). As a result, innovativeness is proposed and becomes an evident construct associated with innovation. Innovativeness relates to openness and readiness of being creative and forming new ways of administrating firm-related functions (Marcati *et al.*, 2008). The focus of the construct should put

more emphasis on the propensity of a firm that strives at being innovative in a continuous fashion. Sigauw *et al.* (2006) indicate that being innovative relies upon not merely a firm's long-term support, but also a multi-functional coordination within a firm. The broader innovation literature, however, does not offer any universally proposed or accepted idea in terms of the definitions of innovativeness and innovation. Both terms are used interchangeably along with a mix of interpretations as well (Wang & Ahmed, 2004). Lynch *et al.* (2006) point out that "the defining factor of long-term survival through innovation appears based not on specific, discrete innovations but rather on an overarching, organization-wide innovation capability structure" (p. 3).

Lynch, Menguc, and Auch's perspective (2006) provide insight into the importance of developing a positive environment for being an innovative firm. In this case, the push and pull framework is applicable to the innovativeness and innovation constructs. In our view, firms can internally enforce or "push" their employees to follow certain rules that are explicit. Simultaneously, firms can encourage or "pull" employees to think and act from those firms' perspective, thus linking to various organizational functions. Such encouragement or "pulled" action is tacit. The organizational literature presents a scarcity of findings that would provide insight as to the terms of the application of the push and pull framework. Therefore, a better understanding of how firms integrate internal functions that are innovative and lead to productive innovations is of true importance.

In this study we consider learning orientation as a necessity for employees to be creative and to fit into an organizational culture that is innovative. With the application of the push and pull framework, the major purpose of this paper is to examine how human resource practices (HR practice, the proposed pushed factor) and learning orientation (the proposed pull factor) affect innovativeness and innovation performance. In exploring these relationships, this study examines the impact of proposed variables on innovativeness and on each innovation component. Currently, there is no application of the push and pull framework in the innovation literature. The results of the study thus provide a new perspective in the innovation literature and serve as empirical data for researchers' further references.

2 Literature Review and Hypothesis Development

2.1 Push and Pull Framework

Borrowing from engineering, R&D, MS/MIS, and organizational science literature, Zmud (1984) suggests the ‘technology-push’ and ‘need-pull’ concepts to explain behaviors pertaining to technology adoption, but his study’s results fail to support the proposed model. Applying Zmud’s perspective, Chau and Tam (2000) also use the ‘technology-push’ and ‘need-pull’ concepts to examine a model associated with the adoption of new organizational technology. However, their study’s results do in fact support the proposed model and account for the usefulness of applying the ‘technology-push’ and ‘need-pull’ concepts. The business literature mostly applies the push and pull framework in the fields of marketing and entrepreneurship. In marketing, the push factor highlights the value provided by a product or service, while the pull factor stresses the significance of drawing customers to a specific product or service. Studies also apply the push and pull theory in examining entrepreneurial motivation as well. Gilad and Levine (1986) note that the push factor relates to situational forces of having individuals become entrepreneurs. In contrast, the pull factor postulates that the existence of possible profitable business activities or ventures can draw interested persons into entrepreneurial activities.

This study holistically utilizes the push and pull framework from the perspective of a management team. Pushing or having employees follow whatever the firm explicitly specifies or expects is imperative. Specifically, push factors refer to the organizational needs that prompt a management team to use human resources as alternatives to have employees engage in activities or behaviors that are in favor of the particular organization. Employing various human resource functions (e.g., establishing regulations, providing rewards, etc.) is necessary for the purpose of serving as guidelines to lead the directions of employees. Sound executions of human resources can ensure that established guidelines are properly followed, implemented, and monitored. Therefore, HR practices are considered as the push factor in this case.

