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The Evolution of Innovation Types Towards Production Performance

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Abstract: It is widely accepted that innovation is central to the growth of outputand productivity. The reason for collecting innovation data is to better understand innovation and its relation to economic growth. This requires both knowledge of innovation activities that have a direct impact on firm performance (for example, through greater demand or reduced costs) and of the factors that affect their ability toinnovate. Systems approaches complement theories that focus on the innovative firm, the reasons for innovating and the activities undertaken by firms. The forces that drive innovation at the level of the firm and the innovations that succeed in improving firm performance are of central importance for policy making. Recently, there has been a great deal of academic and practitioner interest in the concept of creativity and innovation types in organizations and in particular, the effects of innovation types on organizational performance. Understanding how to use innovation successfully in organizations is crucially important in a time when innovation is an almost obligatory survival strategy. This focus is not surprising, as innovation has been touted as the differentiator that will lead to the next level of competitive advantage. Evaluation of innovation types in organizations should help managers to develop productions and process. The objective of this study is to evaluate the organizational, process, product and marketing innovations in the manufacturing industries. Also, the effect of innovation types on the production performance is investigated, based on an empirical study covering 10 manufacturing firms in Iran. Researchers chose a group of top and middle managers of different firms, the number of this group is 200 persons, it means that the population of this study is 200 persons. In this study, researchers get benefit from structural equation model to test measurement model and path analyze. The results reveal the positive effects of innovations on production performance in manufacturing industries.

Key words: Production performance, marketing innovation, process innovation, product innovation, innovation types, organizational innovation

INTRODUCTION

Business and technological changes are threatening organizational sustainability and modern management faces many challenges (Drucker, 1999). Organizations are continually under competitive pressures and forced to re-evaluate come up with new innovations. An innovation can be a new product or service, a new production technology, a new operation procedure or a new management strategy to an enterprise (Liao *et al*., 2008; Nonaka and Yamanouchi, 1989). Innovations have always been essential for the organizations' long-term survival and growth and currently play even more crucial role in the company's future to follow the rapid pace of markets' evolution (Santos-Vijande and Alvarez-Gonzalez, 2007).

Innovativeness is one of the fundamental instruments of growth strategies to enter new markets, to increase the existing market share and to provide the company with a competitive edge. Motivated by the increasing competition in global markets, companies have started to grasp the importance of innovation, since swiftly changing technologies and severe global competition rapidly erode the value added of existing products and services. Thus, innovations constitute an indispensable component of the corporate strategies for several reasons, such as to apply more productive manufacturing processes, to perform better in the market, to seek positive reputation in customers' perception and as a result to gain sustainable competitive advantage (Gunday *et al*., 2011).

Particularly over the last 2 decades, innovativeness has turned into an attractive area of study for those researchers who tried to define, categorize and investigate its performance impacts, especially due to its practical relevance. Innovations provide firms a strategic orientation to overcome the problems they encounter while face uncertainties (Kuratko *et al*., 2005).

In this study, innovation types are distinguished: Product innovations, process innovations, marketing

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innovations and organizational innovations based on OECD (2005) Oslo Manual. Organisation for Economic Co-operation and Development (OECD) Oslo Manual writes that given the complexity of the innovation process and the variations in the way innovation occurs in firms, conventions have to beadopted in order to provide operational definitions that can be used unstandardized surveys of firms, so innovation types definitions are presented outline:

Product innovation: Product innovation is the introduction of a good or service that is new or significantly improved with respect to its characteristics or intended uses. This includes significant improvements in technical specifications, components and materials, incorporated software, user friendliness or other functional characteristics (OECD, 2005).

Process innovation: Process innovation is the implementation of a new or significantly improved production or delivery method. This includes significant changes in techniques, equipment and/or software (OECD, 2005).

Marketing innovation: Marketing innovation is the implementation of a new marketing method involving significant changes in product design or packaging, product placement, product promotion or pricing (OECD, 2005).

