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Evaluation of Data Sharing in Production Firms and Innovation Orientation in The Effect of Management Capability on Operational Performance

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Abstract

The aim of this study is to investigate and analyze the effects of information sharing on the operational performance of technology companies in the competitive environment in the management skills and innovative focus of the firms in the technology sector. Due to the limitations of the research, only the technology firms formed our sample group and we can give the analysis results only through the technology companies. The sample population of the research should also be considered in terms of the intensive technology-oriented industrial firms. A research model has been developed to examine the relationships between variables and to test hypotheses. The data obtained from the collected 312 questionnaires were responded by the engineers working in 28 technology companies. In particular, because of the fact that the sample population is engineers, they have taken part in our research because they assume important duties and responsibilities in both the operational part and in the innovation orientation. In conclusion, we have proved the advantage of sharing information and being innovative in order not to fall back from competition for technology companies.

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Keywords: Management Capability, Intra-organizational Knowledge Sharing, Innovation Orientation, Operational Performance;

1. Introduction

The concept of learning organization means that an organization draws conclusions from the events in which it is constantly living, adapting them to changing environment conditions in a system where it can also improve its employees and as a result, it is a dynamic organization that constantly changes, evolves and renews itself [1].

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In the process of creating or obtaining information, organizations acquire the knowledge either from the experience of their own employees or from the experiences of other organizations. For this reason, new knowledge is important to firms; they can draw advantage from integrating new knowledge with existing firm knowledge. This allows a firm to progress faster and more effectively than its competitors through discovery and exploitation. Furthermore, One of the most important steps that must be taken in creating an innovative organizational culture is to encourage the sharing of knowledge. Knowledge of innovation, knowledge, and the production of knowledge also shape innovation. In this context, it is possible to say that the organizational actions will be shaped by the inclusion and use of information in the innovation process [2]. The production of knowledge is a prerequisite for innovation. In any organization, in order to achieve or improve innovation, the capacity of the organization should be increased and knowledge should be widely used [3]. Information technologies are widely used in the storage, storage, access, transfer and dissemination of information. However, the sharing of information within the technologically supported organization is a basic requirement for innovation but not sufficient [4]. The aim of this study is to investigate and analyze the effects of information sharing on the operational performance of technology companies in the competitive environment in the management skills and innovative focus of the firms in the technology sector. The capacity of organizations to improve their learning and knowledge enables enterprises to improve their performance. The connection between organizational learning and performance is established through innovation.

2. Literature Review and Theoretical Framework

2.1. Management Capability

According to Selznick, capabilities are the distinctive elements of the enterprise that have the potential to drive the firm forward [5]. Capabilities are positioned as a source of strategic competition. Hamel and Prahalad stated as a product of sharing-based learning capabilities in the enterprises that they transformed into all kinds of knowledge, mastery, experience, cultural codes and technical processes, and turned into business-specific basic ability and as a result, they created non-replicable competitiveness [6]. It is very important to adopt all efforts at the management level In order to create and manage an organizational structure based on capabilities. On the other hand, Management capability can be defined as the implementation of integrated strategies or systems designed to recruit, develop and retain people with the skills and attitudes necessary to meet existing and future organizational needs. It can be stated that a closer examination of this definition reveals an understanding that capability management has become synonymous with human resources functions such as workforce planning, recruitment, learning, development and retention as an expression and concept [7].

2.2. Intraorganizational Knowledge Sharing

A knowledge-based perspective emphasizes information as a critical resource that designates the competitive advantage of firms. In order to make competitive advantages, a firm must advance a dynamic capability to integrate information into its areas of expertise; to maintain competitive advantages, a firm should attain to keep safe its private information from the eminent domain and imitation of rivals [8]. Alliances can also be a way to learn and internalize new skills, especially for those who are implicit, collective and buried. The core competences are not sold in an open market. These skills can be learned from a partner, internalized, and if they are used beyond the boundaries of the alliance, they become more valuable. Thus, learning from an alliance partner can be widely exploited to a large extent to other activities and businesses outside the scope of the alliance [9]. In strategic alliances, sharing information between partners is an effective way to create existing knowledge by an alliance firm and expand the knowledge base of partner firms and develop new knowledge at relatively lower cost [10]. Firms want to transfer and acquire new knowledge because they pursue to improve new requests and survive [11].

