ISTANBUL SABAHATTIN ZAIM UNIVERSITY
GRADUATE EDUCATION INSTITUTE
BUSINESS ADMINISTRATION PROGRAM

EVALUATION OF R&D INCENTIVES APPLIED IN TECHNOPARKS AND POLICY RECOMMENDATIONS

MA THESIS

Mahmut İLBARS

Istanbul
January - 2022

ISTANBUL SABAHATTIN ZAIM UNIVERSITY

GRADUATE EDUCATION INSTITUTE

BUSINESS ADMINISTRATION PROGRAM

EVALUATION OF R&D INCENTIVES APPLIED IN TECHNOPARKS AND POLICY RECOMMENDATIONS

MA THESIS

Mahmut İLBARS

Supervisor

Assoc. Prof. Dr. Yusuf DİNÇ

Istanbul

January - 2022

This study has been approved in partial fulfillment of the requirements for MA Degree in Business Administration

Chairperson of the jury	Assoc. Prof. Dr. Yusuf DİNÇ
Member of the jury	Assoc. Prof. Haşmet GÖKIRMAK
Member of the jury	Asst. Prof. Selin SARILI

Approval by

Prof. Dr. Metin TOPRAK

Director, Graduate Education Institute

DECLARATION OF SCIENTIFIC ETHICS AND ORIGINALITY

This is to certify that this MBA thesis dissertation titled “Evaluation Of R&D Incentives Applied In Technoparks And Policy Recommendations” is my work. I have acted according to scientific ethics and academic rules while producing it. I have collected and used all information and data according to scientific ethics and guidelines on thesis writing of Sabahattin Zaim University. In both the text and bibliography, I have fully referenced all direct and indirect quotations and all sources I have used in this work.

Mahmut İLBARS

ACKNOWLEDGEMENTS

Thank you to my esteemed thesis advisor, Assoc. Dr. Yusuf DİNÇ, who helped me at every stage of my research, my invaluable professors who gave me a vision with their lessons in education, my dear wife Emine, my sweet daughter Şeyma, and my family, who supported me throughout my graduate education.

Mahmut İLBARS

Istanbul-2022

ABSTRACT

EVALUATION OF R&D INCENTIVES APPLIED IN TECHNOPARKS AND POLICY RECOMMENDATIONS

Mahmut İLBARS

Master, Department of Business Administration

Thesis Advisor: Assoc. Prof. Yusuf DİNÇ

January-2022, 53 Pages

The study evaluates the adequacy of the R&D incentives applied in the technoparks by the companies in line with their objectives. A survey method was used in this study. In the survey study, a total of 108 companies in Yıldız Technical University Technopark, Teknopark Istanbul, and Istanbul University Entertech Teknokent institutions in Istanbul were reached. The data obtained were examined and it was concluded that the participants generally found the R&D incentives applied in technoparks to be sufficient in the range of 66.7%-80.6%. Policy recommendations were made to improve and develop incentives.

Keywords: Technopark, R&D Incentives, Tax Exemptions

ÖZET

TEKNOPARKLARDA UYGULANAN AR-GE TEŞVİKLERİNİN DEĞERLENDİRİLMESİ VE POLİTİKA ÖNERİLERİ

Mahmut İLBARS

Yüksek Lisans, İşletme (İngilizce)

Tez Danışmanı: Doç. Dr. Yusuf DİNÇ

Ocak-2022, 53 Sayfa

Çalışmanın amacı teknoparklarda yer alan şirketler nezdinde teknoparklarda uygulanan ar-ge teşviklerinin amaçları doğrultusunda yeterliliklerinin değerlendirilmesidir. Bu araştırmada anket yöntemi kullanılmıştır. Anket çalışmasında İstanbul ilinde bulunan Yıldız Teknik Üniversitesi Teknopark, Teknopark İstanbul ve İstanbul Üniversitesi Entertech Teknokent kurumlarındaki toplam 108 şirkete ulaşılmıştır. Elde edilen veriler incelenmiş ve katılımcıların teknoparklarda uygulanan Ar-Ge teşviklerini genel olarak %66,7-%80,6 aralığında yeterli buldukları sonucuna varılmıştır. Teşviklerin iyileştirilmesi ve geliştirilmesine yönelik politika önerilerinde bulunulmuştur.

Anahtar Kelimeler: Teknopark, Ar-Ge Teşvikleri, Vergi Muafiyetleri

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

ABBREVIATIONS

APP : Appendix

KOSGEB : Small and Medium Enterprises Development and Support Administration

p : Page

R&D : Research and Development

SME : Small and Medium Enterprise

SSA : Social Security Administration

TEKMER : Technology Development Center

TDZ : Technology Development Zones

TDZL : Technology Development Zones Law No. 4691

VAT : Value Added Tax

CHAPTER I

INTRODUCTION

The purpose of technoparks; by establishing cooperation between universities, research institutions, and organizations, and production sectors; In order to make the country's industry internationally competitive and export-oriented, to produce technical information, to develop innovations in products and production methods, to increase product quality or standard, to increase productivity, to reduce production costs, to commercialize technological information, to support technology-intensive investment and entrepreneurship, to create job opportunities for people and to contribute to technology transfer. The Law on Technology Development Zones, numbered 4691, which was prepared to realize this aim, came into force by being published in the Official Gazette dated 06 July 2001 and numbered 24454. The Technology Development Zones Implementation Regulation was published in the Official Gazette dated 19 June 2002 and numbered 24790.

In this study, the concept of technopark will be discussed, and the R&D incentives applied in technoparks will be tried to be explained. Within the scope of Law No. 7263, published in the Official Gazette as of February 3, 2021, some amendments made in Law No. 4691 on Technology Development Zones will also be mentioned.

The demographic characteristics of the participants will also be analyzed through the evaluation questionnaire applied to the companies in the technoparks, and their sufficiencies will be evaluated before the companies in line with the purposes of the R&D incentives applied in the technoparks and research results will be included. Policy recommendations will be made to improve and develop incentives.

1.1.Purpose of Research

The research aims to produce technological knowledge, to develop innovations in products and production methods, to increase product quality or standard, to increase productivity, to reduce production costs, to commercialize technological knowledge,

to commercialize technological knowledge in order to provide the country's industry with an internationally competitive and export-oriented structure by providing university-industry cooperation. To support intensive production and entrepreneurship, to adapt small and medium-sized enterprises to new and advanced technologies, to create investment opportunities in technology-intensive areas, to create job opportunities for researchers and skilled people, to assist technology transfer, and to accelerate the entry of foreign capital into the country that will provide high/advanced technology. Evaluate the adequacy of the R&D incentives applied in technoparks to provide the structure in line with these purposes. In this direction, it is aimed to develop various suggestions by applying an incentive evaluation survey with the companies in the technoparks.

1.2.Importance of Research

There are few studies exploring the importance of incentives to encourage firms to locate at technoparks. The role of technological development in supporting development and growth cannot be denied. Therefore, today, by putting forward policies for developing technology, increasing economic welfare also takes priority. Technoparks create a suitable, effective, and efficient environment for R&D to be converted to commercial use in a short span of time. In recent years, The Turkish government has been supporting the technoparks achieve to effective results by creating.

In this context, incentives to attract innovation-minded companies and individuals facilitate the growth of new products. R&D incentives in technoparks serve some purposes. The adequacy of the incentives applied for these purposes on the companies will be determined. No study could be found in Turkey to evaluate these incentives and this study intends to develop on-the-spot policy proposals for the policymakers.

1.3.Scope and Limitations of Research

In the scientific research, companies at Yıldız Technical University Technopark, Teknopark Istanbul, and Istanbul University Entertech Technokent, were taken as the research space. It was chosen based on the confidence that the data would be accurate

and consistent. Technopark companies within the ecosystem of the city of Istanbul were preferred in terms of the difficulty/ease of implementation of incentives and procedures. In particular, the opinions of companies that are thought to be competent in project development and management were sought, and data were collected from 108 companies.

CHAPTER II

R&D INCENTIVES APPLIED IN TECHNOPARKS

In this section, the concept of technopark and the incentives and exceptions provided to managing companies and income and corporate taxpayers operating in the region within the scope of the Technology Development Zones Law No. 4691 are explained.

2.1.Technopark Concept

Technoparks; universities, research institutions, and industrial organizations continue their research, development, and innovation activities in the same environment; they transfer information and technology to organize research and business centers where academic, economic, and social structure is integrated (Tepe ve Zaim, 2016: 20).

Technoparks have a significant role in technology production. Technoparks encourage this project by providing technical service, a necessary place to start a company, technical device, tool, telephone, etc., services to anyone who has the specific technical knowledge and wants to realize a project with a high market value envision. However, it gives an idea to the people and organizations who want to realize a specific project by critiquing this project. Tries to maximize success by eliminating unproductive projects in the first place (Küçükçirkin, 1990: 80-81).

2.1.1.Features of Technoparks

The information produced in technoparks is transformed into technology, and the industry and service sector regional development is ensured, and the economy is accelerated. Technoparks encourage and support the development advanced technologies (Demiral, 2016).

Regardless of their definitions, the standard features determined for technoparks are listed below:

- They are located near a university to take advantage of the existing IT resources and

academic knowledge & experience.

