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Correlation between the Degree of E-Commerce Application and New Product Development Strategy

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ABSTRACT: *By related literatures, this study probes into the effects of the companies' execution of e-commerce and new product development strategy on new product development performance. According to the findings, when execution of new product development strategy is higher, it significantly and positively influences e-commerce application. If the companies can reinforce innovative capacity of new product development, technical capacity of new product development, market development capacity of new products and R&D capacity of new product development, they will upgrade e-commerce execution. In addition, when e-commerce application is higher, it significantly and positively influences new product development performance. Hence, this study suggests that in order to upgrade new product development performance, it must enhance new product development strategy and e-commerce execution.*

KEYWORDS:*New product development, E-Commerce, strategy*

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I. BACKGROUNDAND PURPOSE

With the progress of technology and rise of quality consciousness, customers' demand for product quality becomes more significant. As the product life cycles become shorter, the development process of new products and reduction of time to market are critical. In highly competitive environment, how to use e-commerce and new product development strategy to develop products satisfying customers, reduce the time to market and avoid the waste of resources is the focus of operational strategy in numerous enterprises. In research on e-commerce application, the scholars explored the strategies of e-commerce application, success factors of development and factors of e-commerce introduction. However, it lacks the research on impact of execution of e-commerce on new product development performance. By related literatures, this study probes into the effects of the companies' execution of e-commerce and new product development strategy on new product development performance. Research purposes are shown below: (1) it explores the effect of new product development strategy on e-commerce application; (2) it explores the effect of e-commerce execution on new product development performance; (3) it explores effect of high-tech companies' new product development strategy on new product development performance; (4) it proposes suggestions for high-tech industry's e-commerce application and reinforcement of new product development performance.

II. LITERATURE REVIEW

2.1 New product development strategy

Ansoff and Stewart (1967) stated four types of new product development strategy: (1) strategy to be the pioneer in the market (2) strategy to follow the leader; (3) strategy of application and improvement; (4) strategy of imitation: imitation is the main strategy. Firth and Narayanan (1996) defined strategy of new products by three dimensions: (1) novelty of technology used; (2) novelty of market application; (3) innovation in the market. Cooper (1984a) suggested four variables of new product development strategy: (1) characteristics of new products of enterprises; (2) characteristics of potential market of new products; (3) characteristics of technology of enterprises; (4) characteristics of technology applied for new products. Based on related literatures, this study classifies new product development strategy into four dimensions: (1) innovative capacity of new product development; (2) technical capacity of new product development; (3) market development capacity of new products; (4) R&D capacity of new product development.

2.2 E-commerce application

Department of Commerce defined e-commerce as all e-commercial activities and it is the expansion of exchange of e-data and application of value added network. Kalakota and Whinston (1997) classified e-commerce application into three dimensions: e-commerce between enterprises, e-commerce between enterprises and customers and e-commerce in the enterprises. Rayport and Jaworski (2001) suggested four types of e-

commerce application: e-commerce between enterprises, between enterprises and consumers, between consumers and enterprises and between consumers. According to classification of Kalakota and Whinston (1997), this study divides e-commerce application into three dimensions.

2.3New product development performance

Calantone et al. (1995) adopted return on investment and the growth rate, growth rate of sales and the growth rate and market share and the growth rate as the measures of new product development performance. In the research of Song and Parry (1997), four measures are applied to assess the companies' relative success level of new product development: (1) quality of new products in comparison to the competitors; (2) sales of new products in comparison to the competitors; (3) profits of new products in comparison to the competitors; (4) ratio between expected profits and success rate of new productsin the market. By overall performance of new products and success rate of new product development, Cooper (1984b) measured new product development performance. After literature review, this study adopts five indicators as the dimensions of new product development performance: (1) time of new productsin the market; (2) quality of new products; (3) market share of new products; (4) success rate of new productsin the market; (5) cost of new product development in the market.

III. RESEARCH METHOD

By literature review, this study explores the correlation among e-commerce application, new product development strategy and new product development performance. According to literature review, the hypotheses developed are shown as follows:

H1: When e-commerce application is higher, it significantly and positively influences new product development performance.

H2: When execution of new product development strategy is higher, it significantly and positively influences e-commerce application.

H3: When execution of new product development strategy is higher, it significantly and positively influences new product development performance.

3.1E-commerce application and new product development performance

Allen and Fjermestad (2001) argued that e-commerce application enhances development of new products and improvement of product quality. According to Berrill et al. (2004), e-commerce application can reinforce products and service performance of the companies. Afshar et al. (2011) argued that e-commerce application enhances development of new products. According to literature review, this study proposes H1: when e-commerce application is higher, it significantly and positively influences new product development performance.

3.2 New product development strategy and e-commerce application

Based on Araste et al. (2013), there is positive correlation between innovative capacity of product development and e-commerce application. Jordi et al. (2007) argued that when the companies adopt innovative strategy of products and manufacturing process, it positively influences e-commerce application. Jeon et al. (2006) indicated that high-rank supervisors' innovative attitude upgrades e-commerce application of the enterprises. Zhu et al. (2003) suggested that when the companies pay attention to the upgrading of technical capacity, e-commerce application will be higher. According to Bertschek and Fryges (2002), in order to compete with the competitors, the companies adopt the strategy to enhance market development capacity. E-commerce application will be higher. Giunta and Trivieri (2007) indicated that more significant R&D capacity in the companies leads to the adoption of innovative technology and e-commerce application will be higher. Based on review of related literatures, this study proposes H2: When execution of new product development strategy is higher, it significantly and positively influences e-commerce application.

3.3 New product development strategy and new product development performance

According to Cooper and Kleinschmidt (1991), specific new product development strategy is the key factor of new product development performance. Hise et al. (1989) argued that without complete and specific new product development strategy, it lowers the success rate of new products in the market. Wind and Mahajan (1988) indicated that in the development of new products, execution of new product development strategy influences new product development performance. Based on Balachandra and Friar (1997), complete and specific strategy of new products enhances success rate of new product development in the market. Cooper and Kleinschmidt (1987) argued that in order to enhance new product development performance, the companies must develop new product development strategy matching the corporate objectives. Upon the review of related

literatures, this study develops H3: When execution of new product development strategy is higher, it significantly and positively influences new product development performance.

IV. CONCLUSIONAND SUGGESTIONS

With the pressure in highly competitive environment, developing the products satisfying the customers, reducing the time to the market, avoiding the waste of resources and adopting appropriate decisions to enhance competitiveness are the operational keys of the enterprises at present. According to the findings, when execution of new product development strategy is higher, it significantly and positively influences e-commerce application. If the companies can reinforce innovative capacity of new product development, technical capacity of new product development, market development capacity of new products and R&D capacity of new product development, they will upgrade e-commerce execution. In addition, when e-commerce application is higher, it significantly and positively influences new product development performance. Hence, this study suggests that in order to upgrade new product development performance, it must enhance new product development strategy and e-commerce execution.

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