

FACTORS INFLUENCING INNOVATION IN SMEs IN TURKEY: AN INTERREGIONAL COMPARISON*

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ÖZET

Bu çalışmanın amacı Türkiye’de KOBİ’lerin yenilik yaratma yeteneğini sorgulamaktır. Bu doğrultuda hipotezimiz; işlem çevresi, örgüt kültürü ve örgüt yapısı değişkenlerinin KOBİ’lerin yenilik yaratma yeteneği üzerinde önemli etkisinin olduğudur.

Hipotezimiz, Türkiye’nin 12 alt bölgesinde imalat sanayinde faaliyet gösteren KOBİ’lerde yukarıda belirtilen değişkenler kullanılarak test edilmektedir. Survey yöntemi kullanılarak veriler soru formu aracılığıyla 3034 firmadan toplanmış; geçerlilik ve güvenilirlik analizleri ve nedensellik analizleri (çoklu regresyon analizi) gerçekleştirilmiştir.

Araştırma bulgularına göre, tüm örneklem için örgüt kültürünün yenilikçilik boyutu örgütün yenilik yaratma yeteneğini açıklamaktadır ancak açıklama gücü oldukça düşüktür. Ayrıca bölgeler arasında karşılaştırma yapıldığında örgüt kültürü, yapı ve çevre değişkenlerinin boyutlarında yenilikçiliği açıklamada farklılıklar olduğu görülmüştür.

Anahtar Kelimeler: Yenilikçilik, Örgüt Kültürü, Örgüt Yapısı, Çevre, Çoklu Regresyon, NACE Sınıflandırması.

ABSTRACT

The aim of this study is to question innovation creating capability of SMEs in Turkey. Accordingly our hypothesis is that operational environment, organizational culture and organizational structure have important impacts on innovation creating capability of SMEs.

Our hypothesis is being tested in terms of mentioned variables, on SMEs operating in manufacturing industry in 12 regions of Turkey. Using survey methodology, data was collected from 3034 firms through questionnaires; validity and reliability tests and causality analysis (multiple regression analysis) had been conducted.

According to the findings of study, innovation dimension of culture explains innovation capability of the organizations for whole sample, but the explanation power is very low. Through a comparison among regions, it is also found out that there are differences in explaining innovation for dimensions of organizational culture, structure and environment.

Keywords: Innovation, Organizational Culture, Organizational Structure, Environment, Multiple Regression, NACE Classification.

INTRODUCTION

Small and Medium Size Enterprises (SMEs) always have undertook a major role in national economies. Also the SMEs as being the engine of economical

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growth have an important influence on business volume. Moreover with flexible structures in production SMEs can overcome the economic crisis easier than the large enterprises and adapt to new situations easily. The increase in the prosperity of a country and especially bringing the economical development in developing countries depend on the industrialization and attainment of competitive strength in international markets of this country. Attainment of competitive strength then bases on increasing technological capabilities or shortly the innovation process. Therefore in this study the innovation creating capability of SMEs, having the engine role in national and international economies, has been investigated. During this research especially the population of Turkey as a developing country has been considered and the SMEs operating in several industrial zones have been studied as the sample. As in other countries SMEs constitute %99,5 of all businesses and %62 of total employment. But the economic value created by SMEs in Turkey is only %28 of all economic activity (TUSIAD Report, 2002). Deviating data such those also point out the importance of this study. While deciding the sample of this study NACE (Nomenclature des Activités dans les Communautés Européennes) classification is taken and the 12 subregion operating in manufacturing industry were investigated. In addition to the cultural differences among regions, with the clustering manner in manufacturing industry whether the environmental and organizational factors depending on the cultural differences have influence on innovation creating capability had a great role on this choice.