- They support initiatives that will create jobs, but care is taken to ensure that entrepreneurs also have sufficient technical and administrative potential.
- The success or the expected results emerge at the end of the period that varies according to the subject studied.
- They are geographically close to and in contact with industrial zones and have robust transportation and communication opportunities. (Special conditions may apply for countries with limited natural conditions and geographical settlements, such as Japan.)
- They require fair, impartial, and independent working principles towards entrepreneurs.
- Two types of capital are needed in the establishment and operation of technoparks.
- They require initial investment and capital & operating income.
- Their income comes from rents paid by the entrepreneurs during their tenancy, the shares obtained from the sale of the patent rights, and the partnership shares if the company of the entrepreneur who left the technopark has become a partner (Babacan, 1995: 17).

2.1.2.Purposes of Technoparks

Technoparks are established to strengthen technology-intensive industries in their locations, support the development of industry in new regions, carry out innovative studies, increase productivity with more effective working conditions, and increase competitiveness in the international arena (Harmancı ve Önen, 1999: 4).

If we list the objectives as items:

- To produce products with high technical knowledge and added value, develop innovations in products and production methods, increase product quality or standard.
- To reduce production costs to ensure that the country's industry has an internationally competitive and export-oriented structure.
- To commercialize technological knowledge.
- Support technology-intensive production and entrepreneurship.

- Create investment opportunities in advanced technology areas.
- Create job opportunities for researchers and skilled people, thus preventing brain drain.
- To provide technology transfer and provide the technological infrastructure that will accelerate the entry of foreign capital into the country that will provide high/advanced technology.
- To increase the competitiveness in the regional and international arena by increasing efficiency.
- To ensure that R&D studies turn into economic value by providing knowledge and technology transfer between university and industry by strengthening university-industry cooperation.
- To encourage the creation and development of high-tech companies.
- To create cooperation environments among companies within the same technopark & other technoparks (Keleş, 2010).

2.1.3.Benefits of Technoparks

The benefits of technoparks can be examined under four headings: benefits of technoparks to companies, benefits to universities, benefits to faculty members, benefits to the region and country where they are located (Gümüş, Yükseloğlu, Binark, 2014: 25).

2.1.3.1.Benefits of Technoparks to their Companies

Technoparks provide many benefits to companies. The most significant benefit of technoparks to companies is tax exemptions (income and corporate tax exemption, income tax exemption applied to wages, SSI employer share support, and VAT exemption).

We can list other benefits of technoparks to companies as follows:

- Providing a suitable environment for R&D studies.
- Provides consultancy services in more accessible and more convenient conditions

by the university.

- Creates more effective R&D collaborations with universities.
- Benefit from the research infrastructure of the university under appropriate conditions.
- Creates synergy among R&D companies.
- Creates prestige and the competitive advantage provided to the company by being a part of Technopark.
- Ensures easier technology transfer and development.

2.1.3.2.Benefits of Technoparks to Universities

Technoparks are generally located within university campuses. Technoparks provides many benefits to the university they are located in. The most significant benefit of technoparks to universities is the establishment of university-industry cooperation. Technoparks provide more and more effective cooperation opportunities with the industry.

We can list other benefits of technoparks to universities as follows:

- Establishes basic and applied research opportunities on new topics that arise as a result of interaction with companies.
- Provides more efficient resource allocation to the research infrastructure at the universities.
- Conversion of research results at the university into economic benefits.
- Creates new resources such as land development, office rental, and dues income for the universities.
- Creates new financial resources for universities by transferring the funds from technoparks to research.
- Creates a better environment for research & education.
- Provides new employment opportunities to university graduates, students and academicians (Ibid).

2.1.3.3.Benefits of Technoparks to Faculty Members

Technoparks provide many benefits to faculty members as they are usually located within university campuses. Technoparks encourages faculty members to establish companies in technoparks, become a partner in an established company, and take part in the management of these companies to commercialize the results of their research.

It also provides the following benefits to faculty members:

- Additional income for the faculty members.
- Provides the faculty members opportunities to take administrative positions at the management of the technoparks.

2.1.3.4.Benefits of Technoparks to the Region and Country

Technoparks have many benefits for the region and the country. Technoparks contribute to the formation and growth of innovative companies based on knowledge and produce advanced technology.

Thus, we can list its benefits to the country and the region below:

- Increasing the technological level and innovation capability of the region and country in which it is located.
- Reducing imports by producing products with high added value.
- Increasing the competitiveness of the region and country in which it is located.
- Preventing brain drain in developing countries.
- Depending on all these benefits, the region and country's economic and welfare level increases (Ibid: 26).

2.1.4.Technoparks in World

Technoparks first emerged in America in 1950 with a group of researchers who wanted to commercialize their research led by Stanford University. This technopark, known today as "Silicon Valley," has become the most known technopark in the World (Kayalıdere, 2014).

Technoparks have been expressed with different concepts due to their different formations in countries, such as Research Park in the USA, Science Park in England, Technopôle (Technology City) in France, Technopolis (Technology City) in Japan, and Grunderzentrum (Founder Center) in Germany. In addition, terms such as Entrepreneur Center, Innovation Center, Industrial Park, Business Center are also used.

- Science Parks; These are sites that consist of high-tech companies or research and development organizations gathered next to a large and powerful university.

- Research Parks; They provide support for scientific-based technology production by establishing close relations with a university or research institution of large enterprises or young enterprises based on new technologies with projects developed based on various researches. In these parks, where projects are supported within the scope of basic research and up to prototype production, mass production and marketing of the product during the application phase remain outside the research parks' scope.

- Innovation Center; It aims to provide a series of support services for the emergence and development of new and advanced technology-based companies by establishing closeness with universities.

- First Development Center; They aim to contribute to developing technologies by providing specific supports (materials, consultancy, training, etc.) to entrepreneurs under certain conditions (tenancy period, etc.). Tenant entrepreneurs are replaced by new entrepreneurs when they are ready to go to market.

- Technology Development Centers; It aims to support the establishment of technology-based companies, benefit from the university's scientific potential and infrastructure for the industry, and improve the structure of the economy.

- Technoparks; are the places where the cooperation between the university and the industry materializes. These sites are established to enable entrepreneurs who want to produce goods with new or advanced technology, carry out their industrial and commercial activities near or near universities and benefit from these universities (Harmancı ve Önen, 2009).

2.1.5.Technoparks in Turkey

Efforts to establish a technopark in Turkey started in the 1980s. As a result of these studies, TEKMERs (Technology Centers) started to be established in 1990 as the first step of technoparks within KOSGEB and universities' framework. The legal framework for technoparks was established in 2001 with the enactment of Law No. 4691. Most of the existing technology development zones are university-oriented technoparks. However, in addition to the technoparks established in the organized industrial zones, there are also technoparks representing the province in general, in cooperation with the universities of the critical public and industrial institutions and organizations in the province, especially in Anatolian cities.

Table 2.1 includes the list of technoparks established in Turkey between 2001 and 2020.

Table 2.1: Technology Development Zones in Turkey

No	Name	Affiliated Institution	City	Year	Status
1	METU Technopark TDZ	Middle East Technical University	Ankara	2001	Active
2	TUBITAK Marmara Technopark	TUBITAK	Kocaeli	2001	Active
3	Ankara TDZ	Bilkent University	Ankara	2002	Active
4	Izmir TDZ	Izmir Institute of High Technology	Izmir	2002	Active
5	GOSB Technopark TDZ	Sabanci University	Kocaeli	2002	Active
6	Hacettepe University TDZ	Hacettepe University	Ankara	2003	Active
7	ITU Ari Technopark TDZ	Istanbul Technical University	Istanbul	2003	Active
8	Eskisehir TDZ	Anadolu University	Eskisehir	2003	Active
9	Selcuk University TDZ	Selcuk University	Konya	2003	Active
10	Kocaeli University TDZ	Kocaeli University	Kocaeli	2003	Active
11	Yildiz Technical University TDZ	Yildiz Technical University	Istanbul	2003	Active
12	Istanbul University TDZ	Istanbul University	Istanbul	2003	Active

No	Name	Affiliated Institution	City	Year	Status
13	West Akdeniz Technoparki TDZ	Akdeniz University	Antalya	2004	Active
14	Erciyes University TDZ	Erciyes University	Kayseri	2004	Active
15	Trabzon TDZ	Karadeniz Technical University	Trabzon	2004	Active
16	Cukurova TDZ	Cukurova University	Adana	2004	Active
17	Mersin TDZ	Mersin University	Mersin	2005	Active
18	Goller Bolgesi TDZ	Suleyman Demirel University	Isparta	2005	Active
19	Ulutek TDZ	Uludag University	Bursa	2005	Active
20	Erzurum Ata Technopark TDZ	Ataturk University	Erzurum	2005	Active
21	Gaziantep University TDZ	Gaziantep University	Gaziantep	2006	Active
22	Ankara University TDZ	Ankara University	Ankara	2006	Active
23	Gazi Technopark TDZ	Gazi University	Ankara	2007	Active
24	Firat TDZ	Firat University	Elazig	2007	Active
25	Pamukkale University TDZ	Pamukkale University	Denizli	2007	Active
26	Cumhuriyet TDZ	Cumhuriyet University	Sivas	2007	Active
27	Dicle University TDZ	Dicle University	Diyarbakir	2007	Active
28	Trakya University TDZ	Trakya University	Edirne	2008	Active
29	Sakarya University TDZ	Sakarya University	Sakarya	2008	Active
30	Tokat TDZ	Gaziosmanpasa University	Tokat	2008	Active
31	ASO Technopark TDZ	TOBB Economy and Technology University	Ankara	2008	Active
32	Bogazici University TDZ	Bogazici University	Istanbul	2009	Active
33	Bolu TDZ	Abant Izzet Baysal University	Bolu	2009	Active
34	Malatya TDZ	Inonu University	Malatya	2009	Active
35	Kutahya Dumlupinar Design TDZ	Dumlupinar University	Kutahya	2009	Active
36	Istanbul TDZ	Istanbul Ticaret University	Istanbul	2009	Active
37	Samsun TDZ	Ondokuz Mayis University	Samsun	2009	Active

