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INNOVATION DECISION OF EXPORT COMPANIES AND EFFECT ON FIRMS FINANCIAL PERFORMANCE

Abstract. Innovation is a very important subject for companies especially for developing new products, finding new methods of production, satisfying the consumers' needs, decreasing costs and gaining competitive advantage. Companies can survive by the help of innovation improvement because that it provides continuous progress, which enables companies to grow faster, become more efficient and more profitable than companies, which do not make innovation. Particularly for exporting companies' innovation gains much more importance because of shortening product life cycle and increasing competition in global environment. There are numerous studies that investigate the relation between innovation and firm performance. Research results have shown that innovation influences firm performance in different ways such as; entering the market for the first time with an innovative product allow companies to obtain relatively high profits; the number of innovations completed by companies had a positive impact on the operating profit margin; high product innovativeness had positive affect on the sustainable profitability in longitudinal researches; companies' technical and administrative innovation have also positive affect on firm performance. Therefore, due to the higher uncertainty in business environment, it is crucial to identify the criteria for innovation decision and analyze the effects on firms' financial performance. In this study, main objective is to find out the most important criteria for innovation decision that affects financial performance in Turkish export companies. The authors identified the innovation decision criteria according to the recent studies that explore the relation between innovation and firm performance. Decision model consists of three main criteria as; firm structure, economic and internal environment criteria and nine sub-criteria as; experience, financial structure, crisis & instability, market demand, governmental policies, competition, human capital & education, research & development capability and organizational culture. Analytical Network Process (ANP) method used to select the best alternatives evaluated with respect to nine criteria.

Keywords: Innovation, Financial Performance, Exporting Companies, Decision Making, ANP.

JEL Classification G32, L25, O32

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ІННОВАЦІЙНЕ РІШЕННЯ ЕКСПОРТНИХ ПІДПРИЄМСТВ І ЙОГО ВПЛИВ НА ФІНАНСОВУ ДІЯЛЬНІСТЬ ФІРМ

Анотація. Інновація є дуже важливим питанням для компаній, особливо для розробки нових товарів, пошуку нових методів виробництва, задоволення потреб споживачів, зниження витрат та отримання конкурентної переваги. Компанії можуть вижити за допомогою вдосконалення інновацій, оскільки це забезпечує постійний прогрес, що дає змогу компаніям зростати швидше, ставати ефективнішими та вигіднішими, ніж компанії, які не роблять інновацій. Зокрема, для компаній — експортерів інновації набувають набагато більшого значення через зменшення життєвого циклу продукції та посилення конкуренції у глобальному середовищі. Існують численні дослідження, які розглядають взаємозв'язок між інноваціями та ефективністю фірми. Результати досліджень показали, що інновація впливає на ефективність фірми різними способами, такими як: уперше вихід на ринок з інноваційним продуктом дозволяє компаніям отримувати відносно високі прибутки; кількість інновацій, виконаних компаніями, позитивно вплинуло на норму операційного прибутку; висока інноваційність продукту позитивно вплинула на стійкість прибутковості в рамках довготривалих досліджень; технічні та адміністративні інновації компаній також позитивно впливають на ефективність роботи фірми. Тому у зв'язку з великою невизначеністю у бізнес-середовищі важливо визначити критерії ухвалення інноваційних рішень і проаналізувати вплив на фінансові показники фірм. Основним завданням цього дослідження є з'ясування найважливіших критеріїв рішення щодо інновацій, які впливають на фінансові показники турецьких експортних компаній. Визначено критерії ухвалення рішень щодо інновацій згідно з актуальними дослідженнями, які досліджують взаємозв'язок між інновацією та ефективністю фірми. Модель рішення складається з трьох основних критеріїв, таких як: структура фірми, критерії економічного та внутрішнього середовища, та дев'ять підкритеріїв, таких як: досвід, фінансова структура, криза і нестабільність, ринковий попит, урядова політика, конкуренція, людський капітал та освіта, науково-дослідницька діяльність та організаційна культура. Для вибору найкращих альтернатив, оцінюваних відповідно до дев'яти критеріїв, використовувався метод аналітичного мережевого процесу (ANP).

Ключові слова: інновації, фінансові результати, експортні компанії, ухвалення рішень, ANP.

Формул: 2; рис: 1; табл.: 3; бібл.: 42.

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ИННОВАЦИОННОЕ РЕШЕНИЕ ЭКСПОРТНЫХ КОМПАНИЙ И ЕГО ВЛИЯНИЕ НА ФИНАНСОВУЮ ДЕЯТЕЛЬНОСТЬ ФИРМ

Аннотация. Инновация — очень важный вопрос для компаний, особенно для разработки новых товаров, поиска новых методов производства, удовлетворения потребностей потребителей, снижение затрат и получения конкурентного преимущества. Компании могут выжить за счет совершенствования инноваций, поскольку это обеспечивает постоянный прогресс, что позволяет компаниям расти быстрее, становиться более эффективными и выгодными, чем компании, которые не делают инноваций. Основной задачей данного исследования является выяснение важнейших инновационных критериев, влияющих на финансовые показатели турецких экспортных компаний. Определены критерии принятия решений по инноваций согласно с актуальными исследованиями, которые исследуют взаимосвязь между инновацией и эффективностью компании.