LITERATURE REVIEW and MODEL

Entrepreneurial orientation concept introduced and functionalized by Covin and Slevin based on the earlier work of Khandwalla (1977), takes place extensively both in strategic management and entrepreneurship literature. Covin and Slevin suggests 3 basic dimensions. Those are innovation, proactiveness and risk-taking (Covin and Slevin, 1989; Kreiser, Marino and Weaver, 2002). Afterwards autonomy and competitive aggressiveness had been added to those concepts by Lumkin and Dess (1996). According to Covin and Slevin (1991), innovation and proactiveness are described as the basic tools for the business's survive and success in competitive environments. Prior studies define intrapreneurship with 4 dimensions. According to Antoncic and Hisrich (2001: 498) those dimensions are new business venturing, innovativeness, self-renewal and, proactiveness. While the innovation behavior, identifying with the creative destruction concept of Schumpeter and arising in a form of new product, new process or a being in a new market defining the growth and development of scale economies, it is being stated that in the business context innovation dimension arises more in product, process, new market or technology. According to Zahra (1993) this characteristic is more related to manufacturing firms. Covin and Slevin (1998: 212) state that organizational entrepreneurship grows out of environmental characteristics. Moreover Khandwalla (1977) states that hostile environments are dangerous, stressful and

dominating and the environments those are not hostile are secure, smooth and livable, can be controlled and manipulated by the organization, have great opportunities. Depending on this definition, business should display more entrepreneurial behavior as it passes to a hostile environment from a more coherent and benign environment. In other words it should display a more creative and innovative behavior than the other organizations. Pierce and Delbecq (1977) address the change in organizational structure arising related with the adoption to the environment. According to them the innovative behavior is positively related to environmental uncertainty, decentralization, differentiation and the degree of professionalism. In spite of this formalization affects this behavior negatively. According to Siguay et al. (2006), innovation orientation is a learned philosophy and is related with directly defined, oriented and learned transfunctional values in organizations. Actually the shared values of organization, defined mission and orientations are covered in this definition. Put another way, it covers the beliefs of all organization about innovation and the appropriate climate. However according to Hofstede (1980) Turkey has collectivist culture properties and partially it clouds the innovation climate. Or is the situation not like described above? Therefore the model below is tested considering the relations in the literature. Entrepreneurship theorists such as Schumpeter (1934) and McClelland (1961) and then Lynn (1991), Shane (1993), Davidsson (2004), Wennekers et al (2005) suggest that cultural factors are important at explaining structural factors in the country comparisons. In fact while Wennekers et al (2005) finds out positive relationship between the entrepreneurship dynamics and economical development of a country; McClelland (1961), Hofstede (1980), Lynn (1991), Shane (1993), Wennekars et al (2005) suggest a positive relationship between entrepreneur culture and economical development within the country investigations oriented to culture. In spite of the investigation of the relations among social, communal values and innovation, important lack of those and such studies is favoring macro scales rather than investigations on a firm level. Whereas in those studies including new phase entrepreneurship theory, Covin and Slevin (1989, 1990, 1991) and Antoncic and Hisrich (2001, 2003) evaluate the factors influencing performance on firm level in their intrapreneurship and entrepreneurship posture studies. In the new phase literature while those factors are being defined by organizational variables, management approach and internal and external environmental factors, again the old phase studies in the organization and management literature oriented to the coherence between organization and environment question the relations among organizational structure, environment, technology, strategy and performance implicitly (Child, 1972,1973; Khandwalla 1977,1987; Duncan, 1972; Pugh et al, 1968, 1969; Lawrence and Lorsch, 1967). Venkataraman and Shane (2000) treat the difficulty of defining entrepreneurship and evaluating the factors affecting it especially because of the variables involving mutual interactions i.e. the role of culture in competition. While Ritchie and Brindly (2005) examine the cultural descriptives of SMEs in competition, Zdunczyk and Blenkinsopp (2007) evaluate strategy,

organizational structure, uncertainty degree of environment, importance of learning for the organization, new technologies, resource allocation policies, individual behavior characteristics and group dynamics as the dimensions affecting creation and innovation.

