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Good Practices of Tecnology Transfer Processes in Türkiye

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Karadeniz Technical University Technology Transfer Application Research Center Academic R&D Catalogue

1.1. Introduction:

- ***Background:***

University-industry cooperation is a partnership model involving the sharing of knowledge, technology and expertise between universities and industrial organizations. This cooperation covers the processes of developing innovative products and services by transferring academic knowledge to industry, transforming research results into practice and creating economic added value. In Türkiye, such collaborations are quite rare due to the introverted and closed structure of the industry. The lack of awareness of academic support and R&D culture of industrialists and the inability of the industry to carry out the right academic matching activities in line with the R&D needs of the industry are among the biggest reasons for this.

KTU TTC Academic R&D Catalogue is a good practice that strengthens university-industry cooperation. With this catalogue, access to academic projects and expertise is facilitated by providing fast innovative and technological solutions to the R&D needs and problems faced by industrialists. Matching through the Academic R&D Catalogue accelerates the process of bringing together the right academic partners and industrial enterprises and the process of transforming innovative projects into commercial value. In addition, this application contributes to economic development and the development of innovative solutions by increasing knowledge transfer. This process both accelerates the integration of academic knowledge into industry and provides innovative development and competitive advantage.

- ***Objective:***

The Academic R&D Catalogue has been developed to solve the problems frequently encountered in university-industry cooperation processes in Türkiye. Among the main problems in the university-industry cooperation process; the difficulties experienced by industrial organizations in accessing academic expertise and R&D projects carried out in universities, time losses in determining the right academic partners, and the lack of knowledge about the suitability of funding sources that can be used in R&D studies and how to manage this process come to the front. Industrial organizations often have difficulty in establishing academic collaborations suitable for their needs, which slows down the realization and commercialization of successful R&D projects.

In order to overcome these problems, KTU TTC has developed the 'Academic R&D Catalogue' application as a solution that will enable industrialists to access the know-how, R&D potential and potential cooperation opportunities at the university. The catalogue aims to facilitate the flow of information between the parties by presenting the fields of expertise of the academicians within the university, the projects they carry out and their scientific achievements in a transparent and accessible manner to industry representatives. Another important reason for the creation of the catalogue is to

eliminate the communication gaps and coordination deficiencies experienced in bringing academic knowledge together with industry. In this way, the R&D capacity of universities is directly transferred to the industry and the coordination process of the academic support required to produce innovative solutions is provided more efficiently.
The ultimate goal of the implementation is to strengthen the cooperation between industry and academia, produce qualified R&D projects, accelerate the commercialization process of R&D activities and contribute to the innovation capacity of the country. As a result of this process, both the competitiveness of industrial organizations increases and universities are able to carry out more research and innovation activities with the revenues they will receive from industry collaborations. In the long term, the catalogue is expected to provide a continuous and sustainable structure for university-industry cooperation and to support economic development on a local and national scale.

1.2. Good practice overview:

- ***Description:***

KTU TTC aims to strengthen university-industry cooperation and make knowledge transfer more efficient in the region. Through the "Academic R&D Catalogue" industrialists can find appropriate academic solutions to the specific technical challenges they face and pave the way for innovative collaborations.
KTU TTC Academic R&D Catalogue practice starts with the determination of the R&D needs of industrial enterprises and continues by determining the researchers suitable for these needs by KTU TTC experts and communicating with them via e-mail and one-to-one interviews. As a result of the relevant interviews, information on academicians who are willing to cooperate and whose fields of study are compatible (fields of study, specializations, theses, projects, inventions, patents, etc.) are included in the catalogue prepared. Industrialists notify TTC about the researchers compatible with their own R&D needs through the catalogue and submit their meeting requests. This process is coordinated by KTU TTC and technical and communication support is provided for the successful realization of collaborations. Thus, university-industry cooperation is accelerated and the integration of academic knowledge into industry is facilitated.

