TWO STRATEGIC SUCCESS FACTORS FOR FIRM LEVEL COMPETITIVENESS: INNOVATION AND COOPERATION

Mehmet Deniz
Inonu University
Assistant Professor
E-mail: mehmet.deniz@inonu.edu.tr

Şeyda Nur Seçkin
Inonu University
Research Assistant
E-mail: seydaseckin@gmail.com

Mehmet Cüreoğlu
SMEs Development Organization
E-mail: mehmet.cureoglu@kosgeb.gov.tr

─**Abstract** ─
In this study, it is aimed to determine the competitiveness levels of the manufacturing firms operating in TRB1 region (Malatya, Elazığ, Bingöl,Tunceli) and investigate whether they innovate and cooperate with universities, private firms and non-profit organizations in order to enhance their competitiveness. A field survey using questionnaire method was conducted on small, medium and large sized manufacturing firms operating in the region excluding the micro firms out of the scope. According to survey results, more than half of the firms have an average level of competitiveness. While majority of them make innovation, nearly half of them prefer to cooperate with non-profit organizations. Finally, there exists a significant difference in competitiveness of the firms in terms of innovation and cooperation. In other words, firms that innovate and participate in cooperative facilities have a higher degree of competitiveness.

Key Words: *Competitiveness, Innovation, Cooperation*
JEL Classification: L10

1. INTRODUCTION

In the context of contemporary business environment, if firms seek to stay in the competitive environment, ensure constant growth and achieve economic success, prediction of consumer needs is not enough. The important point is to create new

offers and find new ways of satisfying them. The constantly changing dynamics of today's business world, decreasing product lifecycles, globalization of world economies and fast technological developments require the need to ensure competitive advantage linked with innovation and cooperation.

2. LITERATURE REVIEW

2.1. Competitiveness

Competitiveness is a miscellaneous and controversial concept involving multidimensional concepts and disciplines. Beside it, a consensus on whether enterprises or countries compete with each other does not exist (Cibinskiene, 2010: 62). Competitiveness originated from a Latin word, competer, means involvement in a business rivalry for markets. Today, it is commonly used to describe economic strength of an entity against to its competitors in global markets in which goods, services, people, skills, and ideas move freely across geographical borders (Ambastha and Momaya, 2005:46).

As a measurement of competitiveness, Porter's (1990) Diamond Model is a predominantly accepted and commonly used model in both micro-economic and macro-economic competitiveness surveys in the literature. The model emphasizes four determinants: factor conditions; demand conditions; related and supporting industries; firms' strategy, structure and rivalry. There are also two external variables: chance and government. Porter's four determinants and two outside forces interact in the model.

Diamond Model has faced with some criticisms from various management theorists. For instance, Bosch and Prooijen (1992) pointed out the lack of attention given to the role of national culture in the model. Krugman (1994) criticized the Porter's (1990) idea that nations, like corporations, compete with each other. Rugman and D'Cruz (1993); Bellak and Weiss (1993) criticized that Porter's model is not applicable to small, open and trading economies. According to Narula (1993), Porter has neglected the role of international business activity and has not fully emphasized the importance of technology as a dynamic and incremental process. Dunning (1993) argued that the importance of globalization of production and markets is underestimated. Thus, national diamonds have to be replaced by supranational diamonds. According to Cho and Moon (2000), Nine-Factor Model would be better for measurement of competitiveness since this model in which factors are classified into four categories; subject, environment, resources and mechanism, encompasses both physical and human resources. On

the other hand, Moon et al. (1998) propose the Generalized Double-Diamond (GDD) in that multinational firms were incorporated and government facilities were evaluated as an endogenous variable.

2.2. Innovation, Cooperation and Their Relationships with Competitiveness
It is no arguable that while shifting from an industrial society to an information society, innovation is a means of creating sustainable growth and it is indisputably a factor of competitiveness (Solow, 1957; Fagerberg, 1987; Dosi, 1988; Barney, 1991; Peteraf & Barney, 2003). Innovation is a process of involving not only new techniques but also new forms of knowledge and competencies requiring the interaction of scientific research, technology development and market needs (Clark & Guy, 1998:372). It is necessary to take innovation into account as a complex process of knowledge accumulation that implies numerous feedbacks between several departments of the same firm; between different firms, or between different firms and universities, even between firms and consumers and governmental institutions.