However as the studies are viewed, in spite of being descriptive, covering only the large businesses and lack of causality analysis oriented to small businesses stand out. Also stated in the abstract the aim of this study is to question innovation creating capability of SMEs. Accordingly our hypothesis is that the operational environment, organizational culture and organizational structure have important impacts on innovation creating capability of SMEs in Turkey. Model used in this study is presented in Figure 1.

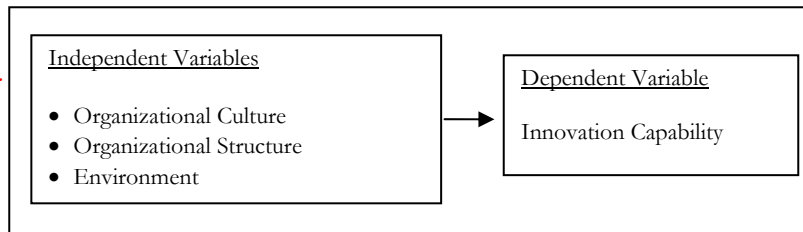


Figure 1. Model of the Study

RESEARCH METHODOLOGY

Sample and the Method of Data Analysis

3034 SMEs operating in industrial zones in Turkey are examined in this study. The population presentation proportion of the firms grouped in region basis and selected by random sampling method corresponds to 3,5 percent of the population. This proportion seeming minor is about 20 percent if it is considered in a subregion basis in every region. In the classification of business according to their sizes, Small and Medium Size Enterprise Development Agency (KOSGEB) definitions are taken. The businesses in the context of this research take place in the analysis according to the NACE classification (Appendix A) and subregion definitions (Appendix B). In the analysis of research data, reliability analysis, descriptive statistics analysis, t-test, regression analysis explaining causality relations, and stepwise method had been utilized.

Questionnaire and Reliability Analysis

The questionnaire evaluated in this study is composed of 5 parts. In the first part of the questionnaire there are 8 statements determined by examining the studies of Khandwalla (1977), Duncan (1972), Burns and Stalker (1961), Thompson (1967), Child (1972), Covin and Slevin (1989), Lumpkin and Dess (2001). Considering the environmental dimension in the study the result of reliability analysis is $\alpha=0.81$ for simple-complex environment and $\alpha=0.73$ for static-dynamic environment.

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In the second part of the questionnaire there are 13 statements for the definition of organizational structure. Variables of organizational structure are evaluated under 4 factors. The result of reliability analysis is like this for 4 dimensions: for formalization $\alpha=0.86$, for standardization $\alpha=0.83$, for the degree of specialization $\alpha=0.83$ and for the degree of centralization $\alpha=0.75$. In the definition of organizational structure variables we have utilized the studies of Hage and Aiken (1967); Pugh et al. (1969); Pugh, Hickson, Hinings and Turner (1968); Rosalie (1979); Child (1973); Pennings (1973); Tung (1979); Slack and Hinings (1994); Hage and Aiken (1967).

For the measurement of organizational culture study of O'Reilly (1991) and Robins (1994) is taken as the basis. Combination of the organizational culture profile developed by O'Reilly and his colleagues and the eleven dimensions determined by Robbins (1994) was used as the organizational culture dimensions. The dimensions arisen as a result of the utilization of the eight dimensions used by O'Reilly (1991) and the eleven dimensions stated by Robbins (1994) and the selection of items complementing one another are categorized in 14 items. Those are individual autonomy, innovation, risk-taking, control, support, training, reward system, entrepreneurship, competition, cooperation, team orientation, communication, identity and direction. According to the results of reliability analysis performed for the dimensions of organizational culture; $\alpha=0.63$ for individual autonomy, $\alpha=0.82$ for innovation, $\alpha=0.80$ for control, $\alpha=0.64$ for training, $\alpha=0.72$ for entrepreneurship, $\alpha=0.73$ for competition, $\alpha=0.60$ for team orientation and $\alpha=0.85$ for direction dimension. The organizational culture dimension those with low reliability had not been included to the analysis.