Management teams strongly target pulling or motivating employees to perform in a preferred manner for their organizations. Pull factors refer to motivations that

enable employees to learn and thereby to become more proactive concerning organizational development. This study considers learning orientation as the pull factor, because we believe that this is pivotal for employees to become creative and to fit into an organization's culture. Knowledge is the cornerstone of being innovative and initiating innovation. Thus, the important aspects for organizational sustainability include realizing how to integrate knowledge bases, how to encourage employees to make use of learned knowledge, and accordingly how to exploit what is unknown. As such, the management team of an organization needs to nurture a learner-friendly environment so as to help motivate their employees to learn in a continuous fashion in order to produce novel ideas related to a variety of organizational functions.

2.2 Innovativeness

Considerably few studies in the innovation literature address the concept of innovativeness (Siguaw *et al.*, 2006). In fact, innovativeness has taken on mixed conceptualizations (Yildiz *et al.*, 2014) and often refers to the term "innovation orientation" (Manu, 1992; Siguaw *et al.*, 2006) or "innovation" (Hurley & Hult, 1998; McLean, 2005). Proposing innovativeness as a multi-dimensional construct, Wang and Ahmed (2004) indicate that its construct consists of five factors: product, market, process, behavioral, and strategic oriented. Hult *et al.* (2004) relate innovativeness to market, learning, and entrepreneurial orientation. Many researchers examine the relationship between innovativeness and various technology products (Blake *et al.*, 2003), while some focus on marketing or customer associated strategies (Drucker, 1954; Tellis *et al.*, 2009).

Amabile (1997) interprets innovativeness as the concept of firm creativity. Viewing organizations as learning identities, Menguc and Auh (2006) refer to innovativeness as a "firm's proclivity, receptivity, and inclination to adopt ideas that depart from the usual ways of approaching business" (p. 66). Other researchers further present that innovative behaviors performed by a firm involve the establishment of organizational culture (Santos-Vijande & Alvarez-Gonzalez, 2007; Skerlavaj *et al.*, 2010), as a strongly established culture can often motivate employees to make a commitment toward being innovative. Considering

innovativeness as an aspect of organizational culture, innovativeness can also denote a firm's capability to continuously generate novel or improved processes, products, services, or ideas (Hurley & Hult, 1998; Hult *et al.*, 2004). Such capabilities derive from organizational openness and a readiness for being creative and incorporating various firm-related functions (Marcati *et al.*, 2008).

2.3 Learning Orientation

Learning is a vital component in strategic management (Holt *et al.*, 2000). Learning orientation represents a set of organization-wide activities that create and utilize knowledge to gain competitive advantages (Calantone *et al.*, 2002), with the construct consisting of acquiring and sharing information relevant to customers, competitors, markets, and technology development (Hurley & Halt, 1998). The classical decision making model stresses the importance of gathering all associated information so that an individual or organization can make the best choices (George & Jones, 2002). However, even when all the relevant information can be obtained, interpreting and evaluating the information require people with sufficient knowledge, expertise, and experience. Thus, in consideration of promoting innovation, it becomes important how to train and encourage employees to be prepared for their expertise and job related skills.

Creating a friendly environment to nurture and sustain a firm's knowledge base is the essence of learning orientation. Calantone *et al.* (2002) indicate that commitment to learning, shared vision, open-mindedness, and intra-organizational knowledge sharing are the cornerstone of learning orientation. Commitment to learning refers to the degree of valuing and promoting a learning environment within a firm, while shared vision functions as a means to establish values with respect to individual, team, and organizational learning. Open-mindedness is the willingness to assess a firm's operational procedure, to make any necessary adjustments, and to appreciate creative ideas. Intra-organizational knowledge sharing focuses on functional department coordination within a firm. Through sharing information and communication, each department is able to systematically examine and structure information. Other than commitment to learning and having a shared vision, Zehir and Basar (2016) note that team orientation is an important factor in terms of the

construct of learning orientation. Team orientation refers to learning as a team. Each team member is considered as a converter by converting individual learning into group and organizational learning (Zehir & Basar, 2016). Siguaw *et al.* (2006) summarize learning orientation as an organization-wide understanding that entails learning and utilizing knowledge to help the firm be innovative in various ways.