Ключевые слова: инновации, финансовые результаты, экспортные компании, принятия решений, ANP.

Формул: 2; рис: 1; табл.: 3; библи.: 42.

Introduction. Today's business environment can be defined as dynamic and complex because of increasing customer needs, intensive competitiveness and high uncertainty due to the globalization and information age [1]. According to these rapid changes in environment, innovation referred as a key factor for sustainable success and financial growth of companies. Several studies regarded «innovation» as one of the main capabilities that support the performance of the company [2]. Innovation is «the perception and resulting actions up on business activities in a new and unique ways» [3]. Besides, organizational innovation is the implementation and adoption of new ideas which is related with resources, process, procedures, technology, product and service in the firm's business practices, workplace organization and market relations [4; 5]. Organizational innovation is also crucial for firms in enhancing financial performance by reducing administrative and transaction costs, developing work environment satisfaction as a result of increase in employee motivation and productivity, gaining access to non-tradable assets (such as non-codified external knowledge) or decreasing costs of all kind of providers [6]. In this study, innovation will be discussed as novelty of ideas and activities in new idea generation, searching new sources, new/improved product or services, technology development, improving marketing and developing

new ways to organize business. Moreover, it is very important and critical to the economy of a country.

Analysis of research and problem statement: The relationship between the innovation of firms and its performance has received considerable attention and is still debatable. Prior researches found strong relations between innovation and financial performance namely; Damanpour F. [4], Neely, A. [7], Hult G. [8] Verhees, F. [9], Alpay, G. [10], Nemlioğlu, I. [11], Acar, Z. [2], Jin, Z. [12]; Zaheer, A. [13], Mengüç, B. [14], Santos, D.F. [15]. Our study shows that linking innovation with the financial performance of companies requires the need to understand innovation as an organizational resource that brings together tangible and intangible elements, internal and external factors for companies [6].

Three priority criteria and sub-criteria were identified by the authors, according to the recent studies that explore the relation between innovation and firm performance. Figure 1 shows the three main criteria; firm structure, economic environment and internal environment criteria and sub-criteria selected to find out which factor is the most influencing factor of innovation decision for exporting companies.

Firms Structure: There are numerous studies pointing out the importance of financial structure and experience on innovation decision of companies which in this study they are categorized as firm structural factors.

Experience: Joining new foreign markets generate experiential knowledge which afterwards brings into business internationalization knowledge, institutional knowledge and business knowledge [16]. Thus the companies' exporting experience also affects its performance of innovation [17]. Previous experiences help companies to improve the deep, internal understanding of conditions related to the use of technology. The number of tasks (experience) increases the ability of finding potential solutions and detect possible task recombinations. This expanded research capability proposes experience to encourage innovation [18].

Financial Structure: Companies should increase R & D spending to support innovation development. Innovation expenditure may include a variety of costs, like salaries and wages of research staff, skilled workers, experienced scientists, engineers and other experts [19]. Evaluation of risky and long-term projects and diversification of risks will greatly affect the financing of innovation [20]. Depending on the information asymmetry between shareholders, creditors and company managers, financial structure affects the decision mechanism of companies on innovation, investment or output with a limited liability [21]. And also lack of financing can cause R&D and innovation projects to be stopped and delayed [22].

Economic Environment: There is an important connection among the economic environment and the innovation performance of firms.

Crisis & Instability: The economic downturn makes job opportunities less precise and therefore the firms are unwilling to make long-term and risky investments. In general the firms are trying to decrease firstly their spending, containing investment and innovation [23]. The crisis and instability may have negative impacts on company's innovation decisions and also on longer-term expectations for continuous growth based on innovation [24]. For innovative companies and R&D performing companies the crisis environment can cause an important risk for financial constraints, and bring forth significant R&D investment cuts across many sectors [22].

Market Demand: In the modern world demands are changing and increasing. To satisfy the increasing demands companies should be aware to respond these changes. It is very important for the management to realize these changes and be organized and ready to meet the new needs [25]. Demand (customers, tastes, customs and purchasing power...) plays an important role for the innovativeness of a nation [26]. In literature there are several studies that finds a positive linkage between innovation and demand [27]. On the other hand, variations in market demand can affect the revenues and profitability of firms [28] and those are important indicators of financial performance.

Governmental Policies: A country's innovativeness is seen as the outcome of several factors, government policies is one of those important factors that may promote innovation [26].

