

Prior knowledge, transformative learning and performance

Transformative
learning and
performance

Wen-Hai Chih and Ling-Chu Huang

*Department of Business Administration,
National Dong Hua University, Hualien, Taiwan, and*

Tsung-Ju Yang

Minghsin University of Science and Technology, Hsinchu, Taiwan

103

Received 25 September 2014
Revised 23 January 2015
1 June 2015
27 July 2015
Accepted 9 September 2015

Abstract

Purpose – The purpose of this paper is to explore the prior knowledge perspective on e-business environments to maintain expertise by firms. The perspectives indicate the crucial of e-service innovation and emphasize the transformative learning in the model.

Design/methodology/approach – The model proposed in this study examines the relationships among customer empowerment, normative pressure, innovativeness, transformative learning, and performance. This study presents empirical results from benchmark services in e-markets of Taiwan. There were 225 valid samples to test the proposed model with SEM.

Findings – Customer empowerment has significant and positive effects on innovativeness and transformative learning, respectively. Normative pressure has significant and positive effects on innovativeness and transformative learning, respectively. Innovativeness has significant and positive effects on transformative learning. Transformative learning has significant and positive effects on financial, customer, and business performance, respectively. In addition, innovativeness mediates the effects of customer empowerment and normative pressure on transformative learning.

Research limitations/implications – This study finds that transformative learning is a crucial role on customer performance. Firms should emphasize on transformative learning of prior market and technological knowledge to achieve customer performance.

Originality/value – Customer empowerment is the technological knowledge innovation of e-business environments. However, normative pressure has to implement the market knowledge orientation on e-business environments. Besides, transformative learning has the largest effect on customer performance.

Keywords Customer empowerment, Normative pressure, Innovativeness, Transformative learning, Performance

Paper type Research paper

Introduction

Internet technology has many implications for various branches of marketing, including consumer (Peterson *et al.*, 1997), business (Kaplan and Sawhney, 2000), and international marketing (Quelch and Klein, 1996).

Prior research has revolutionized the service industry through the development of e-business environments, resulting in improved marketing models. Firms require prior market and technological knowledge to maintain expertise, and firms with this knowledge may flexibly adapt to environmental changes and avoid core rigidities (Teece, 2007). Market knowledge is essential for maintaining knowledge, combining it with other knowledge, and reapplying knowledge (Marsh and Stock, 2006). Additionally, firms with greater technological knowledge can more easily maintain knowledge and apply knowledge (Garud and Nayyar, 1994). Firms generally have insufficient technological and market knowledge. Thus, differences among firms regarding prior knowledge likely influence inter-firm differences in relation to transformative learning (Argote *et al.*, 2003). Therefore, e-markets are strategically



Industrial Management & Data
Systems
Vol. 116 No. 1, 2016
pp. 103-121
© Emerald Group Publishing Limited
0263-5577
DOI 10.1108/IMDS-09-2014-0273

crucial because they assist firms in interacting with customers in a market setting (Grewal *et al.*, 2001).

E-business environments contain two competitive environmental factors: customer power and normative pressure (Wu *et al.*, 2003). Customer power refers to exogenous customer demands that firms should implement specific practices. Therefore, responses to customer power tend to be reactive rather than proactive. Technological advances increase customer-firm, customer-customer, and firm-firm interaction (Yadav and Varadarajan, 2005). Customer-oriented firms tend to be proactive, responding to customer needs and even customizing service according to these needs (Jaworski and Kohli, 1996). In this new marketing paradigm, consumers and firms co-create value at various interaction points (Prahalad and Ramaswamy, 2004).

Unlike customer power, customer empowerment reflects firm initiative, or the extent to which firms provide customers with technological avenues through which to connect and collaborate with these firms (Ramani and Kumar, 2008). The ability of firms to interact with individual customers differentiates firms from one another (Reinartz *et al.*, 2004). Moreover, market knowledge of normative pressure arises from the threat of lost legitimacy. When normative pressure is high, organizations do not innovate according to their assessment of the potential efficiency and returns of their innovations but rather on the basis of the institutional pressure created by the amount of business (Abrahamson and Rosenkopf, 1990). Nevertheless, firms participate in e-markets to enable buyers and sellers to communicate in market space and exchange information related to price and product specifications, and a dynamic price-making mechanism facilitates transactions between firms and customers (Kaplan and Sawhney, 2000).

According to the organizational learning perspective, the most evident manifestations of learning-oriented firms appear at the cultural level (Schein, 1985). To avoid losing expertise, firms must actively retain assimilated knowledge (Lane *et al.*, 2006; Marsh and Stock, 2006). Transformative learning links knowledge and technological learning, and firms possessing only prior knowledge cannot perform effectively in a highly dynamic environment (Garud and Nayyar, 1994; Argote *et al.*, 2003). Thus, to enhance their performance, firms typically implement new ideas, products, and processes (Hurley and Hult, 1998). Innovativeness is embedded in learning-oriented firms with more exploratory and exploitative cultures and facilitates discovering the expressed and latent needs of customers (Slater and Narver, 1999).

Data on dynamic markets suggest that technological advances have changed the interaction between firms and customers (Wu *et al.*, 2003; Yadav and Varadarajan, 2005; Ramani and Kumar, 2008). Previous research has emphasized the effect of new technology on organizational processes (Heide and Weiss, 1995) but failed to discuss the influence of e-business environments and performance on these processes; thus, further investigation is required. Moreover, further studies on the service industry are required. In this study, customer empowerment, normative pressure, and transformative learning were explored to determine the effects of financial, customer, and business performance on the e-service learning ability of firms (Hult and Ketchen, 2001).

The purpose of this study was to determine the relationships among customer empowerment, normative pressure, innovativeness, transformative learning, and performance to ensure compliance with service marketing approaches (Hult and Ketchen, 2001). The e-service economy of Taiwan was used as the study background. Data were collected from benchmark enterprises in the service industry. This study clarified how firms enhance competitive advantage through transformative learning and explored firm financial, customer-service, and business performance. This study

revealed that e-markets are dynamic for firms and suggested that the organizational learning perspective applies to the study of e-business environments and performance according to the study by Lichtenthaler (2009).

Conceptual development

According to the service marketing literature, prior knowledge includes customer empowerment, normative pressure, and innovativeness are as follows.

Prior knowledge

Firm innovativeness varies according to firm environments (Jansen *et al.*, 2006). Analyzing firm environments is crucial to evaluating the effects of transformative learning because different environments imply various dynamic capability valuations (Eisenhardt and Martin, 2000). Prior research on dynamic capabilities has emphasized the importance of technological and market knowledge (Lichtenthaler and Ernst, 2007). Technological knowledge refers to technical requirements. Firms often acquire external knowledge specifically to respond to e-market environments, and this strategic action underscores the importance of environmental influences (Cassiman and Veugelers, 2006). However, firm transformative learning creates organizational inertia in e-market environments (Leonard-Barton, 1992). According to the literature, e-business environments contain two competitive environmental factors: customer empowerment (Ramani and Kumar, 2008) and normative pressure (Wu *et al.*, 2003). Therefore, this study discusses the influence of technological and market knowledge in the following analysis of e-business environments.