- ***Achievements:***

KTU TTC has integrated the Academic R&D Catalogue implementation into the main activities of university-industry cooperation since 2019 and continues to use it. Before

2019, the projects carried out by academicians and their scientific knowledge could not be delivered to the industry in a sufficiently comprehensive and detailed manner. For this reason, industrial organizations had difficulty in establishing effective cooperation with universities for the technical solutions they needed, and did not know which door to knock on.

Academic inventions and projects had difficulty in being integrated into industry, which delayed the transformation of innovative solutions into commercial value. The process of adapting academic projects to industry and transforming collaborations into commercial products was slow. Academics' projects and areas of expertise were not known or accessible to a wide industrial audience. Lack of communication between industrial organizations and academics prevented the realization of joint projects and slowed down the transfer of knowledge. With the introduction of this practice, many R&D projects have been realized thanks to the bilateral collaborations established in the process, and companies have been able to easily access the right person and academic knowledge suitable for their needs, and at the same time, industrialists have been shown that they have more than one option as an academic study partner.

These collaborations established through KTU TTC have contributed to industrial organizations to find academic partners suitable for their needs and to successfully carry out their R&D projects. Since 2019, 30 different companies from the software, food, forest products and defense industry sectors have been catalogued for their R&D needs, and nearly 50 company-academician matches have been made from these catalogues. From the collaborations arising from these pairings, 11 contracted R&D projects and 3 TÜBİTAK projects were carried out.

- ***Source:***

The good practice is carried out by Karadeniz Technical University Technology Transfer Application and Research Centre (KTU TTC). KTU TTC carries out its activities as a technology transfer interface structure between the university and the industry in the status of an official unit affiliated to the university rectorate.

1.3. Partnerships:

- ***Stakeholders Involved:***

Stakeholders of KTU TTC's Academic R&D Catalogue application,

- *KTÜ TTC*
- *İndustrialists*
- *Researchers from KTU*

- ***Role of Each Partner:***

- *KTÜ TTC*
  - KTU TTC is responsible for the preparation, management and coordination of the Academician R&D Catalogue.

- By organizing university-industry cooperation processes, it undertakes an effective bridge mission between both parties, thus ensuring that the process is carried out in an efficient and sustainable manner.
- It plays a strategic role in the process of developing the catalogue and introducing it to the industry and provides the necessary technical and communication support to accelerate the flow of information and facilitate cooperation between the parties.
- KTU TCC also ensures that the data of the catalogues prepared separately for the needs are kept up-to-date and accurate and optimizes the information in the catalogue according to the needs of the industry.

➢ *Īndustrialists*

- Through the catalogue, industrial sector representatives can quickly identify the most suitable academic partners for their R&D needs.
- Industrialists benefit from university-based knowledge and experience in the process of developing solutions for technological challenges and innovation demands.
- Thanks to this cooperation, industrial organizations find solutions to their technical problems through innovative projects and applied research, thus increasing their competitiveness.
- By using the catalogue, industrial enterprises can initiate R&D processes with the right academic partners and access funding sources with academic partners through these processes.

➢ *Researchers from KTU*

- Academicians in KTU TTC's Academician R&D Catalogue participate with their scientific competencies and projects in order to develop solutions for the needs of the industry.
- Academicians offer innovative solutions to the industry with their projects, patent studies, academic publications and expertise in specific fields.
- Academics, who directly contribute to the industry by taking part in R&D projects, transform their scientific research into practical applications by providing knowledge transfer.
- Thanks to this catalogue, academics have the opportunity to commercialize their ideas and projects and create a wider industrial impact by collaborating with industry.