In order to both promote innovation and enhance competitiveness, engaging in cooperative activities is a way of accessing complementary resources, pooling skills and capabilities instead of seeking competitive advantage over other firms (Powell et al. 1996). When faced with situations of resource scarcity; performance distress; environmental pressures and economic downturns and also in order to gain a potential favorable corporation image and identity; organizations seek out cooperation (Schermerhorn, 1975:848). The main motive for cooperation is to adopt collective strategies for value generation so as to enhance competitiveness. Moreover, a firm with precisely defined business related goals and with an understanding of its core interests can possess greater maneuverability in forming coalitions and can take more advantage from these cooperative activities (Littlejohn, 1986:110). Successful cooperation is based on trust, commitment and finally voluntary and mutual agreement which can be set out in a formal and documented contract or an informal contract aimed at achieving common goals (Osarenkhoe, 2010).

3. Methodology
According to information retrieval from Turkish Statistical Institute and SMEs Development Organization, also taking the shadow economy in the region into account; the population size of the small, medium and large sized firms in TRB1 region is determined as approximately 600. Although it was planned to access the whole population, with only 220 of them, face to face interviews were performed.

As a measurement of competitiveness, Porter's (1990) Diamond Model, predominantly accepted and commonly used model in both micro-economic and macro-economic competitiveness surveys in the literature, was used. Within the framework of Diamond Model, the competitiveness of the firms were investigated by factor conditions (4 determinants and 19 questions); demand conditions (2 determinants and 7 questions); related and supporting industries (2 determinants and 11 questions); firms' strategy, structure and rivalry (2 determinants and 14 questions) and finally government policies (3 determinants and 13 questions). As a result of confidence analysis, Cronbach Alfa coefficient is found as $\alpha = 0.933$ indicating that the scale is highly reliable. The model used is as presented below:

I. Factor Conditions	II. Demand Conditions	III. Related & Supporting Industries	IV. Firm Strategy, Structure, Rivalry	V. Government Policies
FC1.Physical Resources (6)	DC1.Customer Needs (2)	RSSI1. Infrastructure (3)	FSSR1.Investment Incentives (5)	GP1. Politic & Economic Institutions (5)
FC2.Human Resources (5)	DC2.Demand Sophistication (5)	RSSI2. Related Industries (8)	FSSR2.Competitive Factors (9)	GP2. State Subsidies (4)
FC3.Information Resources (5) FC4.Capital Resources (3)				GP3. State Controls (4

4. Research Results

Business scopes of manufacturing firms participated in the survey are predominantly food & beverages (26,8%), textile (16,4%) and furniture manufacturing (13,2%). Others are operating in plastic; metal; chemicals; automotive & auto parts; machinery & equipment; wood and wood products; pulp, paper and paper products; non-metallic mineral products. In terms of legal status; 72,3 % of them are limited liability and 21% are joint-stock companies. 73,6% of the firms' employment size is 10-49 ; 21,8 % of is between 50 and 249 and finally 4,6 % of them has 250 and more employees. Firms' operating periods are as follows: 1 to 5 years (26,4%); 6 to 10 years (22,3%); 11 to 25 years (43,6%); 26 years and more (7,7%).

For measurement of firms' competitiveness, an index composed of these five factors (factor conditions; demand conditions; related & supporting industries; firm strategy, structure & rivalry and government policies) is developed and the

coefficients of these factors are determined through expert opinion method. Index formulation is as below:

$$I = (29{,}7864 * FC) + (23{,}2727 * DC) + (12{,}9682 * RSI) + (15{,}2045 * FSSR) + (18{,}7682 * GP)$$

As presented in Diagram 1, the mean and standard deviation of index values are found as 401.79 and 34.861 respectively. Competitiveness level of the firms whose index values calculated as μ (401.79) $\pm$ σ (34.861) is defined as average. From this point of average index value, competitiveness of other firms is classified as above or below it.