Organizational innovation: Organizational innovation is the implementation of a new organizational method in the firm's business practices, workplace organization or external relations (OECD, 2005).

To identify the full range of changes that firms make to improve performance and their success in improving economic outcomes requires abroader framework than technological product and process innovation. The inclusion of marketing and organizational innovations creates a more complete framework, one that is better able to capture the changes that affect firm performance (OECD, 2005). The literature on management emphasizes the key role that both innovation and firm performance, so it seems that one of the primary research areas in the recent innovation literature aims to find out the acknowledged relations between innovation types and firm performance. In this study, researchers aim to explore innovations and their effects on firm performance by examining product, process, marketing and organizational innovations, as well as by focusing on production performance. In this study, production performance is defined as conformance quality, production volume and flexibility, production cost and production and delivery speed (Gunday*et al*., 2011).

Innovation and performance: Most of the broad empirical studies on the relation between innovation and performance provide evidence that this relation is positive (Bierly and Chakrabarti, 1996; Brown and Eisenhardt, 1995; Caves and Ghemawat, 1992; Damanpour and Evan, 1984; Hansen *et al*., 1999; Roberts, 1999; Schulz and Jobe, 2001; Thornhill, 2006; Weerawardena *et al*., 2006). However as Simpson *et al*. (2006) point out, innovation is an expensive and risky activity with positive outcomes on firm performances but also with negative outcomes, such as increased exposure to market risk, increased costs, employee dissatisfaction or unwarranted changes. In addition, some studies arrive at conflicting conclusions. For instance Wright *et al*. (2005), using a sample of small businesses, find that product innovation does not affect performance in benign environments but has a positive effect on performance in hostile environments. Focusing on a sample of US business service firms, Mansury and Love (2008), also find that the presence and extent of service innovation have a positive effect on the growth of a firm but noeffect on productivity. Damanpour *et al*. (2009) find that adopting a specific type of innovation every year (service, technological process and administrative) in public service organizations in the UK is detrimental, consistency in adopting the same pattern of types of innovation over the years has no effect and divergence from the industry norm in adopting types of innovation positively affects performance.

McAdam and Keogh (2004) investigated the relationship between firms' performance and its familiarity with innovation and research. They found out that the firms' inclination to innovations was of vital importance in the competitive environments in order to obtain higher competitive advantage. Geroski (1995) examined the effects of the major innovations and patents to various corporate performance measures such as accounting profitability, stock market rates of return and corporate growth. The observed directe ffects of innovations on firm performance are relatively small and the benefits from innovations are more likely indirect.

Jimenez-Jimenez and Sanz-Valle (2011) concentrate on the organizational learning process and uses a complete measure of innovation. Inaddition that study analyzes the likely moderating effect of firm size and age, industry and environmental turbulence on the relationships between organizational learning, innovation and performance.

Gunday *et al*. (2011) explore the effects of the organizational, process, product and marketing

innovations on the different aspects of firm performance. They identify the relationships between innovations and firm performance through an integrated innovation- performance analysis. They results reveal the positive effects of innovations on firm performance in manufacturing industries.

The role of organizational innovation is emphasized by Lam (2005): Economists assume that organizational change is a response to technical change when in fact organizational innovation could be a necessary precondition for technical innovation. Organizational innovations are not only a supporting factor for product and process innovations; they can also have an important impact on firm performance on their own. Organizational innovations can improve the quality and efficiency of work, enhance the exchange of information and improve firms' ability to learn and utilize newknowledge and technologies.

Li *et al.* (2007)'s study on Chinese firms showed us that process and product innovations were significantly correlated to each other for instance Oke (2007)'s study on British firms revealed that developing formal implementation processes was necessary to pursue incremental product or service innovations, implying that the improvement of the processes is a driving force for the success of the output (product and/or service) innovations. Thus, innovative solutions providing the steps of the production processes with newly improved advantages such as production quality, value, speed and low cost can increase the chance of the product's new components, ingredients, technical specifications, functionalities, etc., to meet the needs and desires of the customers better than before.