2.4 Human Resource Practices

HR practices are important to firms' innovative capability (Perdomo-Ortiz *et al.*, 2009). Not only do they shape the behaviors, attitudes, and skill sets of employees, but they also support the visions and decisions of the management teams for the purpose of achieving organizational goals (Collins & Clark, 2003; Chen & Huang, 2009). McLean (2005) indicates that HR practices enable firms to develop an organizational culture that is creative and innovative. Akgun *et al.* (2007) further note that HR practices are a fundamental tool in terms of the development of a firm's learning capability.

Gupta and Singhal (1993) point out that people, not products, are the real assets for innovative firms. Therefore, HR practices serve as the cornerstone of developing a firm's employees to foster an innovative environment and highly correlate with the organizational culture of being innovative. In the recruiting process, for instance, firms can select those who are more creative and more likely to fit into their firms' culture. As a result, a pool of talents arises, and members can subsequently make their contributions. Firms can also provide training for employees to develop and acquire knowledge and skills relevant to various job functions. Accordingly, those training opportunities also facilitate the process of being innovative (Jimenez-Jimenez & Sanz-Valle, 2008). In sum, the development of HR practices is the key to successful implementation of an innovative culture in a firm, and they help at identifying and developing talents with innovative capabilities. Accordingly, those talents who are able to "think outside the box" will benefit the firm in the future (Maier *et al.*, 2014).

2.5 Innovativeness and Learning Orientation

Learning takes place largely when firms provide a favorable environment. When encouraged to engage in a variety of novel ideas associated with products, services, and processes, employees are likely to learn the knowledge and skills needed to make improvements or innovation. Such a learning attitude or propensity in an organization is called learning orientation. The literature often aligns learning orientation with the construct of market orientation. Both constructs are pivotal to firms' innovativeness (Hurley & Hult, 1998; Hult *et al.*, 2004). Being learning oriented is an organizational-wide attribute and activity, whereas market orientation is more narrowly defined since it generally relates to technology, product, or service innovation. In our view, market orientation is actually embedded in learning orientation. Slater and Narver (1995) also note that "a market orientation is inherently a learning orientation" (p. 67). In essence, learning serves as a vehicle for firms to change and rejuvenate. Thus, firms need to cope with external and internal environments over time for the purpose of gaining competitive advantages.

Innovativeness refers to "the generation, acceptance, and implementation of new ideas, processes, products, or services" (Calantone *et al.*, 2002, p. 515). This statement provides a clear vision in terms of the relationship between innovativeness and learning orientation. Knowledge generation and the core of knowledge management are the essence of being innovative (Liao *et al.*, 2008). Prior research notes that learning orientation can enhance a firm's innovation capability (Damanpour, 1991; Calantone *et al.*, 2002). Hurley and Hult (1998) further point out that learning orientation is antecedent to innovativeness. Regarding the application of the push and pull framework, we argue that learning orientation is actually a pull factor for firms, because a firm's top management team can only encourage, promote, or "pull" its employees to be creative and innovative. The above discussion leads to the following hypothesis.

Hypothesis 1: The magnitude of learning orientation positively correlates with the magnitude of firm innovativeness.

2.6 Innovativeness and Human Resource Practices

Firms with greater capabilities in innovativeness are likely to be more responsive to changing environments (Chen & Huang, 2009). Such responsiveness requires the

support of HR practices to achieve superior performance - that is, HR practices play an important role in helping firms shape their culture and, accordingly, become more reactive to external competitiveness. Wei (2006) notes that a pool of human capital with a wide array of experiences and skills is not merely an invaluable asset for firms, but also functions as a catalyst to fulfill the organizational goals via promoting and enforcing desirable behavioral utility among employees. In the case of being innovative, Chen and Huang (2009) also stress that firms need to leverage human capital for the purpose of developing organizational knowledge in terms of creating new products, services, and processes.