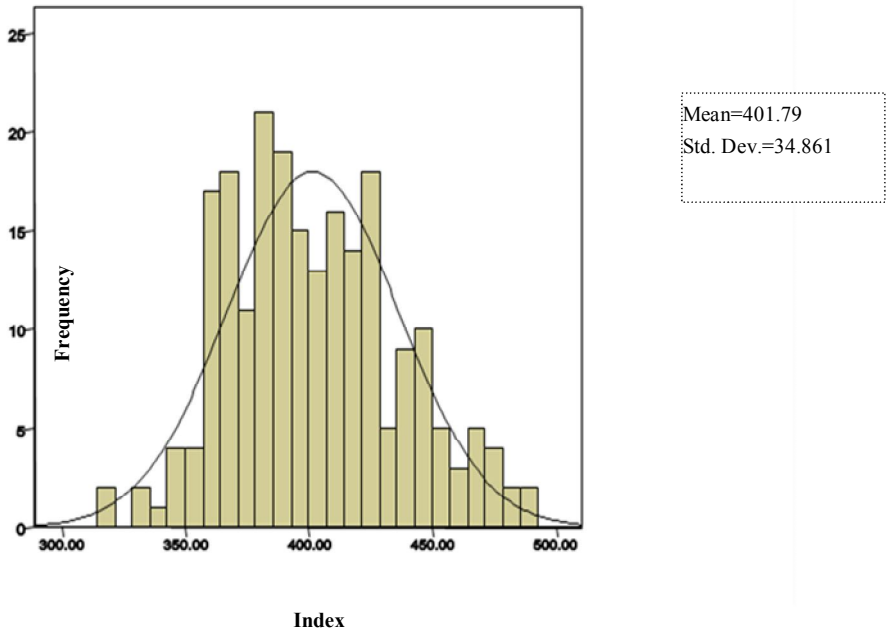Diagram 1. Frequency Distribution of Firms' Competitiveness

Index

Table 1. Competitiveness of Firms

Group	Competitiveness	N	%
1	Below Average	38	17,3
2	Average	144	65,4
3	Above Average	38	17,3

According to Table 1, 65.4% of the firms' competitiveness level is average. While 17.3 % is below the average, 17.3% is above it.

Table 2. Reasons for Innovation

	f	%	Cum. - (%)
To increase market share	71	43,3	43,3
To improve product quality	26	15,9	59,1
To improve product features	12	7,3	66,5
To comply with legal requirements	2	1,2	67,7
For reducing labour costs	9	5,5	73,2
For energy savings	5	3	76,2
Customer demands	15	9,1	85,4
Developments in technology	9	5,5	90,9
Competitors' innovations	15	9,1	100
Total	164	100	

As it is shown in Table 2, 164 of 220 managers (approximately %75) stated that their firms make innovations. %43.3 of them mentioned increasing market share is the most important reason for innovating.

Table 3. Innovation Types

	Yes		No	
	F	%	F	%
Product Innovation	84	38,2	136	61,8
Process Innovation	50	22,7	170	77,3
Organizational Innovation	23	10,5	197	89,5
Marketing Innovation	86	39,1	134	60,9

Product innovation and marketing innovation are the innovation types preferred most by the firms (%38.2 and %39.2 relatively). On the other hand, organizational innovation is the least implemented (%10.5).

Table 4. Reasons for Not Innovating

	f	%	Cum. - (%)
High Costs	13	23,2	23,2
Long-term returns of investments	1	1,8	25
High Risk	1	1,8	26,8
Lack of high-qualified employee	4	7,1	33,9
Lack of Information	5	8,9	42,8
Ease of imitation	1	1,8	44,6
Lack of customer demand	5	8,9	53,6
No need for innovation in the sector	26	46,4	100
Total	56	100	

As it is shown in Table 4, 56 managers stated their firms do not make innovation. As a reason for not innovating, nearly half of them mentioned there is no need for

innovation in their sectors. %23.2 indicated high costs as an important barrier to innovation.