1.4. Process:

- ***TT process methodology:***

The Academic R&D Catalogue is implemented to enable the industry to find academic partners suitable for its R&D needs. The implementation process starts with a comprehensive preparation and planning phase and follows a systematic setup in order to create successful results for both parties. The details of the studies carried out during the implementation process are as follows;

- **Determination of R&D Needs of Industrial Organizations:** In the first stage of the process, preliminary interviews and meetings are held with industrial organizations by KTU TTC, which acts as an interface. In these meetings, the current technological difficulties, innovative solution demands and R&D needs of industrial enterprises are analyzed in detail. At this stage, it is determined in which areas academic support is needed and which specific problems should be worked on. In line with the data obtained as a result of the meetings, prioritized R&D topics for the industry are created and a systematic report is prepared.
- **Determination of Academicians and Compliance Analysis:** R&D demands from industrial organizations are compared with the areas of expertise of academics at KTU. KTU TTC determines potential academic partners suitable for the needs of the industry by analyzing the research fields, projects carried out by academicians at the university and their scientific competencies. At this stage, it is evaluated whether the determined academicians have the capacity to offer appropriate solutions to the industry. Academics' previous projects, scientific outputs and cooperation experiences for industry are critical elements of this evaluation process.
- **Creation of Academic R&D Catalogue:** After determining the appropriate academics, information such as areas of expertise, projects carried out, academic publications, patents, laboratory and technical infrastructure, etc. are compiled for each academician for the catalogue. The catalogue also includes solution suggestions and potential cooperation opportunities that academicians can offer to the industry. This information is presented in a clear and accessible format to help industry representatives select the right academic partners for the R&D request subject.
- **Sharing the Catalogue and Initiating Collaborations:** At this stage, companies are informed about the academics in the catalogue, the studies carried out by the academics on the relevant subject and the solution proposals they will offer and can determine the most suitable academic partners for their R&D needs. Industrial organizations contact the appropriate academicians by examining the information in the catalogue. KTU TTC coordinates this process and provides the necessary technical and communication support for the realization of cooperation between the parties. After the first contact between the industrial organization and the academician, R&D projects (contracted R&D studies, application to funding sources, etc.) are initiated between the parties. KTU TTC also provides management support at this stage, ensuring that the process proceeds smoothly.

- ***Key Milestones:***

One of the most important milestones of the implementation is the detailed analysis of the R&D needs of industrial enterprises. At the beginning of this process, KTU TTC experts organize introductions and initial analysis interviews with industrial enterprises. During these interviews, information is collected about the company's sector, business model, existing technology infrastructure and R&D strategies. In this step, technological trends, sectoral innovation needs and competition conditions that stand out in the field in which the company operates are emphasized. The short, medium and long term targets of industrial organizations are determined and the areas in which they need innovative solutions are revealed.

In line with the information obtained in the first interview, the technical problems faced by the company are detailed. These technical problems may include specific areas such as productivity losses in production processes, raw material and energy consumption, environmental impacts or quality control problems. In addition, the methods that the company has tried before, external support and technical obstacles that have not yet been solved are also analyzed. At this stage, specific needs requiring R&D are identified and it is clarified which research topics require academic support.

Thanks to these analyses, the information in the catalogue can respond to the real needs of the industry. Another important stage is the identification and matching of suitable academics. In this way, industrial organizations can easily find the most suitable academic partners for their projects.

- ***Innovation:***

Collaboration between universities and industry has long played an important role in the transfer of technological knowledge and the development of innovative solutions. However, the traditional methods used in the collaboration process are mostly limited, dispersed and based on personal networks. These methods include individual initiatives and personal contacts, fairs and symposiums, project-based collaborations and individual efforts of technology transfer office experts. KTU TTC Academic R&D Catalogue has been developed in order to eliminate the limitations seen in traditional methods and to make university-industry cooperation more systematic, efficient and quickly applicable, and most importantly, to provide the most accurate matching by offering many alternatives. This catalogue includes innovative elements that facilitate cooperation processes for both industrial organizations and academicians. The innovative elements that the R&D catalogue offers compared to traditional methods in university-industry cooperation processes are as detailed below;