The literature recognizes HR practices as one of the determinants of innovation (Jimenez-Jimenez & Sanz-Valle, 2008; Crowley & Bourke, 2017). Human resource functions, such as recruitment, job design, organizational design, training and development, performance appraisal, and reward system, are all relevant to the establishment of being innovative. From the perspective of management teams, fostering an innovative culture can be desirable, as it involves not only the support of top management teams, but also the synergy of organizational culture. At the same time, a set of human resource management (HRM) policies should be in place to “identify, develop, evaluate, and reward the work behavior that is consistent with the firm’s innovation goals” (Jimenez-Jimenez & Sanz-Valle, 2008, p. 1210). Such HR policies and practices are the “push” factor for firms. Management teams may consider the potential of or the necessity for their firms to lay down a blueprint that reinforces their HR policies and practices. Employees are subsequently, of course, encouraged to follow the blueprint. If they, however, fail or refuse to comply, then a complete set of HR policies can be the backbone for the carrying out of organizational goals, visions, rules, orders, and favored behaviors. Gupta and Singhal (1993) point out that HRM strategies may not be a panacea for poor organizational performance, yet they are able to fuel firms’ innovative capabilities.

Though the literature recognizes relationships among HR practices, firm innovativeness, and innovation, very little research focuses on these issues. Most available studies in the literature describe the relationship between HR practices and innovation, with studies indicating that HR practices positively correlate to innovativeness and have a positive effect on innovation (Laursen, 2002; Laursen & Foss, 2003; Jimenez-Jimenez & Sanz-Valle, 2008; Chen & Huang, 2009).

Perdomo-Ortiz *et al.* (2009) hypothesize that there is a moderating effect on the relationship between HR strategies and innovation, but empirical evidence indicates that no moderating effect exists. Thus, the above discussion leads to the next hypothesis.

Hypothesis 2: The magnitude of human resource practices positively correlates with the magnitude of firm innovativeness.

2.7 Innovativeness and Innovation

Both innovativeness and innovation are pivotal to a firm's sustainability (Yuan & Woodman, 2010; Janssen *et al.*, 2004), but many researchers (Wang & Ahmed, 2004; Lynch *et al.*, 2006; Walsh & Harrington, 2010) note that innovation and innovativeness should be differentiated and indicate that innovativeness is, in fact, a standalone construct. More specifically, innovativeness is the firm's capacity to engage in the generation of new processes, products, or creative ideas (Hult *et al.*, 2004). In other words, innovativeness is a means to innovation - that is, innovativeness should be the precursor of innovation and a prior construct to innovation (Lynch *et al.*, 2006; Lynch *et al.*, 2010). On the other hand, innovation is an *ex post facto* construct that focuses on the generations or modifications of a service, product, production technology, administrative structure, management strategy, or an operation procedure that is new to a firm (Damanpour, 1991; Calantone *et al.*, 2002; Liao & Wu, 2010; Skerlavaj *et al.*, 2010). The above discussion leads to the following hypotheses.

Hypothesis 3: The magnitude of firm innovativeness positively correlates with the magnitude of product innovation.

Hypothesis 4: The magnitude of firm innovativeness positively correlates with the magnitude of process innovation.

Hypothesis 5: The magnitude of firm innovativeness positively correlates with the magnitude of administrative innovation.

3 Methods

The purpose of this study is to test the hypothesized model that focuses on

examining how human resource practices and learning orientation affect innovativeness and innovation performance. In order to describe the methods used herein, this section separates into the following order: (1) measures, (2) data collection, and (3) data analysis.

3.1 Measures

This study adopts and further develops multi-item scales from previous studies in order to test the proposed hypotheses, developing a total of 38 statements via an extensive literature review. We measure innovation using 14 statements adopted from Hurley and Hult (1998), Prajogo and Sohal (2006), Alegre and Chiva (2008), Chen and Huang (2009), and Lee and Yu (2010), categorize the construct of innovation into three dimensions (product, process, and administrative innovations), and then calculate product innovation by seven statements. Process and administrative innovations are respectively measured by three statements and four statements. Drawing upon previous studies (Calantone *et al.*, 2002; Wang & Ahmed, 2004; Santos-Vijande & Alvarez-Gonzalez, 2007; Skerlavaj *et al.*, 2010), the study uses six statements to measure the construct of innovativeness, with HR practices measured by 12 statements. The development of these statements is also from prior research (Gupta & Singhal, 1993; Ahmad & Schroeder, 2003; Chen & Huang, 2009), while we adopt the learning orientation statements from Gong *et al.* (2009) and Skerlavaj *et al.* (2010), presenting a total of six statements to measure the construct. A five-point Likert scale ranging from “strongly disagree” (1) to “strongly agree” (5) measures all constructs of the study. Figure 1 presents the tested conceptual model, with the internal consistency of each construct initially measured by using Cronbach’s α . The Cronbach’s α reliabilities of HR practices, learning orientation, innovativeness, product innovation, process innovation, and administrative innovation are .93, .89, .85, .90, .73, and .91, respectively. The values of each construct exceed the minimum of .70, as suggested by Nunnally (1967).