Table 5. Sources of Innovation & Technology Transfer

	f	%	Cum. - (%)
Following R&D facilities	16	9,8	9,8
Industry periodicals	10	6,1	15,9
Competitors	32	19,5	35,4
Suppliers	11	6,7	42,1
Universities	4	2,4	44,5
Consultancy Firms	4	2,4	47
Fairs	65	39,6	86,6
Internet	21	12,8	99,4
Consumers	1	0,6	100
Total	164	100	

As it can be seen from the Table 5, fairs are preferred most (%39.6) as a source of innovation and technology transfer followed by competitors' innovative facilities (%19.5) and internet (%12.8).

Table 6. Cooperation with Universities, Non-Profit Organizations and Private Firms

	Yes		No	
	F	%	F	%
Non-profit organizations	100	45,5	120	54,5
Universities	62	28,2	158	71,8
Private Firms	68	30,9	152	69,1

When we look at the firms' tendencies towards cooperation, as it is disputed in Table 6, the proportions of firms participating in cooperative activities with non-profit organizations, universities and private firms are as follows: %45.5; %28.2 and %30.9 relatively.

Table 7. Mann Whitney-U Test

	Group	N	Mean Rank	Sum of Ranks	Mann-Whitney U	p
Innovation	1	164	121.83	19980.00	2734.00	.000
	2	56	77.32	4330.00		
Cooperation with Universities	1	62	124.69	7731.00	4018.000	.038
	2	158	104.93	16579.00		
Cooperation with Non-Profit Organizations	1	100	125.22	12522.00	4528.00	.002
	2	120	98.23	11788.00		
Cooperation with Private Firms	1	68	140.41	9548.00	3134.00	.000
	2	152	97.12	14762.00		

In order to determine whether there exists a significant difference in competitiveness levels of firms according to the grouping variables of innovation and cooperation with universities, non-profit organizations, private firms, Mann Whitney-U test is conducted. According to test results, a significant difference is found. In other words, firms that innovate and participate in cooperative facilities are more likely to have a higher degree of competitivenss.

Conclusion

Being one of the underdeveloped regions in terms of socio-economic status; TRB1 region has a gross value added consisting of service sector (66.8%); industrial sector (19.5%) and agriculture (13.7%) as of 2008. Manufacturing industry in the region predominantly is composed of textile (36.4%) and food & beverages (24.2%). Manufacturing firms meet only 0.8% of the employment and 0.76% of the total added-value of the manufacturing industry in country wide. In the region, Malatya is the most developed city followed by Elazığ. According to export figures of 2009, Malatya comes first with 189 873 $ and Elazığ is the second with 18 131 $ (TÜİK, 2011).

According to research results, index method which is developed in order to determine the firms' competitiveness levels indicates that 65.4 % of the firms is at an average level; 17.3% is above the average and 17.3% is below it. Beside it, majority of them (%75) make innovations and increasing market share is stated as the most important reason for making innovation (%43.3). While product innovation and marketing innovation are the innovation types preferred most (%38.2 and %39.2 relatively); organizational innovation is the innovation type least implemented (%10.5). On the other hand, as a reason for not innovating, nearly half of the firms stated that there is no need for innovation in their sectors. When we look at the tendencies of the firms towards cooperation, it is found that approximately half of them prefer to cooperate with non-profit organizations and few of them cooperate with universities. Moreover, firms that innovate and participate in cooperative facilities are more likely to have a higher degree of competitivenss.

During the survey period which is conducted through face to face interviews, it is observed that majority of firms could not achieve institutionalization process properly. As a main decision maker, owner and/or top managers play a dominant role and for this reason; their strategic point of views, risk taking attitudes and entrepreneurship skills are thought as important factors on firms' competitiveness

levels, innovative and cooperative facilities. Beside it, major part of the participants mentioned that although there exists a sufficient capacity for export; lack of qualified employee and knowledge regarding to export-import facilities are two important obstacles for international trade. From our point of view, systematic and continuous university and industry collaboration efforts (according to research results, it is found that these efforts are inadequate in the region) can be an alternative way in order to overcome these two shortages.