Customer empowerment

Technological advances increase customer-firm, customer-customer, and firm-firm interaction (Yadav and Varadarajan, 2005). Firms should focus on building interaction orientation, regardless of whether competitive intensity is high or low (Ramani and Kumar, 2008). A theory gaining credence is that firms cannot think and act unilaterally, and in this new paradigm of marketing, consumers and firms proceed at various points of interaction (Pralhad and Ramaswamy, 2004). Customer empowerment reflects the extent to which firms provide their customers avenues to connect with these firms and actively shape the nature of transactions. Additionally, customer empowerment reflects the degree to which firms enable their customers to connect and collaborate with one another by sharing information, praise, criticism, suggestions, and ideas about their products, services, and policies (Ramani and Kumar, 2008). Firms must produce high-quality products, sell their products and services strategically, and understand the status of the market. In the future, the ability of firms to interact successfully with their customers will differentiate them from other firms (Reinartz *et al.*, 2004). The customer concepts with respect to related available in prior research, such as relationship orientation and customer-relating capability. The concept of "relationship orientation" has been construed as the opposite of a transaction mentality (Day, 1999). It "reflects relevant values, behavioral norms, the shared mental modes used to make sense out of patterns of customer loyalty and defection, and decision criteria" (Day and Van den Bulte, 2002). By contrast, customer empowerment is defined according to its various points of interaction and is distinct from the broader concept of customer-relating capability (Deshpandé *et al.*, 1993; Hamel and Prahalad, 1994) because customer empowerment is specific, actionable, and can be applied by firm to enhance performance.

Normative pressure

E-markets profoundly influence how organizational buyers and sellers interact with one another. As a result, clarifying the behavior of firms that participate in these markets is crucial (Grewal *et al.*, 2001). Organizational e-market development is an imitation of a successful benchmark. They believe that the main reason for benchmark success is involved in e-markets. Some organizations have ceremoniously adopted the electronic market as a pretense to attain legitimacy (Scott, 1987; Abrahamson and Rosenkopf, 1990). Institutional factors affect marketing organization. Normative pressure can hasten the adoption of e-business among businesses, depending on the specific types of pressure exerted by business entities. For example, institutional pressure motivates upstream suppliers and downstream channel members to embrace socially accepted norms and behaviors (Grewal and Dharwadkar, 2002). Normative pressure arises from the threat of lost legitimacy. When normative pressure is high, organizations innovate not according to efficiency and profit but rather on the basis of institutional pressure created by the innovations of other businesses (Abrahamson and Rosenkopf, 1990). In the context of e-business, normative pressure is particularly relevant because the early growth of e-business was characterized by the popularity of high volume and intensity. The press forecasts that businesses will fall behind other businesses if they do not incorporate e-business into their business models. The role of institutional factors highlights the influence of marketing within organizations. They argue that the pressure of conformity and legitimacy arise from external environments such as customers, suppliers, or the general public, all of which affect the role of marketing within organizations (Homburg *et al.*, 1999).

Innovativeness

Organizations aim to pursue market opportunities. To innovate, firms typically adopt or implement new ideas, products, and processes (Hurley and Hult, 1998). However, the broad definition of innovation includes the implementation of new ideas, products, and processes (Thompson, 1965). Furthermore, the definition of innovation by Zaltman *et al.* (1973) is an idea, practice, or material artifact perceived as new by the relevant unit of adoption. Moreover, Amabile *et al.* (1996) defined innovation as the implementation of creative ideas within organizations. Additionally, using Hurley and Hult's (1998) concept of administrative innovation, Menguc and Auh (2006) defined innovativeness as firm organizational and management innovation. This concept includes the notion of openness to new ideas in firm culture, in accordance with Day's (1994) innovativeness concept in organizational culture or administrative innovation. Innovativeness is embedded in the cultures of learning-oriented firms. The cultures of these firms are more exploratory, discovering the expressed and latent needs of customers (Slater and Narver, 1999). The most evident manifestations of learning orientations appear at the cultural level (Schein, 1985). Firms with innovative cultures implement new ideas, products, and processes through management innovation to enhance firm performance (Slater and Narver, 1995). This study defines innovativeness as firm reception to new ideas and innovation regarding organizational culture (Hurley and Hult, 1998).

Prior knowledge and transformative learning

To retain expertise, firms need sufficient prior technological and market knowledge (Marsh and Stock, 2006). Firms with prior technological and market knowledge may adapt to environmental changes and avoid core rigidities by maintaining a large

knowledge base (Teece, 2007). Transformative learning is essential because assimilated knowledge often must be maintained for years before it can be applied to new products (Rothaermel and Deeds, 2004). Technological and market knowledge contribute to explaining path dependencies in transformative learning (Kogut and Zander, 1992; Ernst, 2001). Firms with greater technological knowledge can more easily maintain and reapply knowledge (Garud and Nayyar, 1994). Market knowledge is crucial for maintaining knowledge, combining it with other knowledge, and for reactivating knowledge (Marsh and Stock, 2006). Because transformative learning affects how much knowledge can be applied in exploitative learning, it is necessary for enhancing firm performance on the basis of retaining assimilated knowledge (Lane *et al.*, 2006).

Customer empowerment and transformative learning

Firms continue to evolve, grow, and customize their products and services. According to Deshpandé *et al.* (1993), market orientation is customer led and prioritizes customer interests to generate long-term profit. From the perspective of customer empowerment, individual customers (customer led) rather than the market (market oriented) are used as units of analysis, and marketing activities are conducted with customers rather than for customers. Customer-customer links are strategically crucial to customer empowerment for firms. Customer empowerment also reflects firms' ability to respond to individual customers, enabling firms to form profitable customer relationships by capitalizing on information acquired through successive interactions with customers (Ramani and Kumar, 2008). By increasing the pressures on firms to generate profit, customers demand heterogeneity and advances in technology. Ramani and Kumar (2008) suggested that firms must develop an orientation to facilitate success in interactive market environments. Interactions help firms increase their knowledge of customer preferences (Srinivasan *et al.*, 2002). Previous research has shown that efficient interaction and interface management generates sustained competitive advantage (Rayport and Jaworski, 2005). This indicates that customer empowerment must be incorporated into firm innovation. The two stages of the innovation include innovative initiation and transformative implementation (Hurley and Hult, 1998). Innovative initiation is openness to new ideas in firm culture. Transformative implementation is an organization's ability to adopt or implement new ideas, processes, or products (Burns and Stalker, 1961). Therefore, this study proposes *H1* and *H2*:

- H1.* Customer empowerment has significant and positive effect on innovativeness.
- H2.* Customer empowerment has significant and positive effect on transformative learning.