2.3. Innovation Orientation

Innovation-oriented firms inspire creativity and seek for new ideas. Damanpour (1991) asserted that change oriented firms will present more innovations [12]. Beyond creating organizational innovation, products and services,

it refers to new models of management such as business models, management techniques and management strategises, and organizational structures and total quality management [13-14]. Concordantly, As LePine and Van Dyne (1998) emphasize that innovation prefaces with the appreciation and production of new opinions or resolutions that test past practices and standard operating procedures [15]. Lundvall (1992) emphasizes that innovation as the output of the learning process and systematically process problem solving, evaluating and evaluating the past experiences and transferring the information as a whole consists of the properties [16]. So many studies center upon produce innovation, operation innovation and administrative innovation. In particular, Innovation performance was measured with regard to technical innovation and administration innovation. Furthermore, Innovation performance was appraised in the matter of goods, procedure, managing, marketing and business models. Other scholars measured innovation performance by centering merely upon output innovation. The virtue of this paradigm is that it avoids conglomeration different types of innovation into a single fabric [17].

2.4. Operational Performance

Fundamentally, the firm's operational effectiveness is based on the appropriate selection of strategy in joining with environmental conditions. Therefore, performance is determined by the degree of discrepancy between content and strategy [18]. Firm performance is described as the ability of the institution to achieve its goals efficiently and effectively by using its resources [19]. In addition to, firm performance is defined as the ability to achieve the goals and objectives of the organization [20]. On the other hand, firm performance is affected not only by a problem of definition, but also by a conceptual problem. The performance period was occasionally complicated with productivity. In addition to, organizational performance is a marker which measures how an organization succeeds its targets [21]. In order to develop organizational performance, firms use quantitative and qualitative criteria for measuring and assessing organizational consequences. In term of quantitative criteria, it is seen that they include generally; profitability, sales growth, productivity, cost efficiency, rate of new products and the number of new supply contracts [22]. Innovation is one of the most important concepts in the success of firm performance [23].

3. Methodology

Within the scope of the study, a survey was conducted with 312 employees. Data was obtained by using the IBM SPSS 23 Statistical Package Program were evaluated. Descriptive analysis was used in demographic information. Factor analysis and reliability analysis were performed on questions by using 5-point Likert-type scale. Correlation analysis of the relationships between variables; regression and sobel test were used for the analysis of hypothesis and regression analysis.

3.1. Research Goal

This research has been conducted on white-collar workers (Engineers) who working in manufacturing sector. The aim of this research is to determine the effects of relationships between Operational Performance and Operational Performance with the interim Variable Effects of the Management Capability argument, Intraorganizational knowledge sharing and Innovation orientation. The reason why the manufacturing sector is chosen is that the product innovation activities are more active than the service sector. Therefore, our aim is to evaluate and analyze production firms in terms of innovation orientation and Intraorganizational knowledge sharing, Management Capability and operational Performance.

3.2. Analyses

The questionnaire consists of questions representing 4 variables. In the first part of the questionnaire, the demographic information of the individuals and the information about the work are given. In the second part of the questionnaire, there are questions representing 4 variables. Management Capability; In literature research, important studies referenced in many studies were taken into consideration; Siew-Phaik et al. (2013) and, Chen and Lin (2004) used in the study by using the 5-point Likert scale questions using the factor and reliability analysis is included in the analysis [24-25]. Intraorganizational knowledge sharing sample was used in the measurement of the scale developed

by Zamor in 1998 [26]. The questions were developed by Lichtenthaler and Lichtenthaler (2009), Wang and Ahmed (2007), in order to measure the innovation orientation variable [27-28]. The scale was developed by Wu (2008) and Wu et al. (2008) was used to measure the Operational Performance variable [29-30].