No	Name	Affiliated Institution	City	Year	Status
38	Duzce Technopark TDZ	Duzce University	Duzce	2010	Active
39	Harran University TDZ	Harran University	Sanliurfa	2010	Active
40	Kahramanmaras TDZ	Sutcu Imam University	Kahraman maras	2011	Active
41	Namik Kemal University TDZ	Namik Kemal University	Tekirdag	2011	Active
42	Canakkale TDZ	Onsekiz Mart University	Canakkale	2011	Active
43	Muallimkoy TDZ	Gebze Technical University	Kocaeli	2011	Active
44	Izmir Science and Technology Park TDZ	Izmir Economy University	Izmir	2012	Active
45	Yuzuncu Yil University TDZ	Yuzuncu Yil University	Van	2012	Active
46	Corum TDZ	Hitit University	Corum	2012	Active
47	Celal Bayar University TDZ	Celal Bayar University	Manisa	2012	Active
48	Dokuz Eylul TDZ	Dokuz Eylul University	Izmir	2013	Active
49	Bozok University TDZ	Bozok University	Yozgat	2013	Active
50	Kirikkale University TDZ	Kirikkale University	Kirikkale	2013	Active
51	Nigde University TDZ	Nigde University	Nigde	2013	Active
52	Mehmet Akif Ersoy University MAKU-BAKA TDZ	Mehmet Akif Ersoy University	Burdur	2013	Active
53	Marmara University TDZ	Marmara University	Istanbul	2014	Active
54	Ege Technopark TDZ	Ege University	Izmir	2014	Active
55	Ankara Technopark TDZ	Yildirim Beyazit University	Ankara	2014	Active
56	OSTIM Ecopark TDZ	Ankara University, Hacettepe University, Atilim University Cankaya University, Baskent University, TOBB Economy and Technology University	Ankara	2014	Active
57	Hatay TDZ	Mustafa Kemal University	Hatay	2014	Active
58	Balikesir University TDZ	Balikesir University	Balikesir	2014	Active
59	Karaman TDZ	Karamanoglu Mehmet Bey University	Karaman	2015	Active

No	Name	Affiliated Institution	City	Year	Status
60	Mugla TDZ	Sitki Kocman University	Mugla	2015	Active
61	Konya TDZ	Selcuk University, Necmettin Erbakan University, Aksaray University, Karamanoglu Mehmet Bey University, KTO Karatay University	Konya	2015	Active
62	Afyon-Usak Zafer TDZ	Kocatepe University, Usak University	Afyonkarahisar Usak	2015	Active
63	Adnan Menderes TDZ	Adnan Menderes University	Aydin	2016	Active
64	Gaziantep OSB TDZ	Hasan Kalyoncu University	Gaziantep	2017	Active
65	Zonguldak TDZ	Bulent Ecevit University	Zonguldak	2017	Active
66	Batman University TDZ	Batman University	Batman	2017	Construction
67	Osmaniye TDZ	Osmaniye Korkut Ata University, Adana Science and Technology University	Osmaniye	2017	Construction
68	Karabuk University TDZ	Karabuk University	Karabuk	2017	Active
69	Kapadokya TDZ	Haci Bektas Veli University	Nevsehir	2018	Active
70	Gebze Technical University TDZ	Gebze Technical University	Kocaeli	2018	Active
71	University of Health Sciences TDZ Health Technopark	University of Health Sciences	Istanbul	2018	Active
72	Dudullu OSB Bogazici University TDZ	Bogazici University	Istanbul	2018	Active
73	Antalya OSB TDZ	Akdeniz University Antalya Science University	Antalya	2018	Construction
74	Istanbul Sabahattin Zaim TDZ	Sabahattin Zaim University	Istanbul	2018	Construction
75	Istanbul Medeniyet University TDZ	Medeniyet University	Istanbul	2018	Active
76	Mersin Agriculture Food Specialization TDZ	Mersin University	Mersin	2018	Construction
77	Kirklareli University TDZ	Kirklareli University	Kirklareli	2018	Construction

No	Name	Affiliated Institution	City	Year	Status
78	Teknohab TDZ	Gazi University	Ankara	2018	Construction
79	Cankiri TDZ	Karatekin University	Cankiri	2018	Construction
80	Kastamonu University TDZ	Kastamonu University	Kastamonu	2018	Active
81	Iskenderun Technical University TDZ	Iskenderun Technical University	Hatay	2019	Construction
82	Giresun TDZ	Giresun University	Giresun	2019	Construction
83	Recep Tayyip Erdogan University ve Turkish-German University TDZ	Recep Tayyip Erdoğan University, Turkish-German University	Istanbul	2019	Active
84	ASBU Social Innovation and Entrepreneurship TDZ	Ankara Social Sciences University	Ankara	2019	Construction
85	Abdullah GUL University TDZ	Abdullah GUL University	Kayseri	2020	Construction
86	Yalova University TDZ	Yalova University	Yalova	2020	Construction
87	Bursa Technical University TDZ	Bursa Technical University	Bursa	2020	Construction
88	Esenler Smart City TDZ	Esenler City Hall	Istanbul	2021	Construction
89	Aksaray University TDZ	Aksaray University	Aksaray	2021	Construction

Source: T.C. Sanayi ve Teknoloji Bakanlığı, 2021

Table 2.2 contains the statistical information of the technoparks established in Turkey between 2017 and 2021.

Table 2.2: Statistical Information on Technoparks in Turkey

	2017	2018	2019	2020	2021
Number of Announced Technology Development Zones	69	81	85	87	87
Number of Technology Development Zones in Operation	55	61	67	72	73
Number of Companies	4.475	5.301	5.638	6.364	6.583

Number of Companies with Foreign/Foreign Partners	250	288	318	322	324
Number of Companies with Academician Partnership	1.510	1.078	1.187	1.361	1.393
Total Number of Personnel	44.580	50.966	57.713	66.615	69.026
R&D Personnel	36.584	41.663	46.882	54.562	56.796
Design Personnel	-	-	788	938	979
Support Personnel	2.675	3.162	3.618	4.261	4.691
Out of Scope Personnel	5.321	6.141	6.425	6.854	6.580
Number of Projects (Continuing)	7.690	8.794	9.903	10.654	10.792
Number of Projects (Completed)	25.589	30.166	34.988	39.034	40.955
Total Sales (Billion TL)	50,7	63,6	89,1	117,5	129
Total Exports (Billion USD)	2,9	3,7	4,6	5,6	6,2

Source: T.C. Sanayi ve Teknoloji Bakanlığı, 2021

2.2.Incentives Provided to Technopark Management Companies

The company that is legally established as a joint-stock company and is responsible for the management and operation of the zone is defined as the “managing company.” Although the establishment of the Technology Development Zones needs to cover the expenses such as land procurement, infrastructure, and construction of the administrative building, the part of the specified expenses that the managing companies cannot meet may be covered by the Ministry of Industry and Technology (Güneş, 2009: 164).

The earnings of the managing companies within the scope of the implementation of this Law and the income and corporate taxpayers operating in the Zone exclusively from software, design, and R&D activities in this Zone are exempt from income and corporate tax until 31/12/2028 (Teknoloji Geliştirme Bölgeleri Kanunu, 2001, Geçici Madde 1).

The managing company is exempt from stamp tax in terms of papers issued regarding the implementation of this Law, from fees in terms of transactions, and from real estate tax due to immovables, it owns in the Zone area. Managing companies do not pay wastewater fees (Teknoloji Geliştirme Bölgeleri Kanunu, 2001, Madde 8).

2.3.Incentives Provided to Companies in Technoparks

Entrepreneurs operating in the region constitute the segment that will benefit most from the tax incentives provided by the state. The most crucial activity group in the region is entrepreneurs. Therefore, they are the ones who will make the investments with the highest earnings and which will bring critical technological developments to the country. For this reason, technology development zones need to be significantly encouraged to achieve their goals (Delichasanoglou, 2007).

2.3.1.Income and Corporate Tax Incentives

According to Provisional Article 2 of Law No. 4691, The income and corporate taxpayers operating in the region, exclusively from software, design, and R&D activities in this region, are exempt from income and corporate tax until 31/12/2028. In order to apply for this exemption, taxpayers apply to the tax office to which they are affiliated. In order for the said exemption to be applied, documents to be obtained from the managing company showing that the taxpayer is located in the region and the taxpayer's fields of activity must be attached (Teknoloji Geliştirme Bölgeleri Uygulama Yönetmeliği, 35. madde). In applying the exception, it is not essential whether the taxpayer is subject to income and corporate tax based on total or limited liability (Kutbay, 2018: 85).

The scope of the corporate tax exemption stipulated in Law No. 4691 includes the R&D, software, and design activities carried out within the region; The earnings of a company operating in the region from the same activities outside the region are not considered within the scope of exemption income. Therefore, a company that performs the activities within the scope of the exemption and the activities that are not within the scope of the exemption must follow the revenue from both activities separately and the costs and expenses incurred for these activities. In addition, in case of loss as a

result of activities within the scope of the exemption; The said loss amount should not be deducted from the earnings that are not covered by the exemption (Dokuzoğlu ve Tüm, 2020).