Normative pressure and transformative learning

In the e-business market, normative pressure is particularly crucial. Normative pressure arises from the threat of lost legitimacy (Abrahamson and Rosenkopf, 1990). Normative pressure can catalyze the application of e-business (Grewal and Dharwadkar, 2002). For example, institutional factors shape the influence of marketing within organizations. Homburg *et al.* (1999) argued that pressure for conformity and legitimacy arises from sources in the external environment such as customers, suppliers, or the general public, all of which often crucially influence the role of marketing in organizations. This may pressure businesses to conform by adopting e-business initiatives in communicating with outside parties, order-taking, and procurement. Moreover, administrative and human resource managers may be normatively pressured to adopt e-business initiatives in

internal administration and communication. Innovation is the central mechanism by which organizations develop capabilities and adapt to their environments, thus avoiding capability-rigidity. Organizations must learn to transform their capabilities into knowledge, skill, and processes. Firms implement transformative learning to connect using the outside-in process. A large number of external specialties absorb the combinations of the complexes (Day, 1994). Therefore, this study proposes *H3* and *H4*:

H3. Normative pressure has significant and positive effect on innovativeness.

H4. Normative pressure has significant and positive effect on transformative learning.

Innovativeness and transformative learning

Innovation is the generation, acceptance, and implementation of new ideas, processes, products, or services (Thompson, 1965). The implementation of innovation is determined to be new according to the unit by which innovation is adopted (Garcia and Calantone, 2002). The innovativeness of firm culture acts in concert with various structural properties. The innovative capacity of organizations affects transformative learning through innovative initiation and transformative implementation (Hurley and Hult, 1998). Innovativeness in organizational culture facilitates the implementation of innovations (Zaltman *et al.*, 1973). Firms with a greater capacity for transformation are more able to develop a competitive advantage, and can achieve higher levels of performance (Day, 1994). Therefore, this study proposes *H5*:

H5. Innovativeness has significant and positive effect on transformative learning.

According to technological opportunism, e-business firms face normative pressure in the market, and firms' ability to sense and respond to customer demand for new technology constitute innovation (Srinivasan *et al.*, 2002). To assess the competitive e-business environment, Wu *et al.* (2003) proposed that normative pressure and customer power are the antecedents to discussing the adoption of optimal technology. Thus, e-business firms are closely related to innovation adoption. Menguc and Auh (2006) suggested that firm innovativeness could facilitate the development of new firm capabilities. Learning and assimilating knowledge quickly is crucial for firms to gain a competitive advantage in the market. Additionally, managing transformative learning strategies have become a challenge for inter-firm relationships (Zahra and George, 2002). However, innovativeness is a complex process that requires specific structural and cultural characteristics. Hurley and Hult (1998) asserted that firm cultural characteristics are related to innovativeness. The cultural aspect can be categorized as market knowledge (e.g. market focus, communication, support, and collaboration) and technological knowledge (e.g. power sharing, learning, and development) (Atuahene-Gima, 2005). Prior market and technological knowledge are maintained and activated through transformative learning (Lichtenthaler, 2009). In particular, innovativeness has complementary characteristics. Prior knowledge is embedded in a socially complex firm-level system of learning. Innovativeness creates more firm value and generates greater firm learning (Tece *et al.*, 1997). Therefore, this study proposes *H5a* and *H5b*:

H5a. Innovativeness has a mediating effect on customer empowerment and transformative learning.

H5b. Innovativeness has a mediating effect on normative pressure and transformative learning.

Transformative learning and performance

Firms are increasingly relying on external knowledge to foster innovation and enhance performance (Ireland *et al.*, 2002; Zollo *et al.*, 2002), including financial, customer, and business performance (Kirca *et al.*, 2005). Innovative capacity is related to absorptive capacity (Cohen and Levinthal, 1990; Lichtenthaler, 2009). Because of the managerial challenges of inter-firm knowledge transfer, absorptive capacity is a major source of competitive advantage (Zahra and George, 2002). The importance of transformative learning decreases in turbulent environments because of new developments, which reduce the need for retaining knowledge. However, new knowledge is often cumulatively generated from existing knowledge (Kogut and Zander, 1992). The development of technology and markets suggests that knowledge retention becomes more crucial as environmental turbulence increases (Marsh and Stock, 2006; Helfat *et al.*, 2007). Transformative learning links these two competencies to maintain knowledge over time (Garud and Nayyar, 1994). Process-based firms are more able to innovate and achieve higher performance (Day, 1994). Therefore, this study proposes *H6*, *H7*, and *H8*:

- H6*. Transformative learning has significant and positive effect on financial performance.
- H7*. Transformative learning has significant and positive effect on customer performance.
- H8*. Transformative learning has significant and positive effect on business performance.

Method*Sample, pretest and data collection*

This study collected samples from the China Credit Information Service (CCIS) Ltd which published the top 5,000 largest corporations and selected the top 2,000 service firms in Taiwan. The typical service industry in Taiwan includes general services, finance, and information firms.

To increase the return rate, this study mailed questionnaires directly to the general manager of each firm with return letter which included research institutions and researchers based on the latest corporation directory published by CCIS. Before mailing the questionnaires, this study used convenient sampling to select 60 service firm managers and 60 EMBA students for pretest. There were 118 valid samples for pretest. The results of the reliability analysis reached Cronbach's α ($\alpha > 0.7$) coefficient standard for each construct and initiated the formal survey.

Measures

The respondents of this study were general managers for each company. Except for the age, capital, employee, annual turnover, and listed/OTC company, this study adopted the Likert seven-point scale for the survey, with 1 indicating "strongly disagree" and 7 indicating "strongly agree."

The definition of customer empowerment is the extent to which a firm provides its customers technological avenues to connect with this firm and collaborate with each other. The measurement items of customer empowerment with three items were from Ramani and Kumar (2008). The definition of normative pressure is that competitive firms are willing to accept and use of innovative technologies. The measurement items of normative pressure with five items were from Wu *et al.* (2003). The definition of

innovativeness is the culture of a firm to implement new ideas, products, or processes successfully. The measurement items of innovativeness with four items were from Hurley and Hult (1998). The definition of transformative learning is that firms can use the concept of organizational learning link priori knowledge learning process. The measurement items of transformative learning with eight items were from Lichtenthaler (2009). A customer service-oriented firm evaluates the performance by using subjective performance indicators to analyze firm-level performance. The measurement items of performance including financial performance with three items, customer performance with two items, and business performance with three items were from Kirca *et al.* (2005) and Ramani and Kumar (2008).