3.3. Findings

All our white collars, working in different departments of 25 firms, responded to our survey in accordance with the criteria. 152 female and 160 male white collar responders were included in our survey. 36.7% of the participants were between the 25-30 age group. 49.7% of them are in the age group. The number of engineers over the age of 36 is 13.1%.

3.3. Research Frame

Based on a literature review, Independent variable; Management Capability, Intermediate; Intraorganizational knowledge sharing and Innovation orientation, Dependent Variables; A research model was implemented as Operational Performance. In the study, a quantitative approach was adopted because the data were analyzed in order to determine the relationship between the statistical concepts. In a quantitative research test, we use the independent variable or independent variables to evaluate the effect on the dependent variable [31].

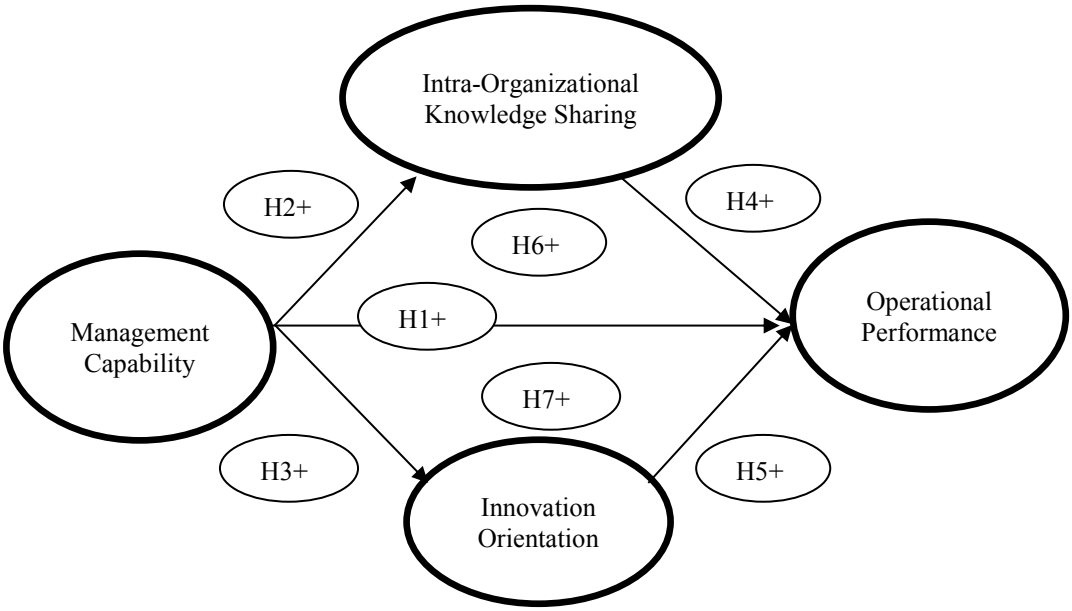

Fig. 1. Research Model

Factor analysis was performed to research the construct validity of the scale. Büyüköztürk (2005), It combines factor analysis with related variables and defines as a multivariate statistical method which aims to discover new unrelated conceptually significant new variables (factors, dimensions) [32]. In our study, the variables were prepared according to the 5-point Likert scale were measured with a 19-question questionnaire. As a result of the factor analysis, the 4 questions did not show factor distribution and were excluded from the scale because of decreasing the reliability. The remaining 15 questions are scattered on four factors. The factors that are subjected to factor analysis with factor loads are shown in the table below:

The reason for the implementation of the KMO Test is to test whether the sample population in the study is suitable

for factor analysis. If the KMO value is above 0.70, it is decided that the sample population is suitable for factor analysis. It is concluded that the variables within the scope of the research model are suitable for factor analysis because the KMO value is 0.903 [33].