The governmental factors such as regulations, the legal environment, the efficiency or the effectiveness of the government (public utilities, public transportation, security, education and health...) has an important effect on innovation. Also the government policies can affect the potential of firm innovation and also can contribute or prevent the firm's innovation and economic welfare [29].

Competition: Competitiveness of the market in which the firms are competing is a very important factor for innovativeness [26]. The managers' strategic decision-making processes for innovation decision significantly affected from the industrial environment. Companies may need to be more innovative in order to be competitive in today's competitive environment. And also the firms who are competing in the global market should introduce innovative products, services and processes more quickly and effectively because of the global competition [30].

Internal Environment Criteria: Organizational factors are important as contextual factors on influencing organizational innovation. Academic researches emphasize the importance of human capital, R&D and organization culture for innovativeness in firms' performance [31; 32].

Human Capital & Education: Human capital defines as knowledge resources that consist of skills, experience, education, expertise, ideas, knowledge, competencies, abilities and values of employees inside organization [33; 34]. Good educated employees with high competences can enhance cognitive abilities that increase productivity and efficiency to develop their work outcomes, which support companies improve the firm's innovative performance [35]. Organizations with extended human capital could analyze customers' problems and needs urgently and show better performance. In addition, these organizations could not imitate by competitors, so they can increase profits, gain competitive advantage and core capabilities [11].

Research & Development Capability: Research and Development programs like R&D investment, patents, R&D intensity are important intangible expenditures that are unique factors to clarify differences in organizations long-term financial performance. R&D capability of organization is about creativity and creating value for its buyers [37]. So it not only related with generating new knowledge, but it also related with organization's ability to absorb and manipulate current knowledge. Therefore, research and development capability accepted as strategically important resource for competitive advantage in internalization [38]. The number of researchers (employees of R&D department), new product or services that are raised in the organization, patents, licensees, are the basic content of the R&D capabilities [39].

Organizational Culture: Organizational culture is the assumptions, beliefs and values that accepted by the employees, which expected as norm behaviours in that organization [40]. Because of the changing competition environment, organizations need to improve abilities to sustainable innovation, so that they must first change their cultures in order to build the innovative culture. Norms and values related with enhancing creativity and encouraging new projects such as risk-taking, experimentation, novel problem-solving, team working, applies new knowledge & ideas, learning by mistakes, failures and rewards non-traditional thinking; are all find positively related with increasing ability of innovation behaviour of organizations [41]. On the other hand, managers are responsible for creating an innovative corporate culture by allowing autonomy to produce creative proposals, applying HR incentive applications, developing and supporting learning opportunities. Lastly, Empirical findings supports significant influence effect of organizational culture on financial performance [42].

Research Model and Results. The Analytical Network Process (ANP) was proposed to expand the Analytic Hierarchy Process to free the boundaries of the hierarchical structure, which indicates that the criteria are independent of each other. Meanwhile, global priority vectors can be obtained with a specific network structure to determine dependency. ANP begins with benchmark comparisons across the system to create the supermatrix. This question is made by asking «How important is a criterion compared to other criteria in your preferences?». Questionnaire applied to 48 participant and geometric mean was taken to get a common sense. A relative scale of 1 to 9 was used to determine the significance. In our case, the structure of the network is shown in Fig.1.

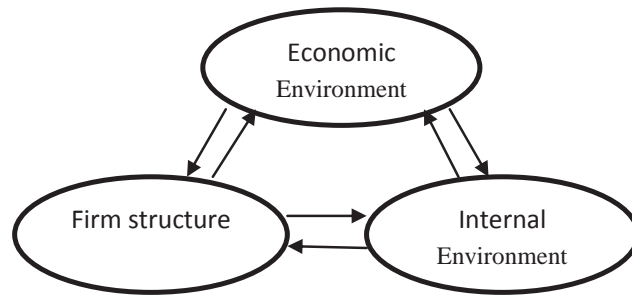


Fig.1. The network structure of the model

In our case, the supermatrix can be formed as the following matrix:

$$W = \begin{bmatrix} 0 & w_{12} & w_{13} \\ w_{21} & 0 & w_{23} \\ w_{31} & w_{32} & 0 \end{bmatrix} \quad (1)$$

where w_{ij} is the main eigenvector of the effect of elements compared to group j th. If the set does not have an effect on $w_{ij}=0$, therefore, the shape of the supermatrix depends on the variety of the structure. Once supermatrix is formed, the predominant supermatrix is obtained by fully converting all column totals to the unit. We then raise the weighted supermatrix to limit the forces to achieve global priority vectors.