Analyses and results

Measurement model

This study mailed questionnaires to the top 2,000 service firms in Taiwan and collected 241 samples (12.0 percent) with 225 valid samples (11.2 percent) after removing invalid samples. This study applied non-response bias test by dividing samples into two groups of before and after (75 and 25 percent) based on receiving time (Armstrong and Overton, 1977) and compared with basic data, including the age ($F = 1.273$), capital ($F = 0.863$), employees ($F = 0.140$), annual turnover ($F = 0.988$), and listed/OTC company ($F = 0.115$). The result showed no significant difference between these two groups.

The following is the demographics of this study. More than half of the service firms in the samples have been in operation for more than 21 years (52.4 percent), and have capital of under 500 million NTD (56.0 percent), annual turnover under five billion NTD (79.1 percent), less than 500 employees (76.9 percent). A smaller percentage was listed/OTC companies (23.5 percent). These results reflect the status of the larger service firms in Taiwan.

This study conducted reliability analysis on the measurement items. The Cronbach's α of the customer empowerment, normative pressure, transformative learning, and performance (include financial, customer, and business performance) was 0.712, 0.840, 0.849, 0.879, 0.750, 0.760, and 0.766, respectively, which were all higher than the standard of 0.7 suggested by Nunnally (1978). This indicated that the internal consistency of constructs was good (Table I).

The measurement of the validity in this study refers to the development of literature with theoretical basis. This study applied practical and academic experts and the pretest to evaluate and revise the measurement. This study indicated content validity. The sample size was consistent with Bagozzi and Yi (1988), who recommended a sample of no less than 200. In accordance with Anderson and Gerbing (1988), the

Constructs	Items	Mean	Var.	α	CR	AVE	References
Customer empowerment	3	5.6	0.26	0.712	0.797	0.574	Ramani and Kumar (2008)
Normative pressure	5	5.4	0.03	0.840	0.828	0.521	Wu <i>et al.</i> (2003)
Innovativeness	4	5.8	0.08	0.849	0.867	0.627	Hurley and Hult (1998)
Transformative learning	8	5.8	0.03	0.879	0.938	0.655	Lichtenthaler (2009)
Financial performance	3	5.7	0.09	0.750	0.785	0.552	
Customer performance	2	5.5	0.16	0.760	0.668	0.504	Kirca <i>et al.</i> (2005)
Business performance	3	5.4	0.09	0.766	0.742	0.501	

Table I.
The reliability
of the constructs

Notes: Var., variance; α , Cronbach's α ; CR, composite reliability; AVE, average variance extracted

analysis consisted of two steps. First, this study used confirmatory factor analysis to evaluate the measurement model for each construct. Except for customer performance was less than the standard value, the results indicated that the factor loading of all items was significant, with average variance extracted (AVE) between 0.501~0.655, which was higher than 0.5, and composite reliability between 0.668~0.938, which was higher than 0.6. This study showed convergent validity of the measurement model for each construct (Fornell and Larcker, 1981).

Second, this study measured the goodness-of-fit for the measurement model. The goodness-of-fit index (GFI), normed fit index (NFI), comparative fit index (CFI) was higher than 0.9, and root mean square residual was less than 0.05. The model showed good convergent validity. The result of the discriminant validity suggested by Fornell and Larcker (1981) showed that the correlation between any two constructs in this study was less than the square root of AVE for each construct and indicated that there was discriminant validity among constructs (Table II).

Structural model

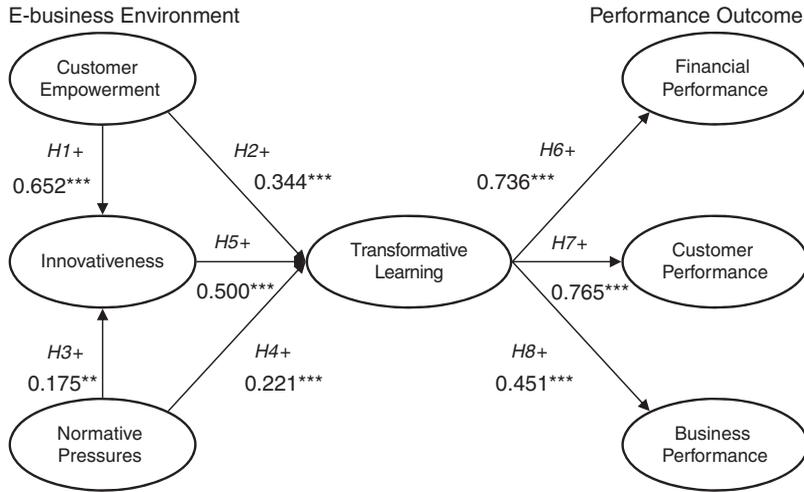
This study conducted structural model with sample sizes between 100 and 400 (Hair Jr et al., 2006) by using maximum likelihood estimation with AMOS software. The GFI of the model was $\chi^2 = 777.998$, $df = 337$, $\chi^2/df = 2.291$, $GFI = 0.809$, $AGFI = 0.770$, $RMSEA = 0.076$, $CFI = 0.879$, $NFI = 0.806$, $PNFI = 0.719$. The GFIs met the acceptable standard, which meant that the model fit was good. This study then examined the relationships among constructs (Figure 1 and Table III).

The effects of customer empowerment were significant and positive on innovativeness and transformative learning, respectively. The path coefficients were 0.652 ($p < 0.001$) and 0.344 ($p < 0.001$). This supported *H1* and *H2* of this study. The effects of normative pressure were significant and positive on innovativeness and transformative learning, respectively. The path coefficients were 0.175 ($p < 0.005$) and 0.221 ($p < 0.001$). This supported *H3* and *H4* of this study. In addition, the effect of innovativeness on transformative learning was significant and positive. The path coefficient was 0.500 ($p < 0.001$). Therefore, *H5* was supported. Finally, the effects of transformative learning were significant and positive on financial, customer, and business performance, respectively. The path coefficients were 0.736 ($p < 0.001$), 0.765 ($p < 0.001$), and 0.451 ($p < 0.001$). This supported *H6*, *H7*, and *H8* of this study. Moreover, this study described the mediation of innovativeness on the effects of customer empowerment and normative pressure on transformative learning as below.