The development and implementation of marketing innovations constitutes an important innovation activity for many enterprises in terms of impact on performance. To gain an idea of the scope of marketing innovations, enterprises might be asked to estimate the percentage of total turnover that is affected by marketing innovations. Innovation surveys can ask two separate questions concerning marketing innovations. One asks for an estimate of the percentage of turnover due to goods and services with significant improvements in product design or packaging. The second asks for an estimate of the share of turnover affected by new marketing methods in pricing, promotion or placement (OECD, 2005).

Finally Fullerton and McWatters (2001), indicated that firms that have invested more in quality practices benefit from significantly higher financial rewards. Similarly Fullerton and Wempe (2009) in a recent study, find appositive relationship between non-financial manufacturing performance and financial performance.

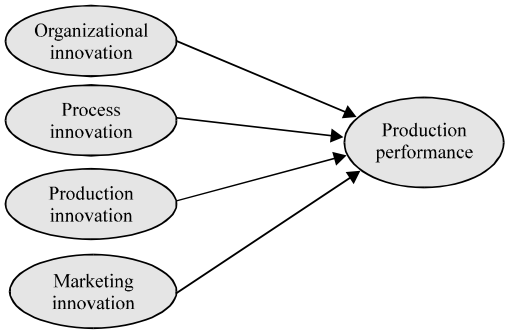

Fig. 1: Research framework

It seems that the relationship between innovation and performance is complex and requires more research, so this study is concentrated on innovation types and production performance.

Research framework and hypotheses: Considering the existing descriptive and empirical literature, it seems that there is a relationship between innovation types and production performance. However, recent literature does not provide us with explicit empirical results for the direction of relationship between these two concepts. So, the research framework is presented in Fig. 1 and the hypotheses are presented outline:

H_1: Higher level oforganizational innovation is associated with improved production performance
H_2: Higher level ofprocess innovation is associated with improved production performance
H_3: Higher level ofproduction innovation is associated with improved production performance
H_4: Higher level ofmarketing innovation is associated with improved production performance

MATERIALS AND METHODS

A survey was conducted in Iran to test the research model. A questionnaire was developed and pilot tested before the formal data collection. Whenever possible, measurement items were adapted from existing scales in the literature. An expert panel of three University Assistance professors, five CEOs and senior production managers examined the face validity of the measurement items. The 5-point Likert-type scales ranging from 1 (strongly disagree) to 5 (strongly agree) were used throughout the questionnaire. Innovation measures for each innovation types are designed considering theoretical and operational definitions and particularities of the four innovation types as stated in the OECD (2005) Oslo Manual. Therefor, innovations measures used in this

research are new for the literature and hence, need to be validated. Production performance criteria are adapted by research of Gunday *et al.* (2011). The questions about product performance are asked employing a 5-point Likert scale in which 1 indicates extremely unsuccessful and 2 unsuccessful, 3 similar, 4 successful and 5 extremely successful.

Sample and data collection: This study examined a sample of 10 manufacturing firms in Iran that located in Kaveh Industrial City. Kaveh Industrial City, measuring 3000 ha, located 100 km far from Tehran is one of the biggest industrial cities of Iran. These firms have started their activities for >5 years. Researchers chose a group of top and middle managers of different firms, the number of this group is 200 persons it means that the population of this study is 200 persons.

The sample has several advantages. First, innovation plays a crucial role in facilitating production such as designing leading new products or services. Second, the transitional economy in Iran strongly depends on the development of innovation; this property makes firms good settings for examining the link between innovation and performance. Third, these firms offer rich settings for testing the hypotheses because each firm encourages innovation types seriously and connects it to production performance.