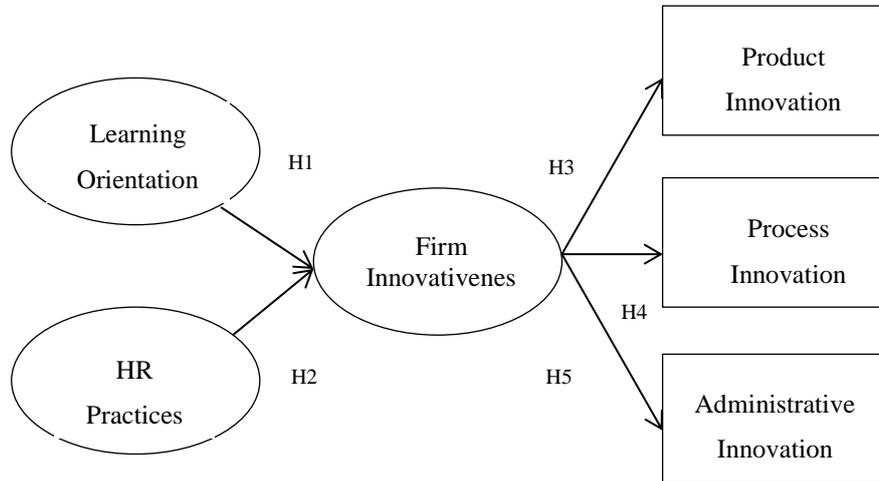


Figure 1. Conceptual Model of the Study

3.2 Data Collection

The population of this study consists of the 1,500 largest Taiwanese business firms. This study employs a census, with the accessible population obtained from China Credit Information Service (2012). The agency publishes the rankings of Taiwanese businesses regularly and is a recognized source for information relevant to firms' management and financial performance. The recipients of the questionnaire are general managers or senior executives of identified firms, as it is assumed that these individuals are one of the most knowledgeable persons in their firm's operations and strategic orientation (Santos-Vijande & Alvarez-Gonzalez, 2007).

Empirical data for the study come via a mailed survey, which included a cover letter, a questionnaire, and a pre-paid, pre-addressed return envelope. The cover letter addressed the importance of the study, provided an assurance of confidentiality, and was signed by the authors with the school letterhead. The second package was mailed to those non-respondents one month after the mailing of the first package. The second package also included a cover letter, a questionnaire, and a pre-paid, pre-addressed return envelope. The difference in packages one and two is the

content of the cover letters. The response total is 313 general managers or senior executives. Among the 313 returned questionnaires, eight are deemed unusable, and therefore the 305 usable responses yield an overall response rate of 20.3%.

3.3 Data Analysis

This study asks the respondents to rate their organizations based on their knowledge. Appendix 1 presents the descriptive statistics and factor loading of each statement related to each construct (i.e., HR practices, learning orientation, innovativeness, product innovation, process innovation, and administrative innovation). This study executes structural equation modeling (SEM), which enables investigators to examine the extent to which a pattern appears in the data and permits investigators to sort through multiple observed variables while taking measurement error into consideration (Hair *et al.*, 2006). We perform AMOS to test the proposed structural model, first employing both composite reliability (CR) and average variance extracted (AVE) to further assess the overall reliability of identified statements (Table 1, Appendix 1). The results of the reliability analysis indicate that all CR estimates reach the acceptable level (larger than .70). The AVE value of innovativeness is slightly lower, but is also acceptable for this study. Table 1 presents an overview concerning the means, standard deviations, and correlations among the constructs. The techniques concerning maximum likelihood estimation test the fitness of the model. The assessments of the model fit are satisfactory ($\chi^2 = 1220.871$, $df = 648$; $\chi^2 / df = 1.884$; GFI = .830; CFI = .928; NFI = .859; IFI = .928; TLI = .922; RMR = .028; RMSEA = .054). This suggests that the reasoning of the proposed relationships fits the data.