Constructs	1.	2.	3.	4.	5.	6.	7.
1. Customer empowerment	(0.758)						
2. Normative pressure	0.377***	(0.722)					
3. Innovativeness	0.548***	0.330***	(0.792)				
4. Transformative learning	0.607***	0.412***	0.697***	(0.809)			
5. Financial performance	0.580***	0.358***	0.435***	0.552***	(0.743)		
6. Customer performance	0.442***	0.338***	0.418***	0.538***	0.559***	(0.710)	
7. Business performance	0.225***	0.194***	0.252***	0.412***	0.479***	0.459***	(0.708)

Notes: Number in brackets is the square root of AVE. *** $p < 0.001$

Table II. Matrix of the correlated coefficients



Notes: $\chi^2=777.998$; $df=337$; $\chi^2/df=2.291$; $GFI=0.809$; $AGFI=0.770$; $RMSEA=0.076$; $CFI=0.879$; $IFI=0.806$; $NFI=0.806$; $PNFI=0.719$. * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$

Figure 1.
Hypothesized model

Hypotheses	Relationship	Path	<i>p</i> -value	Results
H1	Customer empowerment → Innovativeness	0.652	0.001	Supported
H2	Customer empowerment → Transformative learning	0.344	0.001	Supported
H3	Normative pressure → Innovativeness	0.175	0.005	Supported
H4	Normative pressure → Transformative learning	0.221	0.001	Supported
H5	Innovativeness → Transformative learning	0.500	0.001	Supported
H6	Transformative learning → Financial performance	0.736	0.001	Supported
H7	Transformative learning → Customer performance	0.765	0.001	Supported
H8	Transformative learning → Business performance	0.451	0.001	Supported

Table III.
Results of
hypothesis testing

Meditating effect of innovativeness verification

In order to investigate the mediation of innovativeness on the effects of customer empowerment and normative pressure on transformative learning, this study adopted customer empowerment and normative pressure as predictors on transformative learning by conducting hierarchical regression. According to the study of Baron and Kenny (1986), mediator should meet the following conditions. First, there is a significant relation among customer empowerment and normative pressure to transformative learning. Second, there is a significant relation among customer empowerment and normative pressure to the innovativeness. Third, when customer empowerment, normative pressure, and innovativeness are independent of transformative learning, innovativeness must be significantly related to transformative learning. Fourth, the estimation of the regression coefficient of customer empowerment (or normative pressure) must be less than customer empowerment (or normative pressure) to transformative learning.

This study used regression analysis to verify the meditating effect of innovativeness on the relationships between customer empowerment/normative

pressure and transformative learning. First, this study obtained the value of each organization's age, employee, and annual turnover. The variables were then incorporated into the regression model as independent variables to control the possible effects of corresponding variables. Table IV shows that age, employee, and annual turnover were not significant and explanatory power was low ($R^2 = 1.5$ percent) in model 1. Next, when the dependent variable was innovativeness, the independent variable "customer empowerment" was incorporated in model 2, increasing the explanatory power to 30.5 percent. Customer empowerment had significant effect on innovativeness ($\beta = 0.550$). The independent variable "normative pressure" was incorporated in model 3, increasing the explanatory power to 11.5 percent. Normative pressure had significant effect on innovativeness ($\beta = 0.321$).

Table V shows that age, employee, and annual turnover were not significant and explanatory power was low ($R^2 = 3.2$ percent) in model 1. Next, when the dependent variable was transformative learning, the independent variable "customer empowerment" was incorporated in model 2, increasing the explanatory power to 37.6 percent. Customer empowerment had significant effect on transformative learning ($\beta = 0.599$). Model 3 showed that both customer empowerment and innovativeness significantly influenced transformative learning. Customer empowerment was reduced from $\beta = 0.599$ to $\beta = 0.313$ (reduction of 0.286), and its explanatory power increased to 56.3 percent. This showed that innovativeness had a partial mediating effect in the relationship between customer empowerment and transformative learning. This supported *H5a* of this study.

Finally, when the dependent variable was transformative learning, the independent variable "normative pressure" was incorporated in model 4, increasing the explanatory power to 18.6 percent. Normative pressure had significant effect on transformative learning ($\beta = 0.399$). Model 5 showed that both normative pressure and innovativeness significantly influenced transformative learning. Normative pressure was reduced from $\beta = 0.399$ to $\beta = 0.199$ (reduction of 0.200), and its explanatory power increased to 53.1 percent. This showed that innovativeness had a partial mediating effect in the relationship between normative pressure and transformative learning. This supported *H5b* of this study.

Model (independent)	Innovativeness		
	Model 1	Model 2	Model 3
<i>Control variables</i>			
Constant	5.602 (35.060)***	3.111 (10.558)***	4.383 (15.016)***
Age	0.029 (0.755)	0.022 (0.676)	0.032 (0.866)
Employee	0.084 (1.474)	0.012 (0.238)	0.035 (0.632)
Annual turnover	-0.048 (-0.933)	-0.049 (-1.143)	-0.031 (-0.632)
<i>Main effect</i>			
Customer empowerment		0.550 (9.584)***	
Normative pressure			0.321 (4.969)***
R^2	0.015	0.305	0.115
ΔR^2		0.293	0.098
F	1.138	24.166***	7.118***

Notes: Number in brackets are *t*-values. * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$

Table IV. Regression analysis of customer empowerment, normative pressure and innovativeness

Model (independent)	Model 1	Model 2	Transformative learning		Model 5
			Model 3	Model 4	
<i>Control variables</i>					
Constant	5.551 (41.196)***	3.235 (13.662)***	1.865 (7.653)***	4.245 (17.890)***	1.924 (7.494)***
Age	0.044 (1.373)	0.038 (1.453)	0.028 (1.289)	0.047 (1.587)	0.030 (1.343)
Employee Annual turnover	0.084 (1.754)	0.017 (0.440)	0.012 (0.369)	0.032 (0.717)	0.014 (0.401)
	-0.022 (-0.511)	-0.023 (-0.675)	-0.002 (-0.058)	-0.004 (-0.092)	0.012 (0.412)
<i>Main effect</i>					
Customer empowerment		0.599 (11.003)***	0.313 (5.761)***		
Innovativeness			0.520 (9.698)***		0.624 (12.704)***
Normative pressure				0.399 (6.453)***	0.199 (4.010)***
R ²	0.032	0.376	0.563	0.186	0.531
ΔR ²		0.364	0.553	0.171	0.521
F	2.449	33.101***	56.489***	12.584***	49.685***

Table V.
Meditating effect of
innovativeness

Notes: Number in brackets are *t*-values. **p* < 0.05; ***p* < 0.01; ****p* < 0.001

Conclusions and discussion

This study collected service industry data in Taiwan to understand the effects of e-business environments and performance, and conducted theoretical and management implications discussion of research results.

First, this study demonstrates that customer empowerment has significant and positive effects on innovativeness and transformative learning, respectively. The conceptual model, customer empowerment is a crucial factor in e-business adoption (Wu *et al.*, 2003). This result also reveals that innovativeness has significant explanatory power with regard to learning-oriented firms (Hurley and Hult, 1998). Learning-oriented firms provide customers with avenues to connect with these firms and collaborate with one another. Additionally, customer empowerment reflects the extent to which firms provide customers with technological avenues. Therefore, firms with greater technological knowledge can more easily maintain and activate knowledge, develop IT, and learn about the environment. This contributes to technological innovation and transformative learning for firms.