The youngest manager in the sample is 39 years old and the oldest manager is about 56 years of age. The managers are 42 years old on average, 25 of them are female and others are male. Other information about the sample is shown in Table 1.

Table 1: Distribution of sample

Samples	Distribution (%)
Type of commodities	
Product	80
Service	20
Size of the organization (employees)	
<50	18
50-150	37
150-200	9
>200	36
History of the organization (years)	
5-10	20
10-15	60
>15	20

Measurement model: Researchers, firstly performed a Confirmatory Factor Analysis (CFA) to evaluate the overall measurement model. In order to evaluate the validity of measurement model, convergent validity and was assessed.

Convergent validity is the degree to which factors that are supposed to measure a single construct, agree with each other. Researchers tested convergent validity by assessing factor loadings which should be significant and exceed 0.5, composite reliabilities which should exceed 0.6 and the Average Variance Extracted (AVE) that should be >0.5 for all constructs (Fornell and Larcker, 1981).

In the model, all the factor loadings and composite reliabilities fall in the acceptable ranges and are significant at the 0.01 level. Factor loadings range from 0.52-0.98. Composite Reliabilities (CR) range from 0.82-0.96. AVE ranges from 0.67-0.81. The results show that the model meets the convergent validity criteria. Researchers evaluated the internal reliability of scales by Cronbach's alpha (C-α); this statistic ranges from 0.72-0.95 which are all >0.7 (Nunally and Bernstein, 1994). Table 2 shows the factor loading, AVE, CR and C-α of every constructs.

Researchers assessed the measurement model fit by evaluating: absolute fit measures including observed normed (φ^2/df), Goodness of Fit Index (GFI) and Root Mean Square Error of Approximation (RMSEA) and Comparative Fit Index (CFI). As shown in Table 3, all fit indices met satisfactory levels. Therefore, researchers can conclude that the model fits the data well and thus is able to explain the research hypotheses.

Structural model: Table 4 shows the results of hypothesis testing of the structural relationship among the latent variables. For H_1, researchers examined the effects of organizational innovation on production performance. As Table 4 shows the effect of organizational innovation on production performance has values of 0. 35 ($p<0.05$), hypothesis H_1 was supported. Also process innovation has direct effecton production performance ($p<0.05$). However, production innovation is positively associated with production performance ($p<0.05$), it means that H_2 and H_3 are supported in this

Table 2: Results of CFA and internal reliability testing

Constructs	Items	Loading	AVE	CR	C-α
Organizational innovation					
Renewing the organization structure to facilitate teamwork	OI1	0.90	0.85	0.96	0.94
Renewing theproductionandqualitymanagementsystems	OI2	0.94			
Renewing the human resources management system	OI3	0.93			
Renewing the supply chain management system	OI4	0.89			
Renewing the in-firm management information system and information sharing practice	OI5	0.97			

Table 2: Continue

Constructs	Items	Loading	AVE	CR	C-α
Process innovation					
Determining and eliminating non-value adding activities in delivery related processes	PI1	0.88	0.85	0.96	0.95
Decreasing variable cost and/or increasing delivery speed in delivery related logistics processes	PI2	0.96			
Increasing output quality in manufacturing processes, techniques, machinery and software	PI3	0.94			
Decreasing variable cost components in manufacturing processes, techniques, machinery and software	PI4	0.87			
Determining and eliminating non-value adding activities in production processes	PI5	0.96			
Production innovation					
Developing new products with technical specifications and functionalities totally differing from the current ones	PROI1	0.98	0.84	0.96	0.95
Developing newness for current products leading to improved ease of use for customers and to improved customer satisfaction	PROI2	0.98			
Developing new products with components and materials totally differing from the current ones	PROI3	0.63			
Decreasing manufacturing cost in components and materials of current products	PROI4	0.98			
Increasing manufacturing quality in components and materials of current products	PROI5	0.98			
Marketing innovation					
Renewing the product promotion techniques employed for the promotion of the current and/or new products	MI1	0.52	0.59	0.87	0.83
Renewing the distribution channels without changing the logistics processes related to the delivery of the product	MI2	0.78			
Renewing the product pricing techniques employed for the pricing of the current and/or new products	MI3	0.9			
Renewing the design of the current and/or new products through changes such as in appearance, packaging, shape and volume without changing their basic technical and functional features	MI4	0.85			
Renewing general marketing management activities	MI5	0.74			
Production performance					
Conformance quality	PP1	0.76	0.52	0.82	0.72
Production cost	PP2	0.76			
Production (volume) flexibility	PP3	0.83			
Production and delivery speed	PP4	0.88			