Table 1. Measures of Correlations, Reliability Coefficients, and AVEs

Construct	1	2	3	4	5	6	AVE
1. HR practices	.73						.53
2. Learning orientation	.58	.75					.56
3. Innovativeness	.59	.46	.61				.36
4. Production innovation	.40	.54	.60	.75			.56
5. Process innovation	.39	.32	.53	.57	.69		.48
6. Administrative innovation	.53	.27	.21	.52	.50	.86	.74
6. Administrative innovation	.93	.88	.77	.90	.73	.92	
Composite reliability							

Note: Diagonals represent the square root of AVEs. AVE = Average variance extracted.

Figure 2 presents the results of the conceptual framework. Concerning the hypotheses, the finding for H1 indicates that there is a significant relationship between employee learning orientation and firm innovativeness (Learning orientation \rightarrow innovativeness, $H1 = .296, p < .05$). As hypothesized, the two constructs are positively related to each other. Organizations that encourage their employees to learn or to be creative demonstrate a higher degree of innovativeness. The finding for H2 suggests that HR practices are positively associated with firm innovativeness (HR practices \rightarrow innovativeness, $H2 = .610, p < .01$). This finding supports the reasoning in the literature and the hypothesis proposed herein - that is, organizations with the support of HR practices also demonstrate a higher degree of firm innovativeness. Together, these two paths (H1 and H2) account for 77.9% of the variance in terms of firm innovativeness.

The finding for H3 reveals that innovativeness is positively associated with product innovation (Innovativeness \rightarrow product innovation, $H3 = .757, p < .01$). The model accounts for 68.0% of the variance in product innovation, supporting the hypothesis of this study. Specifically, organizations with a higher degree of innovativeness exhibit better performance on product innovation. In a similar vein, the finding for H4 suggests that innovativeness is positively associated with process innovation (Innovativeness \rightarrow process innovation, $H4 = .826, p < .01$). The model accounts for 57.1% of the variance in the process innovation, thus supporting the hypothesis. Organizations with a higher degree of innovativeness show better performance on process innovation. Finally, H5 explores the relationship between innovativeness and administrative innovation. The finding of the study indicates that a positive relationship exists between the two, thus supporting the hypothesis of the study (Innovativeness \rightarrow administrative innovation, $H5 = .775, p < .01$). The model accounts for 60.1% of the variance in the administrative innovation. Organizations with a higher degree of innovativeness have a better performance outcome on administrative innovation.

The practical implication of the findings is that management teams need to have intentional, systematic, and purposeful strategies to manage their firms' human assets by providing a variety of opportunities for employees to learn as well as a wide array of HR practices/functions in order to nurture an environment that characterizes being creative and innovative. Furthermore, this study offers empirical evidence that innovativeness enhances product, process, and administrative innovation. Such results confirm previous findings of other researchers (Hurley & Hult, 1998; Akgun *et al.*, 2007; Santos-Vijande & Alvarez-Gonzalez, 2007; Jimenez-Jimenez & Sanz-Valle, 2008). Since relatively few studies examine the relationship between the constructs of innovativeness and innovation, more tests on this topic should be a priority.

We hypothesize that learning orientation (the pull factor) and HR practices (the push factor) influence innovativeness, which in turn has an impact on innovation. This study is able to provide data-based evidence that addresses these relationships and supports the "learning-orientation-pull" and "HR-Practices-push" concepts - that is, the application of the push and pull framework is a workable idea for both explaining and predicting a firm's potential or possible innovation capabilities. The findings of this study along with the intuitive feature of this model for explaining innovativeness and different types of innovations also suggest that "the general support observed for the overall research model should encourage future research" (Chau & Tam, 2000, p.230).