In the measurement of innovation dimension study of Lumpkin and Dess (1996) was utilized. The reliability of this dimension is $\alpha=0.78$. Innovation creating capability or shortly the innovation capability is one-dimensional and the new product development capability of the organization is being questioned. Accordingly, the measurement of innovation capability in one dimension forms the main limitation of this study. In the first 4 parts of the study a five-point Likert scale had been used. 1 corresponds to negative and 5 to positive evaluations.

In the last part of the questionnaire there are information and descriptives about the demographic characteristics of the sample.

Definitions of Variables used in the study

Formalization: Writing out information about how the people would complete a task.

Standardization: Rules and methods determined for the solution of repetitive tasks or commonly experienced problems.

Degree of Specialization: Determination of roles (or positions) requiring specialization in functional department.

Degree of Centralization: The form of decision making.

Individual Autonomy: Possibility of responsibility, independency and free venture of employees.

Innovation: Prompting employees to be enterprising and innovative.

Control: The rules, regulations and direct observation used to control and manage the behavior of employees.

Training: The self-development demands of employees, approach of the organization about this demand and the allocation of rewards according to performance.

Entrepreneurship and Competition: Employees' desire to do new things, their effort and competition to be better, and the organization's support for this.

Team Orientation: Having the team sense rather than individual sense and the organization's support for aiding to complete a task.

Direction: Stating the goals and objectives of the organization clearly as the employees can understand.

Innovation Capability: Organization's degree of bringing about changes in existing products, developing new products, producing customized products.

RESEARCH FINDINGS

Findings Related to Demographic Characteristics

As to the descriptive statistics, 1482 questionnaires were collected from Istanbul and the cities around which were defined as A1 in the distribution of the firms attended to the survey according to region. 52 questionnaires from the region defined as A11 (Elazig, Erzincan, Erzurum, Kars, Malatya, Bayburt cities), 148 from the region defined as A12 (Adiyaman, Diyarbakir, Gaziantep, Mardin, Sanliurfa, Kilis), 172 from the region defined as A3 (Afyon, Aydin, Denizli, Izmir, Kutahya, Manisa, Usak), 186 from the region defined as A4 (Bilecik, Bursa, Bolu, Eskisehir, Kocaeli, Duzce), 712 from the region defined as A5 (Ankara, Konya, Karaman), 114 from the region defined as A6 (Adana, Antalya, Burdur, Hatay, Isparta, Icel, KahramanMaras, Osmaniye), 90 from the region defined as A7 (Kayseri, Kirsehir, Nigde, Sivas, Yozgat, Kirikkale) and 75 from the region defined as A8 (Amasya, Cankiri, Corum, Ordu, Samsun, Sinop, Tokat, Trabzon, Zonguldak, Bartın, Karabuk). When the regions are evaluated it is seen that A1 region takes the largest part of gross national product, and following A3 and A4. A7 and A8, A12 and A11 regions take the least part of gross national product.

961 of attendants in all regions are owner of the business, 903 of them are partner of the business and the others are professional manager. 697 of attendants have a primary school degree, 965 of them have a high school degree and the others have a college degree. According to the results approximately one third of the sample have a low education level. According to year of foundation 507 businesses in A1 region, 20 in A11 region, 55 in A12 region, 20 in A3 region, 18 in A4 region, 281 in A5 region, 33 in A6 region, 21 in A7 region, 19 in A8 region, totally 974 businesses was founded in 2000 or after this year. Considering the NACE classification, in A1 region businesses

extensively operate in basic metal industry, plastic and rubber industry, textile industry, machinery and equipment industry, furniture production and the production of machine and equipment those not classified in any other category. According to the distributions in other regions the businesses operate extensively in, chemicals and non metallic minerals industry in A11 region, textile food and beverage industry in A12 region, food textile and non metallic products industry in A3 region, textile industry and the production of equipment those not classified in any other category in A4 region, the production of equipment those not classified in any other category main metal furniture and plastic industry in A5 region, food and textile industry in A6 region, textile and main metal industry in A7 region and food and furniture production in A8 region.