2.3.2.Income Tax Withholding Incentive

The fees of R&D, design personnel, and support personnel up to 10% of the number of R&D personnel are exempt from all taxes until 31/12/2028 (Teknoloji Geliştirme Bölgeleri Uygulama Yönetmeliği, 2016).

The exception will be applied to the wages of the R&D and support personnel, whose characteristics are described in Law No. 4691. Hours worked more than forty-five hours per week and other additional working periods are not taken into account within the scope of the exception. Personnel assigned for marketing and sales outside the region to marketing the projects realized within the TDZ are not considered R&D employees. They are not included in the scope of the exception. Since the personnel covered by the exemption are subject to 100% income tax exemption, they cannot benefit from the minimum living allowance. If the relevant personnel work in more than one technopark, they must be exempted separately for the wages earned in each region (Özdemir, 2014).

Personnel working in the TDZ may have to work both within and outside the region due to their job. In this case, the wage calculated for hours worked outside the region is not included in the income tax exemption (Özkanlı ve Çaltekin, 2006).

2.3.3.Insurance Premium Support

Another supporting element provided for technology development zones is insurance premium support. Half of the employer's share of the social security premium accrued in enterprises employing personnel whose wages are exempt from income tax within the scope of Law No. 4691 is covered from the appropriation within the budget of the Ministry of Finance (Dokuzoğlu ve Tüm, 2020).

As it can be understood from the provision of the law, SSA Premium support is applied for the person whose wages are exempt from income tax under the provisions of the

TDZL No. 4691, regardless of the date they started operating in the TDZ (Aktaş, 2012).

Public personnel, personnel subject to Social Security Support Premium and students receiving vocational training, support personnel exceeding ten percent of the number of R&D personnel, insurance holders employed by subcontractors, personnel not directly related to R&D activities cannot benefit from the incentives within the scope of this law (Savcı, Yayla, Özdemir, 2015).

2.3.4.Stamp Duty Incentive

With the brief article 2 of the law numbered 4691, the wages of researchers, software developers, and R&D personnel working in the technology development zone are exempt from all taxes until 31/12/2023. Accordingly, it is understood that all kinds of papers to be issued over the wages paid to the software developers and R&D personnel employed in the Technopark are exempt from stamp tax until 31/12/2028 (Özberk, 2018).

Goods imported to be used in research related to software, R&D, innovation, and design projects carried out within the scope of Law No. 4691, papers issued in this context, and transactions made are exempt from stamp duty and fee (Dokuzoğlu ve Tüm, 2020).

2.3.5.Value Added Tax Exemption

Within the scope of the law, during the tax exemption of the entrepreneurs operating in the region, the deliveries and services produced in the region in the form of system management, data management, business applications, sectoral, internet, mobile, and military command and control application software are within the scope of VAT exemption (Teknoloji Geliştirme Bölgeleri Uygulama Yönetmeliği, 2016).

The said exception will be within the scope of activities carried out within the region, and activities carried out outside the region will not be considered within this scope (Yargıç, 2005: 260).

On the other hand, a critical situation regarding the VAT exemption is that this exemption is granted only to individuals and institutions operating in the region. In

other words, in this case, the managing company cannot benefit from this exception. As a result, management companies in technology development zones will be VAT payers within general principles (Demiral, 2016).

2.3.6.Customs Duty Exemption

Goods imported to be used in research related to software, R&D, innovation, and design projects within the scope of Law No. 4691 are exempt from customs duty and all kinds of funds (Teknoloji Geliştirme Bölgeleri Kanunu, 2001, Geçici Madde 1).

2.3.7.Salary Support for Personnel Graduated from the Field of Basic Sciences

The part of the monthly wage paid for each person by the companies employing personnel with at least a bachelor's degree in the field of basic sciences (mathematics, physics, chemistry, and biology), corresponding to the monthly gross amount of the minimum wage paid for that year, is covered from the appropriation within the budget of the Ministry for two years. For companies to benefit from the said support, the number of relevant personnel must not exceed 10% of the total number of personnel employed within the company (Dokuzoğlu ve Tüm, 2020).

2.4.Amendments to the Technology Development Zones Law

With the regulations made within the scope of Law No. 7263, some changes and additions were made to Law No. 4691 on Technology Development Zones. The law in which these amendments took place was published in the Official Gazette dated February 3, 2021, and entered into force. These changes and additions are below:

- Extension of the Period of Support and Incentives: The period of benefiting from support and incentives has been extended until 31/12/2028 (Karaçetin, 2021).

- Obligation of Companies in TDZ to Invest in Entrepreneurial Firms: Effective as of 01.01.2022, taxpayers whose earnings amount is 1,000,000 TL or more are required to transfer 2% of this amount to entrepreneurial companies by one of the methods determined within the scope of this law until the end of the year (the upper limit is determined as 20.000.000 TL on an annual basis). If the said investment is not made,

20% of the income amount in the relevant year will be subject to tax (Ibid).

- Opening Incubation Centers Outside TDZ: The definition of "Incubation Entrepreneur" has been added to Law No. 4691, and it is stipulated that incubation centers located in the physical areas of Technology Development Zones can be established in other areas outside the zone areas, and entrepreneurs located in these centers can benefit from support, incentives and exemptions (Ibid).

- Regulation Regarding Capital Supports to be Used in Project Financing: The "project deemed appropriate" restriction regarding capital supports provided by income and corporate taxpayers to be used to finance projects to be realized in areas deemed appropriate by the Ministry to those operating in the Technology Development Zone has been lifted. Based on the use of capital support for financing projects within the scope of the law, the annual upper limit of the amount to be discounted in the determination of corporate income has been increased from 500,000 TL to 1,000,000 TL (Çalıkoğlu, 2021).

CHAPTER III

RESEARCH METHOD AND FINDINGS

In this section, the research method is explained, and the analysis of the findings obtained from the survey research will be included. First of all, the reliability analysis results applied to the sufficiency questions in the research will be included. Next, the data on the demographic information of the participants will be analyzed. Then the data on the subjects, which are the central questions of the research, will be emphasized.

3.1.Method of Research

In this study, the survey method with Google Forms was used as the method of collecting data from 108 companies in technopark. The reason for using this method is that it is easy to reach companies, and data is taken in tables. The results were evaluated in the light of the data, and evaluations were made within the scope of their qualifications in line with the purposes of the R&D incentives applied in technoparks.

At the beginning of the survey, the participants were informed about the aims of the incentives applied in technoparks. For these aims, they were asked to evaluate the sufficiency of incentives. To learn the company information of the participants, eight different questions (Type of Participant, Company Sector, Type of Company, Size of Company, Capital Structure of Company, Activity History, Activity History in Technopark, and Number of Employees) were asked to them.

The likert scale was used in the survey method. Likert-type questions contain a statement that includes an attitude or opinion about the subject under investigation and options that indicate the level of agreement with this statement. In Likert-type questions, multiple options are presented between the two extremes to determine the level of participation. These options are ranked in order of “highest to lowest” or “best to worst” (Turan, Şimşek ve Aslan, 2015).

3.2. Cronbach Alpha Reliability Analysis

The Cronbach's alpha coefficient, which is a measure of the internal consistency of the items, is used to explain or question the homogeneous structure of the items in the scale. It is interpreted that the items in the scale with a high Cronbach's alpha coefficient consist of items that measure the same feature and are consistent with each other. It is frequently used in Cronbach alpha Likert type scales. Cronbach's alpha is expressed as:

0 < R2 < 0.40 not reliable

0.40 < R2 < 0.60 low reliable

0.60 < R2< 0.80 quite reliable

0.80 < R2 < 1.00 high reliable (Uzunsakal ve Yıldız, 2018).

Table 3.1: Number of Participants

Case Processing Summary

		N	%
Cases	Valid	108	100,0
	Excluded[a]	0	,0
	Total	108	100,0

a. Listwise deletion based on all variables in the procedure.

As seen in Table 3.1, 108 companies participated in our study.

Table 3.2: Reliability Statistics

Reliability Statistics

Cronbach's Alpha	N of Items
,930	9

As seen in Table 3.2, the Cronbach alpha reliability of the 9-item scale for the adequacy of R&D incentives applied in technoparks was found to be 93%. Thus, it is seen that this reliability value is sufficient. That is, the reliability of the items is quite high.

3.3.Demographic Information

The frequency and percentage distributions of the demographic information of the technopark companies participating in the research are given below.

As seen in Figure 3.1, 69 (63.9%) of the 108 participants forming the sample group are technopark companies, and 39 (36.1%) technopark incubation companies.