Table 1. Rotated Component Matrix[a]

Rotated Component Matrix[a]				
	Component			
	1	2	3	4
IO3. Our company supports the need to develop and use new resources.	0,874			
IO6. People are encouraged for new ideas that don't work.	0,836			
IO4. The extent to which a firm covers, accepts and measures innovation.	0,815			
IO5. Management actively looks for innovative ideas.	0,753			
MC5. Coordination of activities between Alliance partners.		0,874		
MC2. Managing intercultural aspects in strategic alliances.		0,705		
MC4.Stratejikittifaklardakiçatışmayıyönetmek.		0,684		
MC1. Implementation of processes and structures for an alliance management.		0,632		
IKS3. Analyze organizational efforts that are always unsuccessful and pass on commonly learned lessons			0,862	
IKS4. We have special mechanisms to share the lessons learned in organization activities from department to department.			0,859	
IKS1. Senior management continuously emphasizes the importance of sharing information in our company.			0,622	
IKS2. We make little effort to share lessons and experiences.			0,561	
OP2. stock turnover rates				0,862
OP3. Timely delivery to customers.				0,859
OP1. Delivery times				0,715
ExtractionMethod: Principal Component Analysis. RotationMethod: VarimaxwithKaiserNormalization.				
a. Rotationconverged in 5 iterations.				

MC: Management Capability, IKS: Intraorganizational knowledge sharing, IO: Innovation orientation, OP: Operational Performance

Reliability analysis is defined as the internal consistency of the measurement that takes into account the average relationship between the questions. The measurements with Cronbach Alpha coefficient of 0.50 and above are considered to be sufficient [34-35]. Reliability Analysis; Management Capability (4-Questions), .851; Intraorganizational knowledge sharing (4-Questions), .783; Innovation orientation (4-Questions), .814; Operational Performance (3-Questions), .806.

Correlation analysis; One-to-one relationships between Management Capability, Intraorganizational knowledge sharing, Innovation orientation and Operational Performance are discussed. As mentioned earlier, the analyzes so far (factor analysis, reliability analysis, descriptive analysis) were carried out on 312 questionnaires obtained from the institutions. Correlation analysis is used to determine the direction and level of relationship between variables. In the case of a correlation coefficient of 1.00, there is a perfect positive relationship between the variables; In case of -1.00 there is a perfect negative relationship between the variables; In the case of Pearson Correlation 0.00, there is no correlation between the variables [36].

Table 2. Correlations

Correlations					
		Management Capability	Intraorganizational Knowledge Sharing	Innovation Orientation	Operational Performance
Management Capability	Pearson Correlation	1	,580**	,767**	,227**
	Sig. (2-tailed)		0,000	0,000	0,000
	N	312	312	312	312
Intraorganizational Knowledge Sharing	Pearson Correlation	,580**	1	,433**	,664**
	Sig. (2-tailed)	0,000		0,000	0,000
	N	312	312	312	312
Innovation Orientation	Pearson Correlation	,767**	,433**	1	0,059
	Sig. (2-tailed)	0,000	0,000		0,272
	N	312	312	312	312
Operational Performance	Pearson Correlation	,227**	,664**	0,059	1
	Sig. (2-tailed)	0,000	0,000	0,272	
	N	312	312	312	312
**. Correlation is significant at the 0.01 level (2-tailed).					

According to Regression Analysis Results; Supported and Unsupported Hypotheses Regression analysis was used to test predicted research hypotheses and 5 hypotheses were considered in Table 3except for the inter-variable effect according to the results of these regression analyzes.

