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Sustainable innovation policy in non-walled technoparks

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Abstract

Meanwhile, the government in different countries encourages these sustainable activities to make their domestic brands open worldwide Because sustainability and learning growth have comparable meanings, all paths leading in this direction cross with a single phenomenon known as innovation. The more investment in innovation, the more value the company can gain. In Turkey, the government has increased the financial support of sustainable innovation management for more than 20 years. Especially, in the last five years the budget of the ministry has widened to keep growing in growth. The grant incentives given for Research &Development (R&D) centers and Design centers, also called non-walled technoparks, are two main examples of this encouragement. This study is framed on a big-scale company's growth with the help of the R&D or Design Center. The financial and performance-based milestones in the R&D center road map lead the company to follow and invest in technology. This also means taking advantage of the international competition in 360 degrees. Not only is financial performance increased by gaining incentives, but also the qualification of human resources is going up and up. The results show how sustainable innovation policy influences business activities.

Keywords: Brand; Design center; R&D center; sustainable ınnovation.

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1. Introduction

Implementing a new or considerably enhanced product, service, process, marketing strategy, or organizational technique in business operations, workplace structure, or external relations is considered innovation [1]. According to [2], innovation is defined as the process of bringing about novelty, difference, and change in products, services, and business practices to provide economic and social benefits.

Companies innovate to gain a competitive edge and to protect their market position. To avoid losing market share to a more innovative competitor, a company may adopt a reactive strategy and innovate [3]. Alternatively, it can use a proactive strategy to acquire a strategic market position in comparison to its rivals [1]. Within an organization, innovation draws in new members and energizes the current ones. An organization's ability to generate and execute novel concepts gives it a competitive edge. Businesses that don't innovate lose their creative employees. From the highest levels of the organization to the lowest, innovation transforms it. To enable product innovation and policies, it also modifies the organization's value chain [4,5,6]. In the public as well as commercial sectors, innovation is crucial. "Innovation and technology are important forces behind improved growth performance. The success of companies and, eventually, the expansion of economies depend heavily on innovation [7].

Through innovation, nations benefit from economic prosperity [8]. The majority of innovation in the public sector is viewed as service innovation. "Introducing a new or significantly improved service in terms of its features or intended uses is known as service innovation" [1]. Public enterprises gain a great deal from service innovation since it reduces errors in workflow and offers simpler, more affordable, faster, and more secure services. Furthermore, providing superior service gives you a competitive edge. Successful innovation happens when an idea for a good, service, or procedure that fits into a certain chain of value inside the company is combined with a business plan and then implemented through innovation management with competence and discipline [4]. Creating a strategic approach to innovation is necessary for successful innovation management [9]. According to Howells [10], managing the innovation process within an organization requires the use of an innovation model. The significance of innovation management is apparent; however, the majority of organizations lack a strategic approach to innovation, and no all-encompassing technological innovation model for the Turkish sector has surfaced.

1.1. Literature review

The research and development centers and design centers are the only locations where innovation takes place. Similar to how oxygen permeates our environment, innovation should be a process that permeates all aspects of the organization's value chain [4]. An innovation is any concept, method, or item that a person believes to be novel, and a concept is considered innovative if it feels novel to the individual [11].

From a management standpoint, innovation is defined differently; it is a comprehensive process consisting of several interconnected subprocesses rather than a single action. It involves more than just coming up with a novel notion, creating a novel tool, or expanding into an untapped market. All of these activities are done in an integrated manner in the process [12]. Despite their similarities, the terms invention and innovation have different meanings. The commercial and practical applications of inventions are the focus of innovation. It is the process of integrating an invention into the financial system and transforming it into a physical good. According to Tidd & Bessant [9], the relationship between the words can be shown in the following equation:

Innovation = theoretical idea + technical invention + economic exploitation

Inventions are the foundation of innovation, but they must have value to support an organization's expansion. The administration of all the steps involved in developing new ideas, creating new technologies, producing, and promoting new goods or procedures is known as innovation. New products, methods of doing things, and discoveries are all considered inventions. The innovation process is the progression from a novel discovery to a finished product [13].

The various features of innovations influence how quickly they are adopted. An innovation may require a considerable amount of time to achieve widespread adoption and usage. Rogers and Shoemaker [11] state that the most crucial elements that impact the pace at which inventions are adopted include:

• The extent to which an innovation is thought to offer a better position than rivals is known as its competitive advantage. The faster innovation is adopted, the more people believe it has competitive benefits.
• The degree to which an innovation is thought to be compatible with the current culture, values, and user demands is known as its compatibility. In a social system, an innovation that conflicts with social norms and culture will not be quickly embraced [14].
• The degree to which an innovation is acknowledged as being challenging to use and comprehend is known as its complexity. An innovation's degree of complexity affects how easy it is to use and comprehend.
• The extent to which an innovation is tested is its trialability. Innovations that consumers can test out will catch on faster [15].
• The degree to which an innovation's effects are apparent is known as its observability.
• The rate of acceptance of innovations is accelerated by their visible effects.