Moreover, normative pressure also has significant and positive effects on innovativeness and transformative learning, respectively. Because of the characteristics of e-markets, normative pressure is placed on e-services to implement e-business regarding market knowledge orientation, and the benefits of this implementation often exceed its cost. The effectiveness of market knowledge orientation can be manifested (Kohli and Jaworski, 1990). Normative pressure arises from the threat of lost legitimacy. Therefore, when firms experimentally join e-markets, they must expend resources to achieve the objectives of their experiments. Entering these markets to conform market trends or establish an image of technological proficiency does not seem to enhance market activity.

Second, this study demonstrates that innovativeness mediates the effects of customer empowerment and normative pressure on transformative learning. This indicates that innovativeness associated with technological or market knowledge is

strong prior knowledge for promoting transformative learning. Innovation mediation characteristics have the crucial organization learning process on transformative learning. However, this study suggests that innovation is not a simple transformation that can be accomplished in a short time. Innovation is resisted by traditionalists and must be cultivated within firms rather than transferred from the open marketplace. To be realized, innovation required specific structural and cultural characteristics (e.g. differentiation, formalization, a hierarchy, participative decision making, and power sharing) to be established. Firms with greater organizational culture (innovativeness) to innovate will be more successful in responding to their environments that lead to competitive advantage and superior performance (Hurley and Hult, 1998).

Furthermore, according to the marketing literature, transformative learning contributes to performance (Lichtenthaler, 2009). This study finds that transformative learning is crucial to customer performance. Firms require prior market and technological knowledge to adapt to environmental changes and maintain expertise. However, differences in these two types of knowledge likely influence inter-firm differences in transformative learning. This study also finds that, regarding the implementation of e-business in services, the effects on customer performance are greater than those on other two types of performance. This shows that these customers are relatively satisfactory to e-market firms. This study indicates that the effect of transformative learning on customer performance is greater than the direct effects of transformative learning on financial and business performance. This study contributes to marketing theoretically and practically.

Third, most services are intangible, heterogeneous, and inseparable (Parasuraman *et al.*, 1985). Firms require an innovative culture based on prior technological and market knowledge to avoid the capability-rigidity. This study on e-business concepts includes a discussion of customer empowerment, normative pressure, and innovativeness, which are the antecedents of transformative learning. Innovativeness has the greatest effect on transformative learning. Service industries that intend to participate in e-markets should be aware that the nature of innovation is dependent not only on IT capabilities but also on motivation. Allocating time and effort to clarify e-business concepts can yield substantial benefits. Moreover, to gain expertise, firms should strive to achieve efficiency and build IT capabilities.

Managerial implications

This study confirms that creating e-business environments enhances transformative learning in e-business firms, which improves the firms' financial, customer, and business performance. Consequently, innovativeness mediates the relationships between customer empowerment/normative pressure and transformative learning.

The managerial implications of this research are as follows. E-business must implement management practices such as customer empowerment, normative pressure, and innovativeness to improve their e-business environments. Regarding customer empowerment, e-business must establish favorable communication environments for customers in order to encourage customers to share their opinions about the products and services with the firm and other customers. Additionally, customer empowerment enables customers to participate in firms' planning or pre-stage of the products and services. By communicating with customers, firms attain a deeper understanding of customer needs and industry trends. With regard to normative pressure, e-businesses must create moderate pressure in their internal environments. E-businesses should demonstrate to the managers and employees that

the e-business environments are highly competitive and motivates them to perform effectively. If e-business cannot adopt new technology or innovative models, then firms will fall behind their competitors. Finally, regarding innovativeness, e-business firms must create innovative internal environments by constantly improving their technology and management innovations. Furthermore, managers must encourage the application of innovative approaches and allow employees for new ideas to avoid deterring employees from adopting innovative methods.

Developing e-business environments could enhance transformative learning in e-business firms, thus improving firm performance. This study confirms that transformative learning mediates the relationship between e-business environments and firm performance. Therefore, creating e-business environments enhances transformative learning in e-business firms, which improves the firms' financial, customer, and business performance. With regard to the managerial implications, e-business firms must possess high knowledge-management capability in order to attain novel industry information for internal management. Top management must allow for the exchange of industry knowledge among various internal business units to enable these units to adapt the changes in the market. Furthermore, top management should encourage employees to use new technology to generate business opportunities. The above methods can be used to increase firms' transformative learning, and then to improve the firms' performance.

Limitations and future research

The results of this study may have the following bias. First, this paper conducts an empirical study of the service industry in Taiwan, by mailing questionnaires to conduct surveys of firms. The results of this study may not be generalizable for use in other countries or industries. Most past studies discussed the manufacturing in e-market. This study investigates the services e-business environment and performance. The data in Taiwan includes general services, finance, and information firms. Therefore, the characteristics and findings of sample industries are different from previous studies. Future studies can analyze the standard industrial classification to make the comparisons more generalizable. Second, future empirical studies can examine the relative contribution of customer-oriented on the firms' positional advantage. Factors such as capacity to innovativeness, learning orientation, interactive orientation, and market orientation affect firms' positional advantages (Hurley and Hult, 1998; Hult and Ketchen, 2001). Third, transformative learning is a crucial role on superior performance. Future studies can continue to develop relations with the hypotheses of mediation effect. Fourth, this study is a cross-sectional research and future studies can use a longitudinal method to observe the long-term relationships among constructs.

References

- Abrahamson, E. and Rosenkopf, L. (1990), "When do bandwagon diffusions roll? How far do they go? And when do they roll backwards: a computer simulation", *Academy of Management Best Paper Proceeding*, Vol. 50 No. 1, pp. 155-159.
- Amabile, T.M., Conti, R., Coon, H., Lazenby, J. and Herron, M. (1996), "Assessing the work environment for creativity", *Academy of Management Journal*, Vol. 39 No. 5, pp. 1154-1184.
- Anderson, J.C. and Gerbing, D.W. (1988), "Structural equation modeling in practice: a review and recommended two-step approach", *Psychological Bulletin*, Vol. 103 No. 3, pp. 411-423.