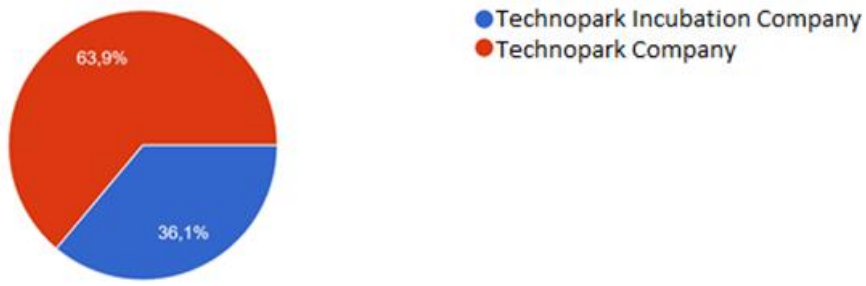

Figure 3.1: Type of Participant

As seen in Figure 3.2, 42 (38.9%) of the 108 participants in the sample group were software, 12 (11.1%) in defense, 9 (8.3%) in engineering-architecture, 9 (8.3%) in material technologies, 9 (8.3%) in health, 6 (5.6%) in media-telecommunications, 3 (2.8%) in sustainable technologies, 3 (2.8%) in cyber security, 3 (2.8%) in textile, 3 (2.8%) in electronics, 3 (2.8%) in finance, 3 (2.8%) operate in the food sector and 3 (2.8%) operate in the manufacturing sector.

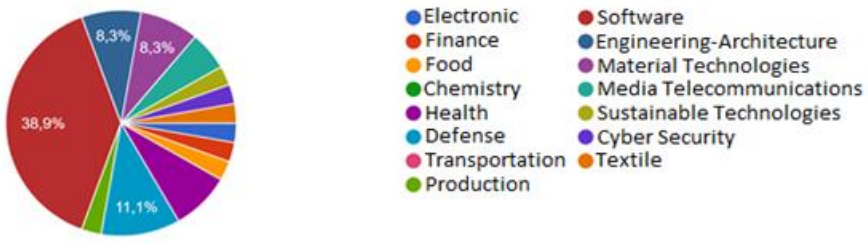

Figure 3.2: Company Sector

As seen in Figure 3.3, 51 (47.2%) of the 108 participants forming the sample group continue their activities as a corporation, 33 (30.6%) sole proprietorship, and 24 (22.2%) limited companies.

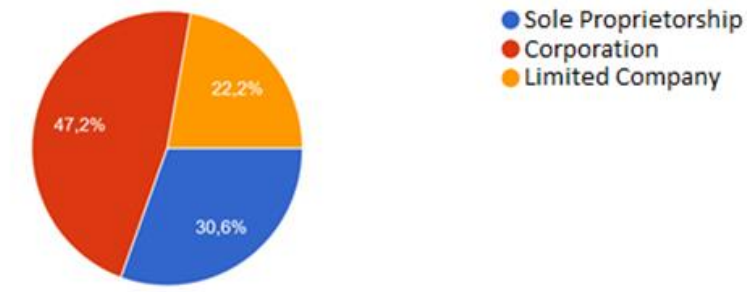

Figure 3.3: Type of Company

As seen in Figure 3.4, 51 (47.2%) of the 108 participants forming the sample group are SME enterprises, 45 (41.7%) micro-enterprises, and 12 (11.1) large enterprises.

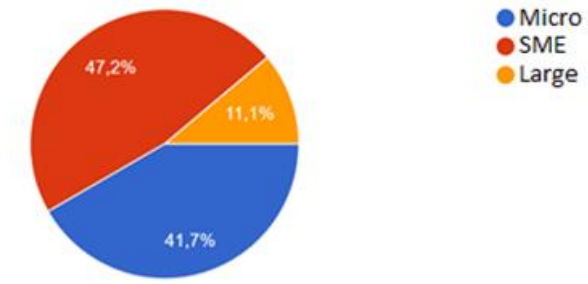

Figure 3.4: Size of Company

The company size criterion specified in the research question has been evaluated within the scope of the regulation, which remains valid in Turkey, on the definition, qualifications, and classification of SMEs, which was published in the Official Gazette dated 24.06.2018. Accordingly, the criteria specified in the regulation are given in Table 3.3.

Table 3.3: SME Criteria

SME Definition	Number of Employees	Annual Revenue or Balance Sheet Total
Micro Enterprise	Less than 10	Up the 3 million TL
Small Enterprise	Less than 50	Up the 25 million TL
Medium Enterprise	Less than 250	Up the 125 million TL

Source: Küçükkaya, 2018

As seen in Figure 3.5, 102 (94.4%) of the 108 participants forming the sample group have domestic capital, and 6 (5.6%) have foreign capital.

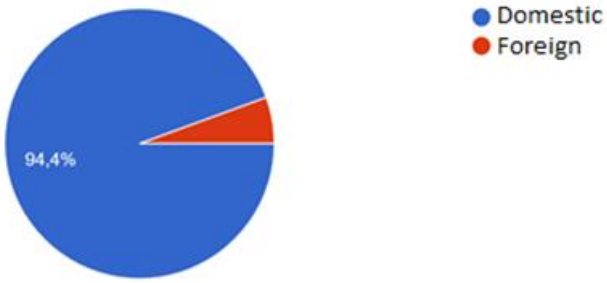

Figure 3.5: Capital Structure of Company

As seen in Figure 3.6, 42 (38.9%) of the 108 participants in the sample group were five years and above, 42 (38.9%) 0-3 years, and 24 (22.2%) 3-5 years, it has a company history.

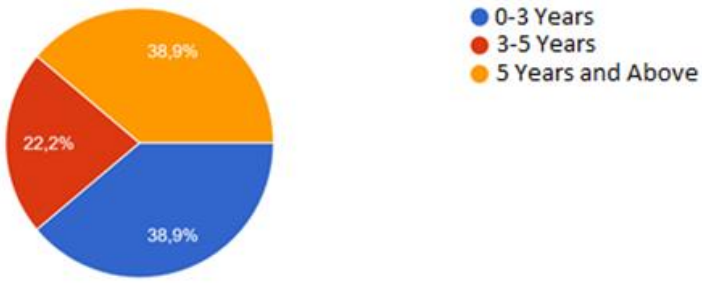

Figure 3.6: Activity History

As seen in Figure 3.7, 60 (55.6%) of the 108 participants in the sample group were 0-3 years, 30 (27.8%) were five years and above, and 18 (16.7%) were 3-5 years, it has a history of being in a technopark.

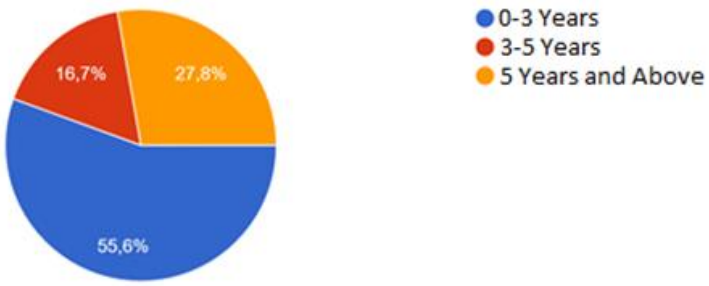

Figure 3.7: Activity History of Technopark

As seen in Figure 3.8, 57 (52.8%) of the 108 participants in the sample group were 0-10 persons, 27 (25%) were 21 persons and above, and 24 (22.2%) were 11-20 persons, it has the number of employees.

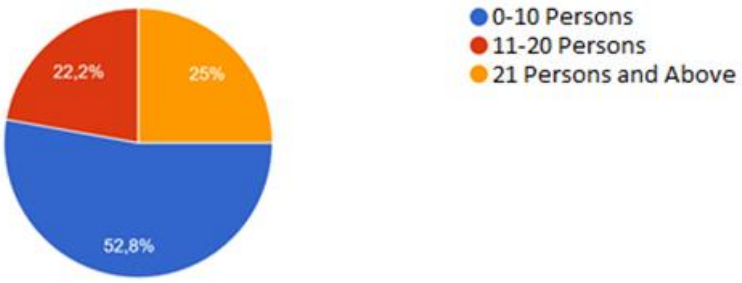

Figure 3.8: Number of Employees

3.4.Survey Results

According to their objectives, survey results for the technopark companies regarding the adequacy of R&D incentives applied in technoparks are given below.

About income and corporate tax exemption applied in technoparks, as indicated in Figure 3.9, 57 (52.8%) of the 108 participants who made up the sample group evaluated it as completely sufficient, 18 (16.7%) sufficient, 18 (16.7%) neither sufficient nor insufficient, 9 (8.3%) insufficient, and 6 (5.6%) completely insufficient.

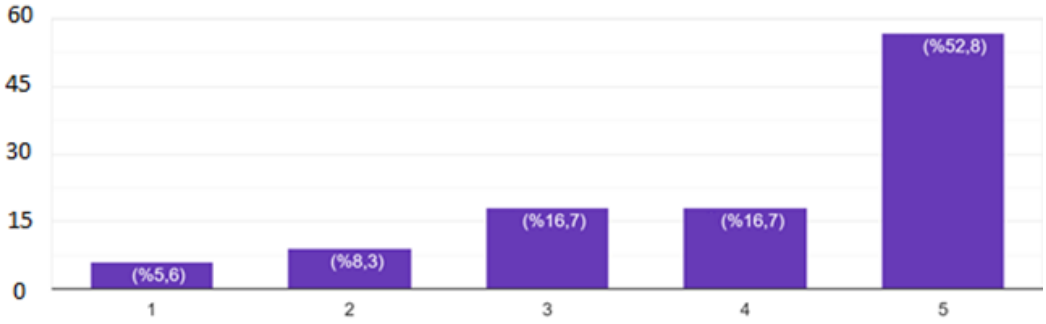

Figure 3.9: Suffiency of Income and Corporate Tax Exemption

About personnel wage income tax and stamp duty exemption applied in technoparks, as indicated in Figure 3.10, 48 (44.4%) of the 108 participants who made up the sample group evaluated it as completely sufficient, 36 (33.3%) sufficient, 12 (11.1%) neither sufficient nor insufficient, 9 (8.3%) insufficient, and 3 (2.8%) completely insufficient.