Findings Related to the Variables

Descriptive Results

The portion lend on R&D by SMEs constituting our sample is little or no. 2350 of them lend no and 492 of them lend 40 thousand dollars to R&D. In 2709 of the businesses there is no patent. There are 1010 firms those had taken registered trademark. Number of useful models is 72 in the entire sample. 1300 of the businesses stated that they have export operations and only 735 of them make sell directly to the customers and the others use intermediaries. According to the frequency distributions 78 percent of all operations are performed in A1 region. The descriptives related to the variables for all regions and the entire sample is given below in Table 1.

Considering the scale it is found out that the attitude relating to innovation capability is fairly high. Again in the entire sample the SMEs define the task environment they operate in as unstable, competitive and dynamic. According to these findings it is expected that the businesses would display entrepreneurial and innovative behavior to survive as stated in the theory. But for the operating field the mean of organizational technology and control dimension of organizational culture must be taken into consideration. Also team orientation requires attention. When the means according to regions are examined it is found that there is no remarkable difference.

Table 1. Descriptive Statistics (N=3034, A1=1482,A11=52, A12=148, A3=172, A4=186, A5=712, A6=114, A7=90, A8=75)

	Mean	S. Dev.	A1	A11	A12	A3	A4	A5	A6	A7	A8
Formalization	3.44	0.918	3.43	3.55	3.44	3.42	3.35	3.50	3.43	3.31	3.20
Standardization	3.22	0.882	3.22	3.50	3.23	3.23	3.17	3.25	3.20	3.20	3.03
Specialization	3.10	1.00	3.11	3.23	3.07	3.11	3.06	3.14	3.02	3.07	2.85
Centralization	3.16	1.05	3.18	3.25	3.11	3.19	3.07	3.15	3.22	3.13	2.94
Culture autonomy	3.47	0.928	3.50	3.52	3.50	3.36	3.39	3.43	3.51	3.46	3.42
Culture innovation	3.52	1.26	3.50	3.37	3.77	3.50	3.44	3.55	3.46	3.70	3.21
Culture control	3.85	0.863	3.88	3.78	3.85	3.79	3.63	3.87	3.78	4.00	3.76
Culture development	3.64	0.912	3.64	3.65	3.60	3.57	3.49	3.70	3.53	3.71	3.61
Culture entrepren.	3.73	0.938	3.74	3.72	3.75	3.68	3.59	3.79	3.67	3.77	3.68
Culture Compet..	3.41	1.05	3.45	3.45	3.38	3.38	3.31	3.41	3.25	3.38	3.45
Culture team	3.80	0.911	3.82	3.78	3.79	3.70	3.54	3.84	3.74	3.90	3.86
Culture Direction	4.01	0.824	4.02	4.05	4.07	3.99	3.81	4.04	3.89	4.11	3.99
Environment Sim-Comp.	3.71	0.693	3.72	3.68	3.64	3.56	3.70	3.73	3.64	3.88	3.67
Environment Stat-Dyn	3.51	0.698	3.49	3.47	3.50	3.43	3.51	3.55	3.55	3.60	3.47
Inovatin Cap.	4.03	0.686	4.01	4.22	3.72	3.86	4.27	4.05	4.34	4.18	3.88

Testing the Hypothesis

As stated at the beginning of the study we have investigated which factors influence innovation capability dimension in the entire sample. Especially the attentive point is that the organizational culture is negatively related with innovation capability. On the other hand as shown in the table below it can be stated that organizational culture affects innovation capability only with a low explanation percentage.