No researcher among the previous literature has addressed the concepts of "learning-orientation-pull" and "HR-practices-push." The results of the study can serve as an initial reference for the application of such concepts. Since the response rate of this study is not ideal, more studies are needed to understand and address the dynamics and applicability of the "learning-orientation-pull" and "HR-practices-push" concepts.

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Appendix 1: Descriptive Statistics (Mean and SD, N=305) and Construct Reliability

Construct/statement	Mean	SD	Factor loading
HR Practices:			
1. Select managers based on their expertise and skills.	3.89	.72	.68
2. Select talents for the future.	3.83	.79	.74
3. Provide incentives based on performance and reward.	3.53	.86	.68
4. Develop plans for the needs of various positions.	3.84	.62	.69
5. Develop an effective performance appraisal system.	3.83	.70	.66
6. Develop future-oriented job analysis.	3.72	.72	.74
7. Provide job-related training programs/activities.	3.91	.71	.72
8. Stress the importance of department communications, which serve as the cornerstone of strategic HRM.	3.67	.79	.74
9. Establish an effective procedure in relation to HR practices.	3.66	.83	.79
10. Establish organizational goals/strategies with employees.	3.81	.78	.79
11. Believe the importance of supporting HR strategies.	3.51	.87	.82
12. Develop effective HRM strategies in a continuous fashion.	3.81	.81	.64
Learning Orientation:			
1. Employees in my organization are encouraged to learn.	3.74	.76	.83
2. Employees in my organization try their best to prepare for task-oriented knowledge.	4.13	.59	.59
3. Employees in my organization consider their assignments challenging.	3.66	.75	.79
4. Employees in my organization are encouraged to develop a variety of new skills.	3.77	.73	.77
5. Employees in my organization are expected to be masterful concerning their job-related tasks.	3.85	.66	.72
6. Employees in my organization are encouraged to learn in-depth knowledge associated with their assignments.	3.91	.68	.75
Innovativeness:			
1. My organization encourages its employees to	4.25	.69	.54

	collectively create something new.			
2.	My organization provides needed resources to help implement creative ideas/plans.	4.04	.65	.58
3.	My organization encourages its employees to provide proposals concerning creative ideas/plans.	4.19	.69	.56
4.	Managers of my organization are willing to take a risk at creating something new.	3.83	.74	.65
5.	My organization has internally created a procedure for the assessment of creative ideas/plans.	3.63	.86	.59
6.	My organization encourages its employees to share their knowledge.	4.03	.75	.69
	Product Innovation:			
1.	New products/services produced by my organization have the priority of being introduced into the market.	3.56	.86	.67
2.	Customers think that my organization's products/services are novel.	3.63	.79	.82
3.	The quality of products/services produced by my organization is better than that of our competitors.	3.93	.73	.80
4.	My organization has produced more novel products/services than our competitors in the past five years.	3.66	.84	.72
5.	My organization focuses on developing patented products in a continuous fashion.	3.48	.96	.64
6.	My organization is able to develop new products/services for the purpose of meeting market demand.	3.65	.86	.81
7.	My organization is able to modify our products/services in order to enter newly developed markets.	3.78	.81	.78
	Process Innovation:			
1.	My organization is able to improve the quality of our products/services in a continuous fashion.	4.10	.63	.70
2.	My organization provides customized products/services to meet customers' needs.	4.06	.69	.69
3.	My organization makes efforts to expand distribution channels for its products/services.	3.93	.73	.68
	Administrative Innovation:			
1.	The management team is sensitive to external changes.	3.81	.71	.72
2.	The management team makes efforts to cope with unplanned changes.	3.70	.68	.92
3.	The management team strives at being efficient in terms of organizational management.	3.76	.67	.91
4.	The management team strives for the integration of various management functions.	3.78	.67	.88

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