BIBLIOGRAPHY

Ambastha, A.,Momaya, K. (2005), Competitiveness of Firms: Review of Theory, Frameworks and Models, Singapore Management Review, Vol.26, N.1, p.45–61

Solow R.M. (1957), Technical Progress and The Aggregate Production Function, Review of Economics and Statistics, Vol.39, pp.312-320

Barney J.B.(1991), Firm Resources and Sustained Competitive Advantage. Journal of Management, Vol.17, N.1, pp.99-120

Bellak, C. J. & Weiss, A.(1993), A Note On the Austrian,Diamond, Management International Review, Vol.33, pp.109-118

Bosch, F. A. J., Prooijen, A. (1992). The Competitive Advantage of European Nations: The Impact of National Culture – a Missing Element in Porter's Analysis?, European Management Journal, Vol.10, N.2, pp.173–177

Cibinskiene A.(2010), Relation of Infrastructure Natural Monopolies and National Competitiveness, Economics And Management, Vol.15, N.1, pp.62-69

Clark J., Guy K.(1998), Innovation and Competitiveness: A Review, Technology Analysis & Strategic Management, Vol.10, N.3, pp.363-395

Cho, D. S.; Moon, H. C.(2000). From Adam Smith to Michael Porter: Evolution of Competitiveness Theory. Korea, Asia-Pacific Business Series, p.223

Dosi G. (1988), Sources, Procedures, and Microeconomic Effects of Innovation, Journal of Economic Literature, Vol.36, pp.1126-1171

Dunning, J. H. (1993), Internationalizing Porter's Diamond, Management International Review, Vol.33, pp.7-15

Fagerberg J. (1987), A Technology Gap Approach to Why Growth Rates Differ, Research Policy, Vol.16, pp.87-107

Littlejohn S.(1986), Competition and Cooperation: New Trends in Corporate Public Issue Identification and Resolution, California Management Review, Vol.24, N.1, p.110-128

Krugman, P. (1994), Competitiveness: A Dangerous Obsession, Foreign Affairs,Vol.73, N.2, pp.28–44

Moon, H. C.; Rugman, A. M.; Verbeke, A. (1998), A Generalized Double Diamond Approach to the Global Competitiveness of Korea and Singapore, International Business Review, Vol.7, N.2, pp.135–150

Narula, R.(1993), Technology, International Business and Porter's "Diamond": Synthesizing a Dynamic Competitive Development Model, Management International Review, Vol.33, pp.85-107

Osarenkhoe A.(2010), A Study of Inter-Firm Dynamics Between Competition and Cooperation – A Coopetition Strategy, Database Marketing & Customer Strategy Management, Vol.17, N.3, pp.201-221

Padula G., Dagnino G.B.(2007), Untangling the Rise of Coopetition: The Intrusion of Competition in a Cooperative Game Structure, International Studies of Management & Organization, Vol.27, N.2, pp.32-52

Peteraf M.A., Barney J.B.(2003), Unravelling the Resource-Based Tangle. Managerial and Decision Economics, Vol.24, pp.309-323

Porter M.E.(1990), The Competitive Advantage of Nations, New York: Free Press

Powell W., Koput, K., Smith-Doerr L.(1996), Inter-Organizational Collaboration and the Locus of Innovation: Networks of Learning in Biotechnology, Administrative Science Quarterly, Vol. 41, N.1, pp.116–145

Rugman A. M. & D'Cruz, J. R.(1993), The Double Diamond Model of International Competitiveness: The Canadian Experience, Management International Review, Vol.33, pp.17-39

Schermerhorn J.(1975), Determinants of Inter-Organizational Cooperation, Academy of Management Journal, Vol.18, N.4, pp.846-855