Table 3. Regression Analysis Results of Impact of Independent Variables on Dependent Variables

Hypotheses	**Standard β**	**Sig.**
H1*: Management has an effect on Capability in Operational Performance.*	**0.227*** **	**0.000**
H2*: Management Capability has an effect on Intraorganizational knowledge sharing.*	**0.580*** **	**0.000**
H3*: Management capability has an effect on Innovation Orientation.*	**0.767*** **	**0.000**
H4*: Intraorganizational Knowledge Sharing has an effect on Operational Performance.*	**0.664*** **	**0.000**
H5*: Innovation orientation has an effect on Operational Performance.*	**0.272*** **	**0.000**

*: p<0.05 **:p<0.01 ***:p<0.001

Measurement of mediation effect by sobel test; for the purpose of explain the temporary effect, it is necessary to define whether the indirect effect of the independent variable (through the mediator) on the dependent variable is meaningful so as to mention the mediation effect by Baron and Kenny in 1986 [37]. In particular, Several tests have been developed to achieve this. One of them is the Sobel test [38]. This test is calculated by using uncorrected regression coefficients and standard error values of the respective variables. These criteria are used formally to assess whether there is mediation.

Intraorganizational knowledge sharing of mediation effect by sobel test in the relationship between Management Capability and Operational Performance; (Standard β: .803***; Sig: .000);

	Input:		**Test statistic:**	**Std. Error:**	**p-value:**
a	0.521	Sobel test:	10.2754037	0.03645589	0
b	0.719	Aroian test:	10.26398633	0.03649644	0
Sa	0.040	Goodman test:	10.28685925	0.03641529	0
Sb	0.043				

If p is less than <0.05, we can explain that there is an mediation effect.

Innovation orientationof mediation effect by sobel test in the relationship between Management Capability and Operational Performance; (Standard β: .279***; Sig: .000);

	Input:		**Test statistic:**	**Std. Error:**	**p-value:**
A	0.877	Sobel test:	3.3970713	0.05060006	0.00068111
B	0.196	Aroian test:	3.39362795	0.0506514	0.00068973
Sa	0.040	Goodman test:	3.40052516	0.05054866	0.00067257
Sb	0.057				

If p is less than <0.05, we can explain that there is an mediation effect.

Hypothesis results;

Table 4. Supported/Unsupported status of research hypotheses

Hypotheses	**Supported / Unsupported**	**Level(Sig.)**
H6*: Intraorganizational knowledge sharing has a mediation variable effect on the relationship between Management Capability and Operational Performance*	**Supported**	***P<0.001***
H7*: Innovation orientation has a mediation variable effect on the relationship between Management Capability and Operational Performance*	**Supported**	***P<0.001***

4. Discussion

In today's business world where industry 4.0 is being discussed and discussed intensively, especially developed countries started to switch to technology intensive production systems by laying the foundations of industry 5.0. This rapid change in the technology world reveals the importance of talents in the organizational structure of organizations. Management of information as well as innovation in accordance with the structure of the organization and organizational performance as a result of this management ability is continuously increasing in the competitive environment is extremely important. The fact that innovations are constantly changing and developing and spreading in the process reveals the fact that innovation and management ability are dealt with together. When we accept innovation as a process, management needs to identify the problems experienced in the organization at this stage and eliminate the problems by revealing the solutions. Damanpour (1988) defines innovation as technical and managerial innovations. The capabilities of the new management are reflected in the innovation with the technical knowledge. Technical innovations are defined as output based on product and manufacturing technologies, and at the same time innovations in management are defined as new ideas and initiatives regarding the control and coordination of the organization [39]. In this case, the management ability can be achieved if it is reflected correctly in the whole organizational structure and the organization is managed correctly in the sense of knowledge sharing and innovation.

On the basis of innovation, training activities include supply chain, machinery and equipment, information management. In addition, innovation is a complex process that involves many activities that are fundamentally interdependent but at the same time very different [40].