1.2. Purpose of study

Large firms depend on their R&D and design centers for expansion and success. These centers lay the groundwork for long-term profitability and sustainable growth by promoting innovation, enhancing products, cutting expenses, and opening up new markets. The focus of this study is on how an R&D or design center helps a large corporation grow.

2. Methods and materials

The study uses secondary data, to achieve the aim of the study. Data were collected from existing companies and analyzed. The study follows a discussion method. All cited materials were duly acknowledged and referenced. No special permissions were required for the use of the data in this study.

3. Results

3.1. Research & Development (R&D) and design centers legislation and applied ıncentives

3.1.1. Research and development centers

Turkey aims to produce high-value products, be among the global economies of scale, and increase its competitive potential with other nations. R&D and design centers play a significant role in reaching these objectives. It is therefore intended to establish these centers within the businesses in the industrial sector and to furnish them with a variety of incentive components through rules and regulations. The study's second section goes into great length on the incentives offered by "Law No.

5746 on Supporting Research, Development, and Design Activities" concerning R&D and design centers.

Within the innovation processes, one of the basic conditions for competing based on knowledge is to exist. The units where activities are carried out develop new technologies, products, and systems with intensive use of information to upgrade research and development units. On the other hand, R&D activities are no longer just the choice of businesses but have become encouraged with government support all over the world. Because at the highest levels, countries' world competitive rankings are supported by industry, statistics show intense R&D incentives. It turns into products containing advanced technology that will increase competitiveness; It is the return of R&D studies to Turkey in the international market with high added value.

For this reason, R&D Centers in Turkey, formerly known as the Ministry of Science, Industry, and Technology, and now supported by the Ministry of Industry and Technology, are capital centers to carry out order-based and/or R&D and innovation activities. It refers to structures established by companies and organized as a separate unit from the organizational structure of the business.

3.1.2. R&D center goals

The achievements that businesses generally aim for when establishing R&D centers are stated below:

- Creating a corporate R&D culture in the business,
- Gaining professionalism and discipline in R&D project development and selection processes and project management processes,
- Specializing in intellectual property rights and monitoring know-how
- Gaining and developing a culture of cooperation with universities
- Increasing the quality of personnel working in R&D,
- Strengthening the technological infrastructure

3.1.3. Content of R&D and ınnovation expenditures

The expenses evaluated within the scope of R&D and innovation activities are listed [16].
These are;

a) Raw Material and Material Expenses
b) Depreciation
c) Personnel Expenses
d) General Expenses
e) Benefits and services provided externally
f) Taxes, duties and charges

3.1.4. R&D centers operating in Turkey

One of the most important actors in Turkey's R&D and innovation ecosystem is private sector R&D centers. R&D center statistical data published by the Ministry of Industry and Technology as of December [17] are included in Table 1. Table 2 shows R&D Centers by province.

TABLE I

December-2023 R&D Center Statistics Data

Number of R&D Centers (active)	1.292
Total Number of Staff (Including Support Staff)	80.838
Bachelor of Science	49.256
Master of Science	15.019
PhD	1.416
Number of Projects (completed)	58.893
Number of Projects (continue)	15.196
Number of Patents	35.688
Registered	12.007
Application	23.681

[17]

TABLE II

R&D Centers by province

No	City	Number of R&D Centers	No	City	Number of R&D Centers
1	İstanbul	414	28	Yalova	4
2	Ankara	145	29	Bolu	3
3	Kocaeli	133	30	Hatay	3
4	Bursa	133	31	Adıyaman	2
5	İzmir	100	32	Çanakkale	2
6	Tekirdağ	55	33	Diyarbakır	2
7	Manisa	32	34	Elazığ	2
8	Sakarya	25	35	Karaman	2
9	Konya	21	36	Niğde	2
10	Eskişehir	20	37	Trabzon	2
11	Antalya	17	38	Zonguldak	2
12	Kayseri	15	39	Afyonkarahisar	1
13	Denizli	15	40	Aksaray	1
14	Balıkesir	14	41	Amasya	1
15	Gaziantep	13	42	Batman	1
16	Kahramanmaraş	13	43	Burdur	1
17	Adana	12	44	Çankırı	1
18	Mersin	11	45	Çorum	1
19	Düzce	10	46	Erzincan	1
20	Kütahya	9	47	Giresun	1
21	Aydın	9	48	Isparta	1
22	Bilecik	7	49	Karabük	1
23	Samsun	6	50	Kırıkkale	1
24	Kırklareli	5	51	Muğla	1
25	Uşak	5	52	Ordu	1
26	Malatya	4	53	Şanlıurfa	1
27	Sivas	4	54	Yozgat	1