Table 2. The Multiple Regression Findings Related to the Effects of the Independent Variable (Stepwise, Whole Sample)

Models	B	Std. Error	Beta	t	Sig.	R	R Square	F	Sig.
Culture Innovation	-,021	,010	-,038	-2,016	,04	,038(a)	,001	4,064	,04(a)

a. Dependent Variable: Innovation Capability

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The results of regression analysis performed according to the subregions differ from the results of general model because different variables enter into the analysis according to different regions. Whereas there is intensiveness in operating types in the A1 region (Istanbul and the cities around), only the environment (static or dynamic) variable explains the innovation capability.

The dynamicity of environment dimension, as in Table 1 having one of the least mean value (3.49) and the negative relations between environment and innovation capability are also important. Moreover it is seen that for the A12 and A14 regions in the explanatory model the innovation dimension of organizational culture and for A6 regions the direction dimension of organizational culture is negatively related within explaining innovation capability.

Table 3. Results of Stepwise Regression Analysis according to Regions

Models	B	Std. Error	Beta	t	Sig.	R	R ²	F	Sig.
Model 2 (A12) Culture	-		-	-				4.884	0.009
Innovation	0.108	0.042	0.213	2.585	0.010	0.18 (b)	0.03		
Formalization	0.129	0.059	0.181	2.197	0.030	0.254(c)	0.06		
Model 3 (A4) Culture									
Innovation	-		-	-				4.602	0.004
Specialization	0.129	0.045	0.225	2,865	0.005	0.160(b)	0.03		
Culture	0.121	0.056	0.159	2,151	0.033	0.228(c)	0.05		
Autonomy	0.123	0.060	0.160	2,043	0.043	0.273(d)	0.08		
Model 1 (A6) Culture	-		-	-				4.482	0.03
Direction	0.134	0.063	0.198	2,117	0.037	0.198(f)	0.04		
Model 1 (A7) Environment	-		-	-				6.844	0.01
Stat-Dyna	0.259	0.099	0.273	2,616	0.011	0.273(a)	0.08		

a Predictors: (Constant), Environment Stat-Dyna

b Predictors: (Constant), Culture Innovation

c Predictors: (Constant), Culture Innovation Formalization

d Predictors: (Constant), Culture Innovation, Specialization

e Predictors: (Constant), Culture Innovation, Specialization, Culture Autonomy

f Predictors: (Constant), Culture Direction

RESULTS and SUGGESTIONS

When the findings are evaluated by considering the existing literature important results have been obtained. Most important point is that considering the innovation capability appearing in the literature only with new product development dimension may produce insufficient results. Likewise while

evaluating and measuring the concept it is necessary to take market orientation, process and method development into account. In other words innovative and creative orientation is a fact including multi dimensionality. Also innovation should include multiple variables those are suggested that affecting it as stated by Zdunczyk and Blenkinsopp (2007). This result is evidence on that performing explanatory and verifying factor analysis is necessary rather than assumptive hypothetical models in the analysis of innovation orientation and capability. Considering the operating difficulties of small sized enterprises the importance findings mustn't be undervalued. Entrepreneurship behavior of the business also reflects managerial entrepreneurship behavior. It should not be expected that employees to be entrepreneurial which are not supported by management about innovation and do not call the managerial behavior as entrepreneur. However there is a lack of studies about the effects of managerial entrepreneurship behavior on employees and how it influence innovation in the literature. In spite of the fact that values related to entrepreneurship culture on the firm basis are high, the result that this variable's explanation is very low would be important. Therefore it is necessary to perform response bias tests in such studies. This assessment must be given attention especially in the view of international comparison criteria. If business's resource allocation for innovation and the importance of this for the business are recognized by the employees they would also believe on the entrepreneurial behavior. Because of their structures SMEs in developing countries have problems in resource allocation, finance and technology. In addition to this if there is a managerial conservativeness managerial priority is oriented to survive in the market rather than creating process or having entrepreneurial employees. Considering the characteristics of our sample, it must be remembered that similar problems exist for the SMEs in Turkey. Effort for solving daily problems orients businesses to imitative production and businesses which can not have the necessary strength may make contract manufacturing. According to the literature innovation is called as a behavior only for the large size organizations. However it is possible to overcome this problem with the foundation of regional research institutes and the cooperation with institutions having international accreditation. Another important point is that competing businesses operating in the same sector rather than the complementary sectors exist in clustering. Just as in Turkey there are clustering in SMEs in Turkey on a region basis. Policy makers have important responsibility to overcome this problem.