5. Conclusion

In today's world, where competition conditions are quite challenging, the survival of firms is undoubtedly related to their superior performance and sustainable competitive advantage. Many new conditions brought about by globalization necessitate corporate performance and competitive advantage. Many disciplines, especially economics, management and engineering sciences, work in this area for the evolution of firms. Those who wish to conduct research later in the field of information management may wish to expand the research population on a country-by-country basis in terms of whether there will be any difference between the relationships taking into account the differences between countries. Thus, it will be interesting to study these relationships at international level, since cultural differences will generally affect organizational characteristics and relationships with organizational effectiveness. Looking at the findings of the research, it is seen that the management ability has a positive effect on both information sharing and innovation orientation, and it positively affects organizational performance. When the inter-variable effect is examined, the importance of information-sharing and innovation-orientedness emerges in terms of positive effects on organizational performance.. For this reason, keeping pace with the dynamic conditions in the new economy and achieving sustainable competitive advantage and exhibiting sustainable superior performance are important opportunities of researchers in parallel with the fundamental problem of today's firms. Firms can provide this problem with continuous improvement, internalizing the logic of continuous development and continuously renewing and rebuilding their resources and capabilities. These skills can be made dynamic through collective learning and assimilation, including technology.

References

[1] Senge, Peter, et al. (1999) "The dance of change: The challenges to sustaining momentum in learning organizations." Performance Improvement **38(5)**: 55-58.N. D. Tripathi, J. H. Reed and H. F. Vanlandingham(1998) “Handoff in cellular systems” *IEEE Pers. Commun*: 26-37.

[2] Davenport, Thomas H., and Laurence Prusak (2001) "İş dünyasında bilgi yönetimi." Rota Yayın Yapım Tanıtım Tic. Ltd. Şti., İstanbul.

[3] Kermally, Sultan (2004) Developing and managing talent: a blueprint for business survival. Thorogood.

[4] Stewart, Thomas A., Nurettin Elhüseyni, and Zülfü Dicleli (1997) Entellektüel Sermaye: kuruluşların yeni zenginliği. Türk Metal Sanayicileri Sendikası.

[5] Selznick, Philip (2011) Leadership in administration: A sociological interpretation. Quid Pro Books.

[6] Prahlad, C. K., and Gary Hamel (1990) "The core competence of the corporation." Harvard Business Review **68(3)**: 79-91.

[7] Abraham, S (2011) "Talent management strategies of an international bank in the Middle-East." International conference on technology and business management.

[8] Jiang, Xu, et al. (2016) "Entrepreneurial orientation, strategic alliances, and firm performance: Inside the black box." Long Range Planning **49(1)**: 103-116.

[9] Doz, Yves L., and Gary Hamel (1998) Alliance advantage: The art of creating value through partnering. Harvard Business Press.

[10] Hsu, I-Chieh, and Yi-Shun Wang (2008) "A model of intraorganizational knowledge sharing: Development and initial test." Journal of Global Information Management (JGIM) **16(3)**: 45-73.

[11] Van Wijk, Raymond, Justin JP Jansen, and Marjorie A. Lyles (2008) "Inter‐and intra‐organizational knowledge transfer: a meta‐analytic review and assessment of its antecedents and consequences." Journal of management studies **45(4)**: 830-853.

[12] Abdallah, Ayman Bahjat, Samer Eid Dahiyat, and Yoshiki Matsui. "Lean management and innovation performance: Evidence from international manufacturing companies." Management Research Review **42(2)**: 239-262.

[13] Jamrog, Jay, Mark Vickers, and Donna Bear (2006) "Building and sustaining a culture that supports innovation." People and Strategy **29(3)**: 9.

[14] Rennings, Klaus (2000) "Redefining innovation—eco-innovation research and the contribution from ecological economics." Ecological economics **32(2)**: 319-332.

[15] LePine, Jeffrey A., and Linn Van Dyne (1998)"Predicting voice behavior in work groups." Journal of applied psychology **83(6)**: 853.

[16] Lundvall, Bengt-Ake (1992) "National systems of innovation: An analytical framework." London: Pinter.

[17] Chittoor, Raveendra, Preet S. Aulakh, and Sougata Ray (2015) "Accumulative and assimilative learning, institutional infrastructure, and innovation orientation of developing economy firms." Global Strategy Journal **5(2)**: 133-153.

[18] Srivastava, Prashant, Karthik NS Iyer, and Mohammed YA Rawwas (2017) "Performance impact of supply chain partnership strategy-environment co-alignment." *International Journal of Operations & Production Management* **37(7)**: 927-949.