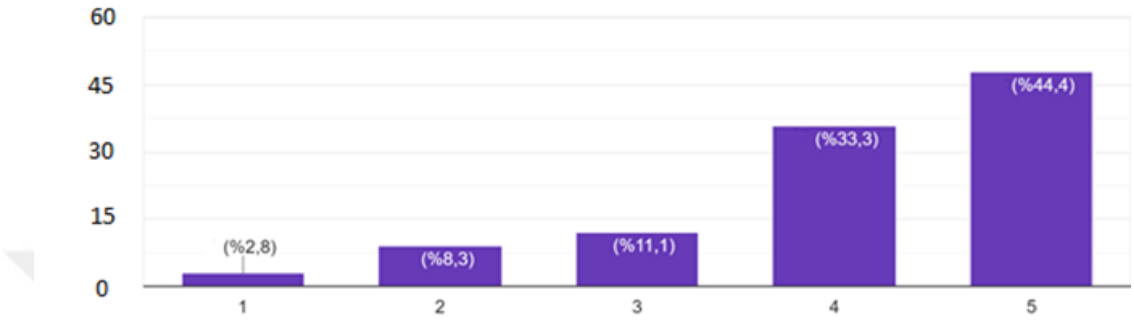

Figure 3.10: Sufficiency of Personnel Wage Income Tax and Stamp Duty Exemp.

About insurance premium employer share support applied in technoparks, as indicated in Figure 3.11, 33 (30.6%) of the 108 participants who made up the sample group evaluated it as completely sufficient, 24 (22.2%) sufficient, 27 (25%) neither sufficient nor insufficient, 15 (13.9%) insufficient, and 9 (8.3%) completely insufficient.

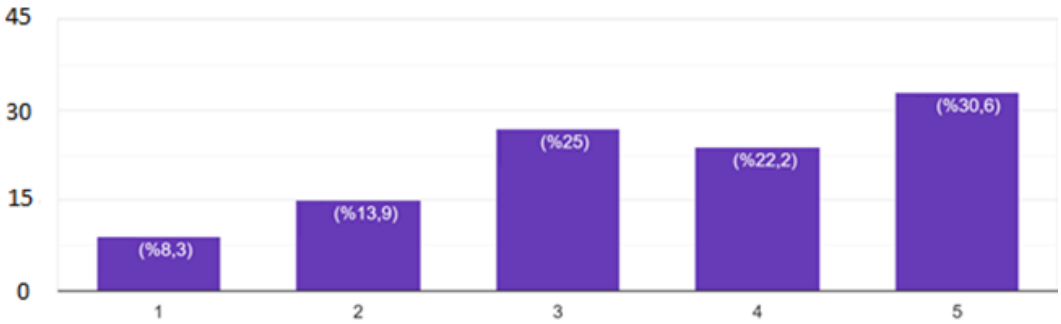

Figure 3.11: Sufficiency of Insurance Premium Employer Share Support (50%)

About customs duty exemption applied in technoparks, as indicated in Figure 3.12, 45 (41.7%) of the 108 participants who made up the sample group evaluated it as completely sufficient, 42 (38.9%) sufficient, 9 (8.3%) neither sufficient nor insufficient, 6 (5.6%) insufficient, and 6 (5.6%) completely insufficient.

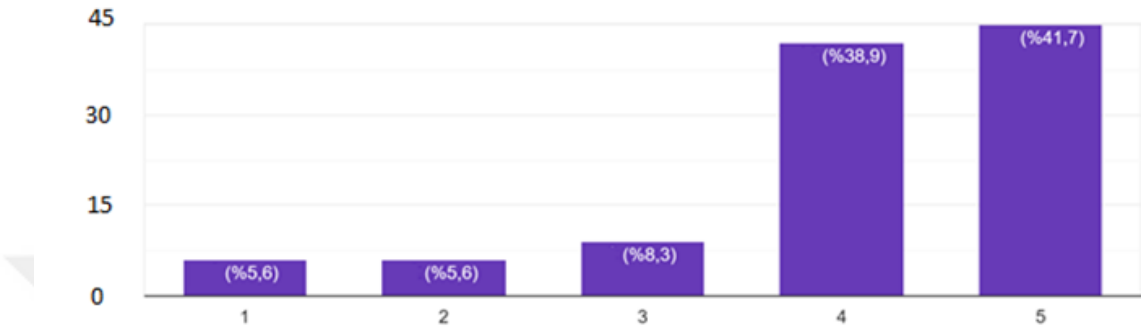

Figure 3.12: Sufficiency of Customs Duty Exemption

About VAT exemption applied in technoparks, as indicated in Figure 3.13, 42 (38.9%) of the 108 participants who made up the sample group evaluated it as completely sufficient, 30 (27.8%) sufficient, 18 (16.7%) neither sufficient nor insufficient, 12 (11.1%) insufficient, and 6 (5.6%) completely insufficient.

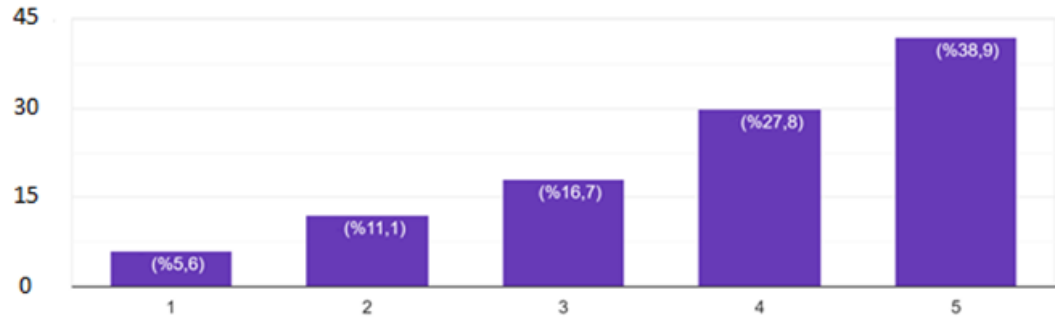

Figure 3.13: Sufficiency of Value Added Tax Exemption

About two-year gross minimum wage support applied in technoparks, as indicated in Figure 3.14, 39 (36.1%) of the 108 participants who made up the sample group evaluated it as completely sufficient, 33 (30.6%) sufficient, 15 (13.9%) neither sufficient nor insufficient, 15 (13.9%) insufficient, and 6 (5.6%) completely insufficient.

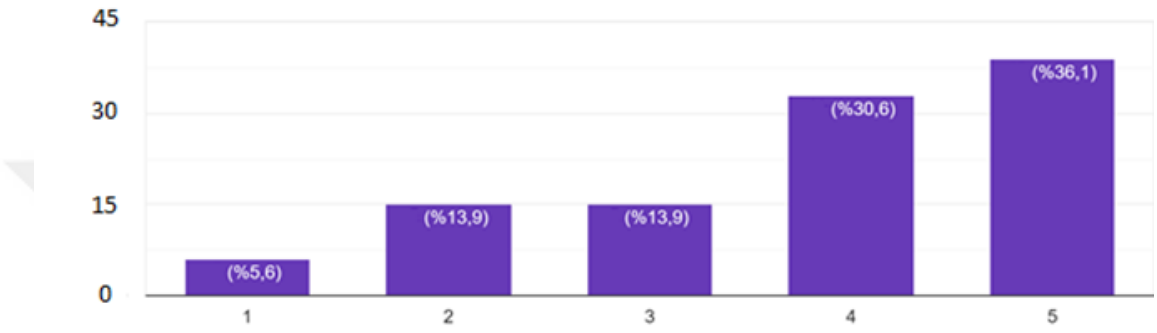

Figure 3.14: Sufficiency of Two-Year Gross Minimum Wage Support

About extending the duration of incentives applied in technoparks until 31/12/2028, as indicated in Figure 3.15, 69 (63,9%) of the 108 participants who made up the sample group evaluated it as completely sufficient, 18 (16.7%) sufficient, 9 (8.3%) neither sufficient nor insufficient, 6 (5.6%) insufficient, and 6 (5.6%) completely insufficient.

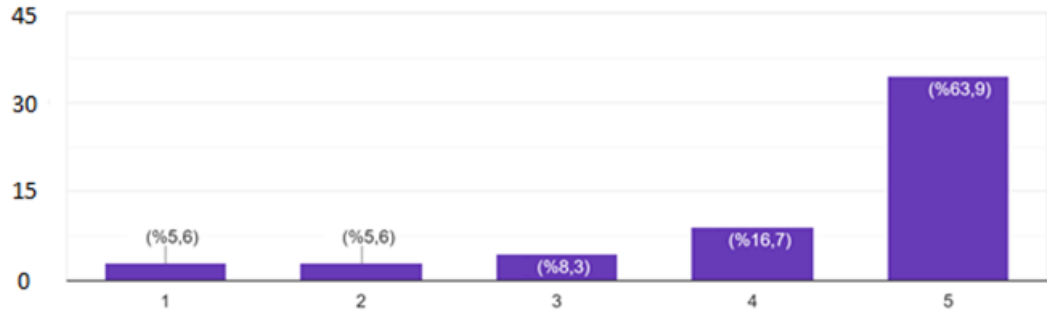

Figure 3.15: Sufficiency of Extending the Duration of Incentives

About obligation to support entrepreneurs to be implemented in 2022, as indicated in Figure 3.16, 36 (33.3%) of the 108 participants who made up the sample group evaluated it as completely sufficient, 24 (22.2%) sufficient, 18 (16.7%) neither sufficient nor insufficient, 18 (16.7%) insufficient, and 12 (11.1%) completely insufficient.