Table 3: Overall fit indices of the CFA model

Fit index	Scores	Recommended cut-off value
φ^2/df	2.65	<2, <5
GFI	0.84	>0.90, >0.80
RMSEA	0.07	<0.08, <0.1
CFI	0.92	>0.90

Table 4: Standardized path coefficients

Hypothesis	Path	Standardized path estimate	p-value	t-value	Results
H_1	OI->PP	0.35	<0.05	2.97	Support
H_2	PI->PP	0.34	<0.05	2.87	Support
H_3	PROI->PP	0.44	<0.05	3.55	Support
H_4	MI->PP	0.36	<0.05	3.12	Support

study. For H_5, the effect of marketing innovationon production performance was examined. This effect value was 0.36 and ($p<0.05$) so H_4 was supported.

This study does not just testify the influence of innovation types on production performance but also explores how this mechanism works through production performance; direct effects were calculated and listed in Table 4. As to the direct effects, Table 4 shows production innovation is larger than process, marketing and organizational innovation on production performance (0.44>0.36>0.35>0.34), so production innovation is the most effective factor on production performance.

RESULTS AND DISCUSSION

Hypotheses show that innovation types are associated with improved production performance. Specifically, researchers found that organizational innovation has a direct impact on production performance. Evangelista and Vezzani (2010) show that relationship between technological and non-technological innovation is a very complex and under-investigated topic. These researchers provide evidence that enlarging the analysis of innovation beyond the technological domain is crucial to a better understanding of firms' economic performances, complex and organizational innovation modes playing a major role in explaining these performances.

On the other hand, the study identifies the important of organizational innovation in some Iranian companies, it means that organization structure, quality management systems, human resources management system, supply chain management system, management information system and information sharing practice should be used effectively in the firms to sustain production performance. The results of this study, appear the component of organizational innovation by the use of others studies. It should be mentioned that Lhuillery (2000), focused on a range of individual organizational practices (mostly knowledge production and human management practices) and identified those that affect the innovation capability of French companies. The results show that innovative firms tend to develop organizational innovation to improve their performance.

The findings present higher level of process innovation is associated with improved production

performance. Lhuillery (2000)'s used dependent variables such as patents, process, product, marketing and design innovation to evaluate innovations component and firm performance while researchers focus on process and product. The research highlighted the effect of process innovation as one of the important types of innovation. Increasing delivery speed in delivery related logistics processes, increasing output quality in manufacturing processes are concentrated in this study. Lokshin *et al.* (2008) studied the complementarity between product, process and organizational innovations and their impact on labour productivity. Ichniowski *et al.* (1997), also used this approach to test the complementarity between different human resource management practices. They found, in a sample of 36 homogeneous steel production lines that using a set of innovative work practices, such as teams, flexible job assignments or training leads to a higher output level and product quality. These searches focus on product quality, labour productivity, process and organizational innovation and it seems that their results are similar to the findings. This research illustrates higher level of production innovation is associated with improved production performance. An imitation strategy may lead to better new product performance. Imitation costs often are much lower than innovation costs because an imitator, for example does not need to spend as many resources on research; the existing products already provide the imitator with information for itsproduct development (Schnaars, 1994). Further more, a market usually is not well formed at its beginning. It is impossible for an innovator to make the right strategic move every time. This provides imitators with the opportunity to identify a superior position and introduce improved products to better serve customers, so production performance is very useful strategy for develop new production and the research presents essential role of production innovation on production performance.