[19] Neely, Andy, ed. (2007) Business performance measurement: Unifying theory and integrating practice. Cambridge University Press.

[20] Ricardo, R., and D. Wade (2001) "Corporate performance management: How to build a better organization through measurement driven strategies alignment." Butterworth Heinemann. Entrepreneurship Theory and Practice **26(4)**: 71-95.

[21] Ho, Li-An (2008) "What affects organizational performance? The linking of learning and knowledge management." *Industrial Management & Data Systems* **108(9)**: 1234-1254.

[22] Awwad, Abdulkareem, and Dr Mamoun N. Akroush. "New product development performance success measures: an exploratory research." *EuroMed Journal of Business* **11(1)**: 2-29.

[23] Mone, Mark A., William McKinley, and Vincent L. Barker III (1998) "Organizational decline and innovation: A contingency framework." *Academy of management review* **23(1)**: 115-132.

[24] Chen, Chung‐Jen, and Bou‐Wen Lin (2004) "The effects of environment, knowledge attribute, organizational climate, and firm characteristics on knowledge sourcing decisions." *R&D Management* **34(2)**: 137-146.

[25] Siew-Phaik, Loke, Alan G. Downe, and Murali Sambasivan (2013) "Strategic alliances with suppliers and customers in a manufacturing supply chain: From a manufacturer's perspective." *Asia-Pacific Journal of Business Administration* **5(3)**: 192-214.

[26] Zamor, Robert L. Measuring and improving organizational change readiness in the libertyville fire department. National Fire Academy, 1998.

[27] Lichtenthaler, Ulrich, and Eckhard Lichtenthaler (2009) "A capability‐based framework for open innovation: Complementing absorptive capacity." *Journal of management studies* **46(8)**: 1315-1338.

[28] Wang, Catherine L., and Pervaiz K. Ahmed (2007) "Dynamic capabilities: A review and research agenda."*International journal of management reviews* **9(1)**: 31-51.

[29] Wu, Wei‐ping (2008) "Dimensions of social capital and firm competitiveness improvement: The mediating role of information sharing." *Journal of management studies* **45(1)**: 122-146.

[30] Wu, Lei–Yu, et al. (2008) "Internal resources, external network, and competitiveness during the growth stage: A study of Taiwanese high–tech ventures." *Entrepreneurship Theory and practice* **32(3)**: 529-549.

[31] Thomas, J. R., Silverman, S., & Nelson, J. (2015). Research methods in physical activity, 7E. Human kinetics.

[32] Büyüköztürk, Şener (2005) "Anket geliştirme." *Türk Eğitim Bilimleri Dergisi* **3(2)**: 133-151.

[33] Altunışık, Remzi, et al. (2007) Sosyal bilimlerde araştırma yöntemleri: SPSS uygulamalı. Sakarya yayıncılık.

[34] Nunnally, Jum C (1978) Psychometric Theory: 2d Ed. McGraw-Hill.

[35] Hair, Joseph F., Robert P. Bush, and David J. Ortinau (2000) Marketing research: A practical approach for the new millennium. Irwin Professional Publishing.

[36] Ural, Ayhan, and İbrahim Kılıç (2013) "Bilimsel araştırma süreci ve spss ile veri analizi, Detay Yayıncılık, **4**." Baskı, Ankara 31.

[37] Baron, Reuben M., and David A. Kenny (1986) "The moderator–mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations." *Journal of personality and social psychology* **51(6)**: 1173.

[38] Sobel, Michael E (1982) "Asymptotic confidence intervals for indirect effects in structural equation models." Sociological methodology 13: 290-312.

[39] Damanpour, Fariborz. "Innovation type, radicalness, and the adoption process." Communication research 15.5 (1988): 545-567.

[40] Albors-Garrigos, Jose, Juan Ignacio Igartua, and Angel Peiro (2018) "Innovation management techniques and tools: Its impact on firm innovation performance." *International Journal of Innovation Management* **22(6)**: 1850051.