- Argote, L., McEvily, B. and Reagans, R. (2003), "Managing knowledge in organizations: an integrative framework and review of emerging themes", *Management Science*, Vol. 49 No. 4, pp. 571-582.
- Armstrong, J.S. and Overton, T.S. (1977), "Estimating non-response bias in mail surveys", *Journal of Marketing Research*, Vol. 14 No. 3, pp. 396-402.
- Atuahene-Gima, K. (2005), "Resolving the capability: rigidity paradox in new product innovation", *Journal of Marketing*, Vol. 69 No. 4, pp. 61-83.
- Bagozzi, R.P. and Yi, Y. (1988), "On the evaluation of structural equation models", *Journal of the Academy of Marketing Science*, Vol. 16 No. 1, pp. 74-94.
- Baron, R.M. and Kenny, D.A. (1986), "The moderator-mediator variable distinction in social psychological research: conceptual, strategic, and statistical considerations", *Journal of Personality and Social Psychology*, Vol. 51 No. 6, pp. 1173-1182.
- Burns, T. and Stalker, G.M. (1961), *The Management of Innovation*, Tavistock Publishing, London.
- Cassiman, B. and Veugelers, R. (2006), "In search of complementarity in innovation strategy: internal R&D and external knowledge acquisition", *Management Science*, Vol. 52 No. 1, pp. 68-82.
- Cohen, W.M. and Levinthal, D.A. (1990), "Absorptive capacity: a new perspective on learning and innovation", *Administrative Science Quarterly*, Vol. 35 No. 1, pp. 128-152.
- Day, G.S. (1994), "The capabilities of market-driven organizations", *Journal of Marketing*, Vol. 58 No. 4, pp. 37-52.
- Day, G.S. (1999), *The Market Driven Organization: Understanding, Attracting, and Keeping Valuable Customers*, The Free Press, New York, NY.
- Day, G.S. and Van den Bulte, C. (2002), "Superiority in customer relationship management: consequences for competitive advantage and performance", Marketing Science Institute Working Paper Report No. 2-123, Marketing Science Institute, Cambridge, MA.
- Deshpandé, R., Farley, J.U. and Webster, F.E. Jr (1993), "Corporate culture customer orientation, and innovativeness in Japanese firms: a quadrad analysis", *Journal of Marketing*, Vol. 57 No. 1, pp. 23-37.
- Eisenhardt, K.M. and Martin, J.A. (2000), "Dynamic capabilities: what are they?", *Strategic Management Journal*, Vol. 21 Nos 10-11, pp. 1105-1121.
- Ernst, H. (2001), "Patent applications and subsequent changes of performance: evidence from time-series cross-section analyses on the firm level", *Research Policy*, Vol. 30 No. 1, pp. 143-157.
- Fornell, C. and Larcker, D.F. (1981), "Evaluating structural equation models with unobservable variables and measurement error", *Journal of Marketing Research*, Vol. 18 No. 1, pp. 39-50.
- Garcia, R. and Calantone, R. (2002), "A critical look at technological innovation typology and innovativeness terminology: a literature review", *Journal of Product Innovation Management*, Vol. 19 No. 2, pp. 110-132.
- Garud, R. and Nayyar, P.R. (1994), "Transformative capacity: continual structuring by intertemporal technology transfer", *Strategic Management Journal*, Vol. 15 No. 5, pp. 365-385.
- Grewal, R. and Dharwadkar, R. (2002), "The role of institutional environment in marketing channels", *Journal of Marketing*, Vol. 66 No. 3, pp. 82-97.
- Grewal, R., Comer, J.M. and Mehta, R. (2001), "An investigation into the antecedents of organizational participation in business-to-business electronic markets", *Journal of Marketing*, Vol. 65 No. 3, pp. 17-33.
- Hair, J.F. Jr, Black, W.C., Babin, B.J., Anderson, R.E. and Tatham, R.L. (2006), *Multivariate Data Analysis*, 6th ed., Prentice-Hall, Upper Saddle River, NJ.

- Hamel, G. and Prahalad, C.K. (1994), *Competing for the Future*, Harvard Business School Press, Boston, MA.
- Heide, J.B. and Weiss, A.N. (1995), "Vendor consideration and switching behavior for buyers in high-technology markets", *Journal of Marketing*, Vol. 59 No. 3, pp. 30-43.
- Helfat, C.E., Finkelstein, S., Mitchell, W., Peteraf, M.A., Singh, H., Teece, D.J. and Winter, S.G. (2007), *Dynamic Capabilities: Understanding Strategic Chance in Organizations*, Blackwell Publishing, Oxford.
- Homburg, C., Workman, J.P. Jr and Krohmer, H. (1999), "Marketing influence within the firm", *Journal of Marketing*, Vol. 63 No. 2, pp. 1-17.
- Hult, G.T. and Ketchen, D.J.J. (2001), "Does market orientation matter? A test of the relationship between positional advantage and performance", *Strategic Management Journal*, Vol. 22 No. 9, pp. 899-906.
- Hurley, R.F. and Hult, T.M. (1998), "Innovation, market orientation, and organizational learning: an integration and empirical examination", *Journal of Marketing*, Vol. 62 No. 3, pp. 42-54.
- Ireland, R.D., Hitt, M.A. and Vaidyanath, D. (2002), "Alliance management as a source of competitive advantage", *Journal of Management*, Vol. 28 No. 3, pp. 413-446.
- Jansen, J.J.P., Van den Bosch, F.A.J. and Volberda, H.W. (2006), "Exploratory innovation, exploitative innovation, and performance: effects of organizational antecedents and environmental moderators", *Management Science*, Vol. 52 No. 11, pp. 1661-1674.
- Jaworski, B.J. and Kohli, A.K. (1996), "Market orientation: review, refinement, and roadmap", *Journal of Market-Focused Management*, Vol. 2 No. 1, pp. 119-135.
- Kaplan, S. and Sawhney, M. (2000), "E-hubs: the new B2B marketplaces", *Harvard Business Review*, Vol. 78 No. 3, pp. 97-103.
- Kirca, A.H., Jayachandran, S. and Bearden, W.O. (2005), "Market orientation: a meta-analytic review and assessment of its antecedents and impact on performance", *Journal of Marketing*, Vol. 69 No. 2, pp. 24-41.
- Kogut, B. and Zander, U. (1992), "Knowledge of the firm, combinative capabilities, and the replication of technology", *Organization Science*, Vol. 3 No. 3, pp. 383-397.
- Kohli, A.K. and Jaworski, B. (1990), "Market orientation: the construct, research propositions, and managerial implications", *Journal of Marketing*, Vol. 54 No. 2, pp. 1-18.
- Lane, P.J., Koka, B. and Pathak, S. (2006), "The reification of absorptive capacity: a critical review and rejuvenation of the construct", *Academy of Management Review*, Vol. 31 No. 4, pp. 833-863.
- Leonard-Barton, D. (1992), "Core capabilities and core rigidities: a paradox in managing new product development", *Strategic Management Journal*, Vol. 13 No. S1, pp. 111-125.
- Lichtenthaler, U. (2009), "Absorptive capacity, environmental turbulence, and the complementarity of organizational learning processes", *Academy of Management Journal*, Vol. 52 No. 4, pp. 822-846.
- Lichtenthaler, U. and Ernst, H. (2007), "Developing reputation to overcome the imperfections in the markets for knowledge", *Research Policy*, Vol. 36 No. 1, pp. 37-55.
- Marsh, S.J. and Stock, G.N. (2006), "Creating dynamic capability: the role of intertemporal integration, knowledge retention, and interpretation", *Journal of Product Innovation Management*, Vol. 23 No. 5, pp. 422-436.
- Menguc, B. and Auh, S. (2006), "Creating a firm-level dynamic capability through capitalizing on market orientation and innovativeness", *Journal of the Academy of Marketing Science*, Vol. 34 No. 1, pp. 63-73.