CONCLUSION

The findings support the claim that higher level of marketing innovation is associated with improved production performance. Marketing innovation can be important for firm performance and the overall innovation process. Defining characteristic of marketing innovations is the orientation towards customers and markets with a view to improving sales and market share. Economic objectives of marketing innovation may differ greatly from other innovations types which tend to focus on productive quality and efficiency. However, looking into production performance from perspective of marketing innovation is very crucial for organization and should improve economic goals.

IMPLICATIONS

The findings support the fact that innovation strategy is an important major driver of production performance and should be developed and executed as an integral part of the business strategy. Managers should recognize and manage the innovations in order to boost their operational performance. Having a clear understanding of the exact nature of innovations will help firms to prioritize their market, production and technology strategies, to be followed by appropriate subsequent action plan.

These findings substantiate the conceptual model and offer several managerial implications. First managers of firms should put additional emphasis on innovation types as they are important instruments for achieving sustainable competitive power. Improved innovative performance is contingent upon the degree of implementation of innovations. Firms that are endowed with resources to improve their innovative capabilities could expect a more significant improvement of their production and market performance, if they encourage and implement a high level of innovation activities. Second managers ought to invest more on innovative capabilities and support new attempts of introducing innovations of each type and new production development.

REFERENCES

Bierly, P. and A.K. Chakrabarti, 1996. Generic knowledge strategies in the U.S. pharmaceutical industry. Strategic Manage. J., 17: 123-135.

Brown, S.L. and K.M. Eisenhardt, 1995. Product development: Past research, present findings and future directions. Acad. Manage. Rev., 20: 343-378.

Caves, R.E. and P. Ghemawat, 1992. Identifying mobility barriers. Strategic Manage. J., 13: 1-12.

Damanpour, F. and W.M. Evan, 1984. Organizational innovation and performance: The problem of organizational lag. Admin. Sci. Q., 29: 392-409.

Damanpour, F., R.M. Walker and C.N. Avellaneda, 2009. Combinative effects of innovation types and organizational performance: A longitudinal study of service organizations. J. Manage. Stud., 46: 650-675.

Drucker, P.F., 1999. Management Challenges for the 21st Century. HarperCollins Publishers, New York, USA., ISBN-13: 9780887309984, Pages: 207.

Evangelista, R. and A. Vezzani, 2010. The economic impact of technological and organizational innovations. A firm-level analysis. Res. Policy, 39: 1253-1263.

Fornell, C. and D.F. Larcker, 1981. Evaluating structural equation models with unobservable variables and measurement error. J. Market. Res., 18: 39-50.

Fullerton, R.R. and C.S. McWatters, 2001. The production performance benefits from JIT implementation. J. Oper. Manage., 19: 81-96.

Fullerton, R.R. and W.F. Wempe, 2009. Lean manufacturing, non-financial performance measures and financial performance. Int. J. Oper. Prod. Manage., 29: 214-240.

Geroski, P., 1995. Innovation and competitive advantage. Economic Department Working Paper No. 159, OECD, Paris, France. http://www.oecd.org/regreform/reform/2733164.pdf.

Gunday, G., G. Ulusoy, K. Kilic and L. Alpkan, 2011. Effects of innovation types on firm performance. Int. J. Prod. Econ., 133: 662-676.

Hansen, M.T., N. Nohria and T. Tierney, 1999. What's your strategy for managing knowledge? Harvard Bus. Rev., 77: 106-116.

Ichniowski, C., K. Shaw and G. Prennushi, 1997. The effects of human resource management practices on productivity: A study of steel finishing lines. Am. Econ. Rev., 87: 291-313.