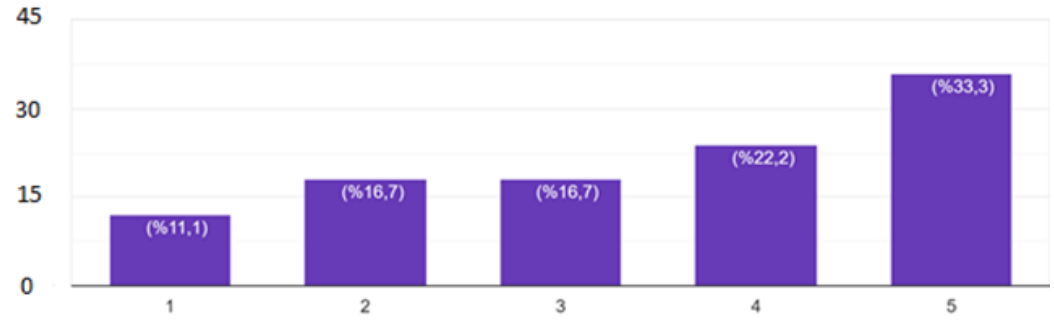

Figure 3.16: Obligation to Support Entrepreneurs to be Implemented in 2022

About R&D incentives generally applied in technoparks, as indicated in Figure 3.17, 36 (33.3%) of the 108 participants who made up the sample group evaluated it as completely sufficient, 45 (41.7%) sufficient, 9 (8.3%) neither sufficient nor insufficient, 15 (13.9%) insufficient, and 3 (2.8%) completely insufficient.

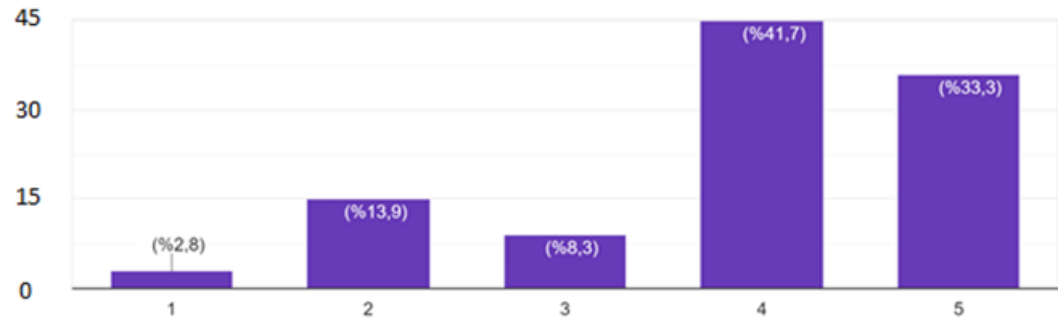

Figure 3.17: Sufficiency of R&D Incentives Generally Applied in Technoparks

CHAPTER IV

RESULT AND POLICY RECOMMENDATIONS

In this section, the research results and policy recommendations based on the findings are given.

In the second part of our research, the concept of technopark is discussed, and the characteristics and purposes of technoparks are explained. At the same time, the benefits of technoparks to companies, universities, faculty members, and the country are explained. The list of active and under construction technoparks in Turkey is given. At the same time, statistical information showing the development process of technoparks in Turkey in the last five years is given. R&D incentives applied to technopark management companies and companies located in technoparks are explained within the scope of Technology Development Zones Law No. 4691. In addition, with the regulations made within the scope of Law No. 7263, some regulations made in Law No. 4691 on Technology Development Zones are included.

4.1.Demographic Research Results

Participants were included in the study by random selection without applying any preconditions. With most of the participants being Technopark Companies, it was ensured that a study was conducted on a target group that is more aware and actively gains in the evaluation of R&D incentives applied in Technoparks.

Among the companies analyzed, the first three sectoral fields of activity in the Technology Development Zones were identified as software, defense, and Engineering-Architecture activities, respectively. When the technopark studies in developed countries and our country are compared, it is possible to say that the studies in Turkey are very new and in the development phase. In the future, this technopark structure is expected to make significant contributions to Turkey's R&D and technology power.

One of the critical issues that companies in technoparks should choose during the initial setup phase is the correct determination of the company type. With the selection of the company type, the tax and market conditions to be applied during the company activities are determined. According to the result of our research question, it has been determined that our research group consists of a more dedicated and aware participant group because most of our participants are in the structure of a capital company due to their management structures, establishment procedures, and audit processes.

It is revealed that technoparks are insufficient in attracting foreign investors or that the incentive opportunities in the regions are not well known by foreign investors.

The participants company history was determined there are generally new entrepreneurs and well-established companies that have reached a certain level of experience in technoparks regarding holding on to their sectoral markets and benefiting from incentives. In this direction, the necessity of bringing synergy within the ecosystem, transfer of experience, and supporting entrepreneurship to the forefront is revealed.

The participating companies generally started to take place in technoparks recently. This shows that the technopark awareness among companies in our country has just recently settled. It is thought that this rate will increase further as the R&D incentives applied in technoparks become widespread in the ecosystem.

4.2.Sufficiency of Incentives Research Results and Policy Recommendations

According to their objectives, opinions of technopark companies regarding the adequacy of R&D incentives applied in technoparks were determined.

R&D Incentives applied in technoparks have positive contributions to the development of technoparks. Now Turkey has preferred an innovative economic development model. That is the way that the importance given to R&D is at a detectable level. Innovative economic Turkey, which reveals the will to enter the path of development, needs technological progress. The way to do this depends on R&D activities. These units are also known it is located in the Technology Development Zones. In this respect this incentives in Technology Development has positive contributions to the development of the regions in Turkey.

Increasing and diversifying incentives Technology It is an important factor in increasing the contribution of the Development Zones to the economy. The application of incentives in positive and productive areas, both businesses and enterprises, has a positive effect on the continuity of the sector. Because when incentives increase, there is a decrease in investment cost, easing in financing needs and increase in profitability. The effects of incentives on the competitiveness of countries also has important effects on foreign trade. Incentives has a significant impact on R&D, education, foreign exchange, and export advantage for our country in tax, social security, and energy subsidies.

In Turkey, technoparks contribute to the economy. In technoparks, mainly have software, informatics, electronics, advanced materials technologies, design, nanotechnology, working in biotechnology, automotive, medical technologies, and renewable energy many different companies. Firms located in these regions undoubtedly contribute to the country's economic development with their projects. Reducing the country's foreign dependency by producing advanced material technologies and exports bringing money to domestic markets by limiting affects economic development.

Participating firms (including incubators) generally rated the incentives applied as adequate. However, it has been observed that the adequacy ratio has decreased in terms of insurance premium employer share support. In Turkey, the employer's share in insurance premium is 20.5%. This practice creates a cost for the entrepreneurs. Therefore, the support rate should be increased. The treasury must cover 75% of the employer's share of the insurance premium.

Survey participants generally evaluated the incentives applied as sufficient, regardless of the number of employees. However, it has been observed that the adequacy ratio for wage support has decreased in companies with 21 or more employees. Undergraduate courses to be supported are limited to mathematics, physics, chemistry, and biology. This practice restricts the entrepreneurs. Qualified personnel can be employed by including engineering departments. Thus, the scope of support should be increased.

Participants generally evaluated the R&D incentives applied in technoparks as sufficient in the range of 66.7%-80.6%. For this reason, a protective and improving

policy should be followed. The findings show that the incentives provided to the companies in the technoparks can create an increasing effect on the production of value-added technology. It can be thought that with the increase in the number of technoparks and the expansion of the scope of incentives, the companies in the technoparks will increase their contribution to the economy's strategic goals in terms of macro indicators.

It is recommended to increase the number of technoparks to be surveyed in future studies.

BIBLIOGRAPHY

Aktaş, A. (2012). "Teknoloji Serbest Bölgesi'nde Uygulanan İstisna, Muafiyet ve Destekler", İstanbul Üniversitesi, Sosyal Bilimler Enstitüsü, Yüksek Lisans Tezi.

Babacan, M. (1995), Dünya'da ve Türkiye'de Teknoparklar. İzmir: Asil Ofset Matbaası.

Çalıkoğlu, E. (2021). *Teknoloji Geliştirme Bölgeleri ve Ar-Ge/Tasarım merkezlerinde Ar-Ge ve yenilik faaliyetlerine ilişkin değişiklikleri içeren 7263 sayılı Kanun yayımlandı.*. 21.03.2021 tarihinde https://www.ey.com/tr_tr/tax/tesvikte-gundem/sirkuler/2021/teknoloji-gelistime-bolgeleri-ar-ge-yenilik-faaliyetlerine-iliskin-degisiklikler adresinden erişildi.

Çankır, B. (2013). *Teknoloji Geliştirme Bölgelerinde Gelir ve Kurumlar Vergisi İstisnası ve Uygulamaya İlişkin Özellikli Durumlar*. 07.03.2021 tarihinde https://www.vergidegundem.com//documents/10156/1390523/agustos_makale2.pdf adresinden erişildi.