- Nunnally, J.C. (1978), *Psychometric Theory*, McGraw-Hill, New York, NY.
- Parasuraman, A., Zeithaml, V.A. and Berry, L.L. (1985), "A conceptual model of service quality and its implications for future research", *Journal of Marketing*, Vol. 49 No. 4, pp. 41-50.
- Peterson, R.A., Balasubramanian, S. and Bronnenberg, B.J. (1997), "Exploring the implications of the internet for consumer marketing", *Journal of the Academy of Marketing Science*, Vol. 25 No. 4, pp. 329-346.
- Prahalad, C.K. and Ramaswamy, V. (2004), *The Future of Competition: Co-Creating Unique Value With Customers*, Harvard Business School Press, Boston, MA.
- Quelch, J.A. and Klein, L.R. (1996), "The internet and international marketing", *Sloan Management Review*, Vol. 37 No. 3, pp. 60-75.
- Ramani, G. and Kumar, V. (2008), "Interaction orientation and firm performance", *Journal of Marketing*, Vol. 72 No. 1, pp. 27-45.
- Rayport, J.F. and Jaworski, B.J. (2005), *Best Face Forward*, Harvard Business School Press, Boston, MA.
- Reinartz, W.J., Krafft, M. and Hoyer, W.D. (2004), "The customer relationship management process: its measurement and impact on performance", *Journal of Marketing Research*, Vol. 41 No. 3, pp. 293-305.
- Rothaermel, F.T. and Deeds, D.L. (2004), "Exploration and exploitation alliances in biotechnology: a system of new product development", *Strategic Management Journal*, Vol. 25 No. 2, pp. 201-221.
- Schein, E.H. (1985), *Organizational Culture and Leadership*, Jossey-Bass, San Francisco, CA.
- Scott, W.R. (1987), "The adolescence of institutional theory", *Administrative Science Quarterly*, Vol. 32 No. 4, pp. 493-511.
- Slater, S.F. and Narver, J.C. (1995), "Market orientation and the learning organization", *Journal of Marketing*, Vol. 59 No. 3, pp. 63-74.
- Slater, S.F. and Narver, J.C. (1999), "Market-oriented is more than being customer-led", *Strategic Management Journal*, Vol. 20 No. 12, pp. 1165-1168.
- Srinivasan, S.S., Anderson, R. and Ponnarolu, K. (2002), "Customer loyalty in e-commerce: an exploration of its antecedents and consequences", *Journal of Retailing*, Vol. 78 No. 1 pp. 41-50.
- Teece, D.J. (2007), "Explicating dynamic capabilities: the nature and microfoundations of (sustainable) enterprise performance", *Strategic Management Journal*, Vol. 28 No. 13, pp. 1319-1350.
- Teece, D.J., Pisano, G. and Shuen, A. (1997), "Dynamic capabilities and strategic management", *Strategic Management Journal*, Vol. 18 No. 7, pp. 509-533.
- Thompson, V.A. (1965), "Bureaucracy and innovation", *Administrative Science Quarterly*, Vol. 5 No. 1, pp. 1-20.
- Wu, F., Mahajan, V. and Balasubramanian, S. (2003), "An analysis of e-business adoption and its impact on business performance", *Journal of the Academy of Marketing Science*, Vol. 31 No. 4, pp. 425-447.
- Yadav, M.S. and Varadarajan, P.R. (2005), "Understanding product migration to the electronic marketplace: a conceptual framework", *Journal of Retailing*, Vol. 81 No. 2, pp. 125-140.
- Zahra, S.A. and George, G. (2002), "Absorptive capacity: a review, reconceptualization, and extension", *Academy of Management*, Vol. 27 No. 2, pp. 185-203.
- Zaltman, G., Duncan, R. and Holbek, J. (1973), *Innovations and Organizations*, John Wiley and Sons Inc., New York, NY.
- Zollo, M., Reuer, J.J. and Singh, H. (2002), "Interorganizational routines and performance in strategic alliances", *Organization Science*, Vol. 13 No. 6, pp. 701-713.

Further reading

- De Boer, M., Bosch, F.A.J. and Volberda, H.W. (1999), "Managing organizational knowledge integration in the emerging multimedia complex", *Journal of Management Studies*, Vol. 36 No. 3, pp. 379-398.
- Teece, D.J. (1998), "Capturing value from knowledge assets: the new economy, markets for expertise, and intangible assets", *California Management Review*, Vol. 40 No. 3, pp. 55-79.

Appendix

Customer empowerment (Ramani and Kumar, 2008)

This firm encourages customers to share opinions of its products or services with the firm.

This firm encourages customers to share opinions of its products or services with other customers.

This firm encourages customers to participate interactively in designing products and services.

Normative pressure (Wu *et al.*, 2003)

A large number of our competitors and business partners have already adopted e-business practices.

In our industry, firms that do not readily adopt new technologies will be left behind.

We would be considered technology-deficient if we do not implement e-business practices.

It is crucial that we are seen as a cutting edge business that adopts innovative technologies.

In our industry, most firms will ultimately end up adopting a wide range of e-business practices.

Innovativeness (Hurley and Hult, 1998)

Technical innovation, based on research results, is readily accepted.

Management actively seeks innovative ideas.

Innovation is readily accepted in program/project management.

People are penalized for new ideas that don't work. (R)

Transformative learning (Lichtenthaler, 2009)

We thoroughly maintain relevant knowledge over time.

Employees store technological knowledge for future reference.

We communicate relevant knowledge across the units of our firm.

Knowledge management is functioning well in our company.

When recognizing a business opportunity, we can quickly rely on our existing knowledge.

We are proficient in reactivating existing knowledge for new uses.

We quickly analyze and interpret changing market demands for our technologies.

New opportunities to serve our customers with existing technologies are quickly understood.

Performance (Kirca *et al.*, 2005; Ramani and Kumar, 2008)

Financial performance

Customers who this firm identifies as potentially profitable turn out to be profitable in the long run.

A larger proportion of acquired customers remain profitable in the long run for this firm as compared to its competitors.

The number of customers who were unprofitable last year and became profitable this year for this firm is greater than the number of customers who were profitable last year but became unprofitable this year.

Customer performance

The overall satisfaction level of our customers is higher than the satisfaction levels of these customers with our competing firms.

A higher percentage of our new customers come to us because of referrals from our existing customers, relative to our competitors.

Business performance

Relative to this firm's main competitors, currently our profits are

Relative to last year, this firm's profits are

Relative to our firm's main competitors, our marketing investments result in returns that are

Transformative
learning and
performance

121

Corresponding author

Ling-Chu Huang can be contacted at: eriohuang@gmail.com

For instructions on how to order reprints of this article, please visit our website:

www.emeraldgroupublishing.com/licensing/reprints.htm

Or contact us for further details: permissions@emeraldinsight.com

Reproduced with permission of copyright owner. Further reproduction prohibited without permission.