Jimenez-Jimenez, D. and R. Sanz-Valle, 2011. Innovation, organizational learning and performance. J. Bus. Res., 64: 408-417.

Kuratko, D.F., R.D. Ireland, J.G. Covin and J.S. Hornsby, 2005. A model of middle-level managers' entrepreneurial behavior. Entrepreneurship Theory Pract., 29: 699-716.

Lam, A., 2005. Organizational Innovation. In: The Oxford Handbook of Innovation, Fagerberg, J., D.C. Mowery and R.R. Nelson (Eds.). Chapter 5, Oxford University Press, Oxford, UK., ISBN-13: 9780199286805, pp: 115-147.

Lhuillery, S., 2000. The organizational practices of innovation and the performances of firms: An empirical investigation. Second Draft, March 6, 2000, Dynacom Series Working Paper, D19, LEM, Sant'Anna School of Advanced Studies, Pisa, Italy.

Li, Y., Y. Liu and F. Ren, 2007. Product innovation and process innovation in SOEs: Evidence from the Chinese transition. J. Technol. Transfer, 32: 63-85.

Liao, S.H., W.C. Fei and C.T. Liu, 2008. Relationships between knowledge inertia, organizational learning and organization innovation. Technovation, 28: 183-195.

Lokshin, B., R. Belderbos and M. Carree, 2008. The productivity effects of internal and external R&D: Evidence from a dynamic panel data model. Oxford Bull. Econ. Stat., 70: 399-413.

Mansury, M.A. and J.H. Love, 2008. Innovation, productivity and growth in US business services: A firm-level analysis. Technovation, 28: 52-62.

McAdam, R. and K. Keogh, 2004. Transitioning towards creativity and innovation measurement in SMEs. Creativity Innov. Manage., 13: 126-141.

Nonaka, I. and T. Yamanouchi, 1989. Managing innovation as a self-renewing process. J. Bus. Venturing, 4: 299-315.

Nunally, J.C. and I.H. Bernstein, 1994. Psychometric Theory. 3rd Edn., McGraw-Hill, New York, USA., ISBN-13: 9780070478497, Pages: 752.

OECD, 2005. Oslo Manual: Guidelines for Collecting and Interpreting Innovation Data. 3rd Edn., OECD Publishing, Paris, France, ISBN: 92-64-01308-3, Pages: 162.

Oke, A., 2007. Innovation types and innovation management practices in service companies. Int. J. Oper. Prod. Manage., 27: 564-587.

Roberts, P.W., 1999. Product innovation, product-market competition and persistent profitability in the U.S. pharmaceutical industry. Strategic Manage. J., 20: 655-670.

Santos-Vijande, M.L. and L.I. Alvarez-Gonzalez, 2007. Innovativeness and organizational innovation in total quality oriented firms: The moderating role of market turbulence. Technovation, 27: 514-532.

Schnaars, S.P., 1994. Managing Imitation Strategies: How Late Entrants Seizemarketing from Pioneers. The Free Press, New York, USA., ISBN-13: 9780029281055, Pages: 294.

Schulz, M. and L.A. Jobe, 2001. Codification and tacitness as knowledge management strategies: An empirical exploration. J. High Technol. Manage. Res., 12: 139-165.

Simpson, P.M., J.A. Siguaw and C.A. Enz, 2006. Innovation orientation outcomes: The good and the bad. J. Bus. Res., 59: 1133-1141.

Thornhill, S., 2006. Knowledge, innovation and firm performance in high-and low-technology regimes. J. Bus. Venturing, 21: 687-703.

Weerawardena, J., A. O'Cass and C. Julian, 2006. Does industry matter? Examining the role of industry structure and organizational learning in innovation and brand performance. J. Bus. Res., 59: 37-45.

Wright, R.E., J.C. Palmer and D. Perkins, 2005. Types of product innovations and small business performance in hostile and benign environments. J. Small Bus. Strategy, 15: 33-44.