$$\lim_{k \rightarrow \infty} (W)^k \quad (2)$$

Economic environment factor can be measured by the criteria of crisis and instability (E1), market structure (E2), regulation (E3), competition (E4). Firm structure factor can be measured by the criteria experience (F1), financial structure (F2). On the other hand, interval environment factor can be measured by the criteria research and development capability (I1), human capital (I2), and organizational culture (I3). In additional, each factor is dependent to each other as shown in Fig. Then, ANP continue with comparison of importance between each criterion. For example, firist matrix calculated by asking the first question «For the criterion of market structure (E1), How much more important is the economic environment factor than the firm structure factor criteria?». The other matrices can be found by the similar questions. After calculating the influence of the elements in each component, we can get supermatrix based on the eigenvectors and the model. Since each factor affects each other, the supermatrix is formed as follows (Tabl. 1):

Table 1

		Pairwise comparison								
E_1		0	0	0	0.181	0.354	0.400	0.463	0.463	0.463
E_2		0	0	0	0.599	0.266	0.200	0.284	0.284	0.284
E_3		0	0	0	0.220	0.380	0.400	0.253	0.253	0.253
E_4		0.637	0.582	0.136	0	0	0	0.634	0.250	0.400
F_1		0.105	0.109	0.654	0	0	0	0.192	0.250	0.200
F_2		0.258	0.309	0.210	0	0	0	0.174	0.500	0.400
I_1		0.637	0.558	0.105	0.464	0.464	0.464	0	0	0
I_2		0.105	0.122	0.637	0.210	0.210	0.210	0	0	0
I_3		0.258	0.320	0.258	0.324	0.324	0.324	0	0	0

Subsequently, the weighted supermatrix is obtained by ensuring that all columns are fully added to the unit (Tabl. 2).

Table 2

		Weighted Supermatrix								
$W =$	E_1	0	0	0	0.091	0.177	0.200	0.232	0.232	0.232
	E_2	0	0	0	0.300	0.133	0.100	0.142	0.142	0.142
	E_3	0	0	0	0.100	0.190	0.200	0.127	0.127	0.127
	E_4	0.319	0.291	0.068	0	0	0	0.317	0.125	0.200
	F_1	0.053	0.055	0.327	0	0	0	0.096	0.125	0.100
	F_2	0.129	0.155	0.105	0	0	0	0.087	0.250	0.200
	I_1	0.319	0.279	0.053	0.232	0.232	0.232	0	0	0
	I_2	0.053	0.061	0.319	0.105	0.105	0.105	0	0	0
	I_3	0.129	0.160	0.129	0.162	0.162	0.162	0	0	0

Finally, when calculating the weight of the predominant supermatrix limiting, the limiting supermatrix can be obtained as follows (Tabl. 3):

Table 3

		Limiting Supermatrix								
$W =$	E_1	0.150	0.150	0.150	0.150	0.150	0.150	0.150	0.150	0.150
	E_2	0.098	0.098	0.098	0.098	0.098	0.098	0.098	0.098	0.098
	E_3	0.083	0.083	0.083	0.083	0.083	0.083	0.083	0.083	0.083
	E_4	0.107	0.107	0.107	0.107	0.107	0.107	0.107	0.107	0.107
	F_1	0.147	0.147	0.147	0.147	0.147	0.147	0.147	0.147	0.147
	F_2	0.103	0.103	0.103	0.103	0.103	0.103	0.103	0.103	0.103
	I_1	0.084	0.084	0.084	0.084	0.084	0.084	0.084	0.084	0.084
	I_2	0.129	0.129	0.129	0.129	0.129	0.129	0.129	0.129	0.129
	I_3	0.100	0.100	0.100	0.100	0.100	0.100	0.100	0.100	0.100

The criterion of market structure has the highest priority with 0.150 weight. Secondly financial structure criterion comes with 0.147 weight and thirdly human capital criterion takes place with 0.129 weight.

Conclusion. There are numerous studies pointing out the importance of innovation for exporting companies. However, there are few studies analyzing the link between innovation decision and the effect on financial performance for exporting companies. In this research, results show that among nine criteria, market demand is the most important factor influencing the innovation decision. Market demand is very important for companies because they should take into account the variations in demand to make future predictions, to establish strategies and to make decisions for future growth. Furthermore, due to the fluctuations in demand, the profitability and the revenue of the company can be affected and thereby it enhances the firms' financial performance. There are supporting studies that confirms the importance of demand factor and the customers' needs and preferences in literature [25; 26]. Moreover, the findings suggest that, the second important factor is financial criteria for innovation decision. The companies' financial structure indicates the ability of financing innovation expenditures such as R&D, patent and licensees spending and it is crucial for making long-term decisions [19; 22; 36]. Lastly, human capital (HC) is the third important criteria that includes the skills, abilities, experience and education of companies' employees. Therefore, human capital is both supportive and essential for innovation and financial performance because of employee's knowledge, expertise and competencies are vital and gain competitive advantage in today's complex and dynamic competitive environments [36].

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