Delichasanoglou, M. (2007). "Teknoloji Geliştirme Bölgeleri, Türkiye'deki Gelişimi, Sağladığı Vergisel Avantajlar ve Bir Anket Uygulaması", İstanbul Üniversitesi, Sosyal Bilimler Enstitüsü, Yüksek Lisans Tezi.

Demiral, B. (2016). "Teknoparklarda Faaliyet Gösteren İşletmelerin Vergi İstisna ve Uygulamaları, Ar-Ge Desteği", Okan Üniversitesi, Sosyal Bilimler Enstitüsü, Yüksek Lisans Tezi.

Dokuzoğlu, S, Tüm, K. (2020). 4691 Sayılı Teknoloji Geliştirme Bölgeleri Kanunu Kapsamında Sunulan Teşviklerin Vergisel Boyutunun İncelenmesi. *İşletme ve İktisat Çalışmaları Dergisi*, *8*(1): 14-29.

Gümüş, M, Yükseloğlu, S, Binark, A. (2014). Ülkemizde Teknoparkların Gelişimi ve Mühendislik Eğitimindeki Rolleri. *Süleyman Demirel Üniversitesi Fen Bilimleri Enstitüsü Dergisi, 17*(1): 24-31.

Güneş, Ş. (2009), "Teknoloji Geliştirme Bölgelerine (Teknopark) Sağlanan Vergisel Avantajlar", *Mali Çözüm Dergisi, 91*: 161-170.

Harmancı, M. ve Önen, M.O. (1999). Dünya'da ve Türkiye'de Teknopark ve Teknokent Uygulamaları, *Türkiye Kalkınma Bankası AŞ, 2*: 3-47.

Karaçetin, Ö. (2021). *Teknoloji Geliştirme Bölgeleri Kanunu ile Bazı Kanunlarda Değişiklik Yapılmasına Dair Kanun*. 21.03.2021 tarihinde https://www.pwc.com.tr/tr/hizmetlerimiz/vergi/ar-ge/bultenler/teknoloji gelistirme-bolgeleri-kanunu-ile-bazi-kanunlarda-degisiklik-yapilmasina-dair-kanun.html adresinden erişildi.

Kayalıdere, G. (2014). Türkiye'nin Teknoloji Politikalarında Teknoparkların Önemi ve Teknoparklara Yönelik Vergi Avantajları. *Gazi Üniversitesi Sosyal Bilimler Dergisi, 1*(1): 75-96.

Keleş, M. (2010). TÜRKİYE'DEKİ TEKNOKENTLERİN MEVCUT DURUMUN İNCELENMESİ. *Süleyman Demirel Üniversitesi Sosyal Bilimler Enstitüsü Dergisi,* (11): 1-22.

Kutbay, H. (2018). Türkiye'de Ar-Ge Faaliyetlerine Sağlanan Vergi Teşvikleri: Tarihsel Bir Perspektif. *Vergi Sorunları,* 81-102.

Küçükçirkin, M. (1990), Üniversite-Sanayi İş birliği, Ülke Sanayisi ve Ekonomisi Açısından Önemi. İstanbul: TOBB

Küçükkaya, M. (2018). *Küçük ve Orta Büyüklükteki İşletmelerin Tanımı, Nitelikleri ve Sınıflandırılması Hakkında Yönetmelikte Değişiklik Yapılmasına Dair Yönetmelik Hakkında*. 30.06.2021 tarihinde http://www.ksavukatlik.com/kucuk-ve-orta-buyuklukteki-isletmelerin-tanimi-nitelikleri-ve-siniflandirilmasi-hakkinda-yonetmelikte-degisiklik-yapilmasina-dair-yonetmelik-hakkinda/ adresinden erişildi.

Özberk, F. (2018). "Teknoparklarda İşletmelere Sağlanan Vergisel Avantajlar Ve Bir Uygulama", İstanbul Arel Üniversitesi, Sosyal Bilimler Enstitüsü, Yüksek Lisans Tezi.

Özdemir, F. (2014). Ar-Ge personelinin Ücretine İlişkin İstisnaların Etkinliğinin Değerlendirilmesi. *Maliye Dergisi, 166*: 159-173.

Özkanlı, M.S. ve M. Çaltekin. (2006). Teknoloji GeliŞtirme Bölgelerinde Vergi Uygulamaları. *Mali Çözüm Dergisi*, *77*: 153-167.

Savcı, A.Ş, Yayla, İ.E, Özdemir, E. (2015). *Ar-Ge Faaliyetlerine Yönelik Vergi Destekleri ve Uygulamaları*. 1.Basım. İstanbul

"T.C. Sanayi ve Teknoloji Bakanlığı". İstatistikler. 30.06.2021 tarihinde https://www.sanayi.gov.tr/istatistikler/istatistiki-bilgiler/mi0203011501 adresinden erişildi.

Teknoloji Geliştirme Bölgeleri Kanunu. (2001). T.C Resmi Gazete. 24454, 26 Haziran 2001.

Teknoloji Geliştirme Bölgeleri Uygulama Yönetmeliği. (2016). T.C Resmi Gazete. 29797, 10 Ağustos 2016.

Tepe S. ve Zaim, A.H. (2016). Türkiye'de ve Dünyada Teknopark Uygulamaları:Teknopark İstanbul Örneği. *İstanbul Ticaret Üniversitesi Sosyal Bilimler Dergisi*, *29*: 19-43.

Turan, İ, Şimşek, Ü, Aslan, H. (2015). Eğitim Araştırmalarında Likert Ölçeği ve Likert-Tipi Soruların Kullanımı ve Analizi. *Sakarya Üniversitesi Eğitim Fakültesi Dergisi*, *0*(30): 186-203.

Uzunsakal, E. ve Yıldız, D. (2018). ALAN ARAŞTIRMALARINDA GÜVENİLİRLİK TESTLERİNİN KARŞILAŞTIRILMASI VE TARIMSAL VERİLER ÜZERİNE BİR UYGULAMA. *Uygulamalı Sosyal Bilimler Dergisi*, *2*(1): 14-28.

Yargıç, B. (2005). Teknoloji Geliştirme Bölgelerinde (Teknoparklar) Uygulanan Vergisel Teşvikler, *Mali Çözüm Dergisi*, *72*: 255-260.

APP1: SURVEY OF EVALUATION OF R&D INCENTIVES APPLIED INTECHNOPARKS

The incentives applied in technoparks aim to produce technological knowledge to ensure that the country's industry has an internationally competitive and export-oriented structure by providing university-industry cooperation. In addition, developing innovations in products and production methods, increasing product quality or standards, increasing productivity, reducing production costs, commercializing technological knowledge, supporting technology-intensive production and entrepreneurship, adapting small and medium-sized enterprises to new and advanced technologies, creating investment opportunities in technology-intensive areas, to create job opportunities for researchers and skilled people, to help technology transfer and to provide the technological infrastructure that will accelerate the entry of foreign capital into the country that will provide high/advanced technology. The sufficiency of the incentives applied for these purposes is being investigated. The data obtained will be used in the Master's Thesis of Istanbul Sabahattin Zaim University Graduate Education Institute, Department of Business Administration, for purely scientific purposes.

1.Type of Participant

- Technopark Incubation Company
- Technopark Company

2.Company Sector

- Electronic
- Finance
- Food
- Chemistry
- Health
- Defense
- Transportation
- Production
- Software

- Engineering-Architecture
- Material Technologies
- Media Telecommunations
- Sustainable Technologies
- Other

3.Type of Company

- Sole Proprietorship
- Corporation
- Limited Company

4.Size of Company

- Micro
- SME
- Large

5.Capital Structure of Company

- Domestic
- Foreign

6**.Activity History**

- 0-3 Years
- 3-5 Years
- 5 Years and Above

7.Activity History in Technopark

- 0-3 Years
- 3-5 Years
- 5 Years and Above

8.Number of Employees

- 0-10 Persons
- 11-20 Persons
- 21 Persons and Above

9.Income and corporate tax exemption is sufficient

Strongly Disagree (1) (2) (3) (4) (5) Strongly Agree

10.Personnel wage income tax and stamp duty exemption is sufficient

Strongly Disagree (1) (2) (3) (4) (5) Strongly Agree

11.Insurance premium employer share support (50%) is sufficient

Strongly Disagree (1) (2) (3) (4) (5) Strongly Agree

12.Customs duty exemption is sufficient

Strongly Disagree (1) (2) (3) (4) (5) Strongly Agree

13.Value added tax exemption is sufficient

Strongly Disagree (1) (2) (3) (4) (5) Strongly Agree

14.Two-year gross minimum wage support provided by ministry to companies employing R&D personnel graduated from basic sciences (10%) is sufficient

Strongly Disagree (1) (2) (3) (4) (5) Strongly Agree

15.Extending the duration of incentives until 31/12/2028 is sufficient

Strongly Disagree (1) (2) (3) (4) (5) Strongly Agree

16.As of 2022, companies with an annual income of 1,000,000 TL or more are obliged to transfer 2% of this income to entrepreneurial companies. This decision is appropriate and sufficient

Strongly Disagree (1) (2) (3) (4) (5) Strongly Agree

17.Generally, R&D incentives applied in technoparks are sufficient

Strongly Disagree (1) (2) (3) (4) (5) Strongly Agree

CV

Mahmut İLBARS was born in Istanbul. He completed his undergraduate education at Istanbul University, Faculty of Business Administration, Department of Business Administration in 2017. He has been working as a project specialist at Istanbul Sabahattin Zaim University Technology Transfer Office since 2018. He is married and has one child.