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Appendix A: NACE Classification

15 Manufacture of food and beverages

16 Manufacture of tobacco products

17 Manufacture of textiles

18 Manufacture of wearing apparel; dressing and dyeing of fur

19 Tanning and dressing of leather; manufacture of luggage, handbags, saddlery, harness and footwear

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- 20 Manufacture of wood and of products of wood and cork, except furniture; manufacture of articles of straw and plaiting materials
- 21 Manufacture of pulp, paper and paper products
- 22 Publishing, printing and reproduction of recorded media
- 23 Manufacture of coke, refined petroleum products and nuclear fuel
- 24 Manufacture of chemicals and chemical products
- 25 Manufacture of rubber and plastic products
- 26 Manufacture of other non-metallic mineral products
- 27 Manufacture of basic metals
- 28 Manufacture of fabricated metal products, except machinery and equipment
- 29 Manufacture of machinery and equipment n.e.c.
- 30 Manufacture of office machinery and computers
- 31 Manufacture of electrical machinery and apparatus n.e.c.
- 32 Manufacture of radio, television and communication equipment and apparatus
- 33 Manufacture of medical, precision and optical instruments, watches and clocks
- 34 Manufacture of motor vehicles, trailers and semi-trailers
- 35 Manufacture of other transport equipment
- 36 Manufacture of furniture; manufacturing n.e.c.
- 37 Recycling
- 72 Computer and related activities

Appendix B: Definition of subregions in the study

A1: *Subregion1 (İstanbul) + Subregion2 (Batı Marmara):* İstanbul + Tekirdağ + Edirne + Kırklareli + Balıkesir + Çanakkale

A3: *Subregion3 (Ege):* İzmir + Aydın + Denizli + Muğla + Manisa + Afyon + Kütahya + Uşak

A4: *Subregion4 (Doğu Marmara):* Bursa + Eskişehir + Bilecik + Kocaeli + Sakarya + Düzce + Bolu + Yalova

A5: *Subregion5 (Batı Anadolu):* Ankara + Konya + Karaman

A6: *Subregion6 (Akdeniz):* Antalya + Isparta + Burdur + Adana + Mersin + Hatay + Kahramanmaraş + Osmaniye

A7: *Subregion7 (Doğu Anadolu):* Kırıkkale + Aksaray + Niğde + Nevşehir + Kırşehir + Kayseri + Sivas + Yozgat

A8: *Subregion8 (Batı Karadeniz) + Subregion9 (Doğu Karadeniz):* Zonguldak + Karabük + Bartın + Kastamonu + Çankırı + Sinop + Samsun + Tokat + Çorum + Amasya + Trabzon + Ordu + Giresun + Rize + Artvin + Gümüşhane

A11: *Subregion10 (Kuzeydoğu Anadolu) + Subregion11 (Ortadoğu Anadolu):* Erzurum + Erzincan + Bayburt + Ağrı + Kars + Iğdır + Ardahan + Malatya + Elazığ + Bingöl + Tunceli + Van + Muş + Bitlis + Hakkari

A12: *Subregion12 (Güneydoğu Anadolu):* Gaziantep + Adıyaman + Kilis + Şanlıurfa + Diyarbakır + Mardin + Batman + Şırnak + Siirt