[17]

3.1.5. The importance of incentives applied to R&D and design centers

Innovation is a concept that requires costs for investors and businesses but also involves uncertainty. Many businesses stay away from innovation activities with the concern of not taking the risk of this uncertainty and not being able to turn the costs they will incur into profit. According to the research findings conducted on non-innovative businesses between 2012 and 2014, approximately 16.7% of these businesses stated that they were innovative businesses, but there were obstacles to their innovation activities, and 83% stated that they had no reason to innovate. In addition, low market demand, previous innovations, and lack of ideas were other findings that led them to stay away from innovation [18].

The support provided by the state to R&D activities aims to eliminate the deterrence of the reasons that keep businesses away from innovation and, on the contrary, to encourage R&D activities in terms of operating costs. With the effect of government incentives given in this context, the number of R&D centers established within capital companies is increasing rapidly. Tables 3 and 4 show statistical values for design centers in Turkey.

TABLE III

December-2023 Design Center Statistics Data

Number of Design Centers (active)	329
Total Number of Staff (Including Support Staff)	7.957
Bachelor of Science	5.093
Master of Science	708
PhD	37
Number of Projects (completed)	58.893
Number of Projects (continue)	15.196
Number of Patents	35.688
Registered	12.007
Application	23.681

TABLE IV

Design Centers by province

No	City	Number of Design Centers	No	City	Number of Design Centers
1	İstanbul	148	16	Konya	1
2	Ankara	36	17	Kırklareli	1
3	Bursa	32	18	Mersin	1
4	İzmir	24	19	Antalya	1
5	Kocaeli	16	20	Yalova	1
6	Tekirdağ	13	21	Amasya	1
7	Denizli	12	22	Malatya	1
8	Adana	8	23	K.Maraş	1
9	Manisa	6	24	Karabük	1
10	Sakarya	5	25	Hatay	1
11	Eskişehir	4	26	Zonguldak	1
12	Aydın	3	27	Sivas	1
13	Düzce	3	28	Bilecik	1
14	Kütahya	2	29	Çanakkale	1
15	Kayseri	2	30	Gaziantep	1

3.1.6. Differences between R&D centers and design centers

There are some differences between R&D Centers and Design Centers According to Law No. 5746 written in Table 5.

TABLE V

Differences Between R&D Centers and Design Centers

R&D CENTERS	DESIGN CENTERS
R&D Personnel consists of researchers and technicians.	R&D Personnel consists of designers and technicians.
The minimum number of full-time R&D Personnel for establishing an R&D center is 15.	The minimum number of full-time design personnel under the conditions for establishing a design center is 10.
Basic sciences support is provided to personnel who are graduates of basic sciences and are employed in R&D Centers.	There is no Basic Sciences support application for design centers.
R&D Centers can carry out both R&D and design projects.	Design Centers can only make design projects.
R&D Centers can benefit from both R&D and design incentives.	Design Centers can only benefit from design incentives.
Incentives provided to R&D Centers end with the completion of the project. Therefore, there is no grant paid for the registration costs of the product resulting from the Project.	Design registration support is provided for the registration costs of the product obtained by the Design Centers at the end of the Project.

[17]

4. Conclusion

In this information era, the way for countries and businesses to exist in existing markets is through information production. Information production is possible with production based on developing technology. Today, customers desire to obtain better quality goods and services at lower costs, and their demands are in rapid motion. While technology makes it possible to rapidly innovate and launch goods and services with more advanced features than the current offering, it is not possible for buyers in the market not to be affected by this and their expectations to remain the same. The most important field of activity that countries and businesses invest in to meet these expectations is R&D studies. As an indication of the importance Turkey attaches to R&D activities, it encourages industrial enterprises to establish R&D and design centers within their bodies; It provides various incentive elements for the projects carried out in these centers. One of these is the incentives provided to these centers by Law No. 5746 on Supporting Research, Development, and Design Activities.

With these incentive elements provided by the state, there has been a significant increase in the number of R&D and design centers. According to the statistical data shared by the General Directorate of R&D Incentives in May/2019, the number of R&D centers in operation was 1171, while the number of design centers in operation reached 347. In particular, the number of R&D centers increased in 2016 according to Official Law No. 5746. After the decision of the Council of Ministers published in the newspaper, it increased by 250% until 2019. As the incentive rate and incentive element increase, there is a rapid increase in the number of R&D and design centers established within businesses. This situation has created a need for information about the accounts and recording methods that should

be used during the transfer of the incentives provided to these centers by the state to the accounting records.

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