- **Systematic Information Access:** While it takes a great deal of time for industrialists to reach the right academic partner in traditional methods, KTU TTC R&D Catalogue provides a systematic service to industrial enterprises by compiling the fields of expertise of academicians, the projects they carry out and the scientific results they have obtained. This catalogue enables to identify academic partners suitable for the needs of the industry in a short time.
- **Prior Needs Analyses:** Before the catalogue is created, KTU TTC holds one-to-one meetings with industrial organizations to determine the R&D needs and technology requirements of the industry. These needs analyses ensure that the information in the catalogue is more useful and targeted for the industry. Thus,

industrial organizations can initiate a productive and focused cooperation process with academics suitable for their needs.

- **Broad Promotion of Academic Capacity:** The catalogue allows not only the introduction of specific academics, but also the systematic presentation of the university's overall academic capacity to the industry. This constitutes a more inclusive approach that brings together the entire expertise potential of the university with the industry, as opposed to collaborations based on individual connections.
- **Facilitated Collaboration Process:** The catalogue not only identifies the appropriate academic partners for industrial organizations to quickly initiate their R&D needs and projects, but also includes KTU TTC's technical and operational support in cooperation processes. Unlike traditional methods, this process creates a faster and smoother collaboration environment.

With the innovative approaches offered by the KTU TTC R&D Catalogue application, a more proactive and targeted systematic approach, time and resource savings and comprehensive information access are provided compared to traditional methods. This application directly contributes to the faster commercialization of R&D processes in Türkiye and to the establishment of the right connections between industry and academia.

1.5. Outcomes:

- ***Impact on Stakeholders:***

The innovative elements of KTU TTC's Academic R&D Catalogue are that it offers a more systematic, targeted and accessible structure compared to traditional cooperation methods. This application enables **rapid solution access and accurate matching** in reaching academic partners suitable for the R&D needs of industrial organizations. The catalogue makes academic **competencies visible** by providing details such as academics' expertise, research projects, publications, patents and laboratory infrastructure. Thus, industrial organizations can easily see which academician can contribute to which technological field, which enables the university's research capacity to be integrated more effectively into the industry. **With the facilitation of** the cooperation process and the technical and operational **coordination** of KTU TTC, the process has become faster and more efficient. These innovations go beyond the traditional methods of cooperation based on personal contacts and take university-industry cooperation to a more comprehensive and strategic level. KTU TTC's Academic R&D Catalogue also makes significant contributions to regional development. This catalogue increases the innovation capacity of local enterprises and supports them to become more competitive by bringing together the technical solutions needed by local industrial enterprises with the academicians in the region. At the same time, by accelerating the transfer of knowledge between universities and industry, it enables the emergence of innovative projects and collaborations that create economic value in the region. This process contributes to the creation of employment and sustainable development of the region while strengthening the local economy.

KTU TTC's Academic R&D Catalogue strengthens university-industry cooperation and increases the effectiveness of R&D projects with the various benefits it provides to stakeholders. In terms of **financial gains**, industrial enterprises generate income by developing and commercializing innovative products with the right academic partners, and also facilitate their access to funding sources such as TÜBİTAK. This supports the financial sustainability of industrial organizations and contributes to the continuity of R&D projects.

In terms of **time-saving**, the systematic access provided by the catalogue and the possibility of rapid access to appropriate academic partners provide significant efficiency in cooperation processes. Industrial organizations can reach the right academic expertise without wasting time, so that projects can start faster. This allows projects to respond to market needs in a shorter time. Moreover, the effective communication between stakeholders through the catalogue prevents demotivation that may arise from poor communication and supports the parties to work with high motivation in the cooperation process.

In the field of **job creation**, growing R&D projects contribute to the opening of new employment areas, and new projects born between industry and academia bring qualified labour force to the sector. With the growth and commercialization of R&D projects, industrial enterprises employ more personnel, which contributes positively to the labour market on a local and national scale.

The catalogue also has advantages in terms of **skills development**. Academicians gain practical experience by having the opportunity to work with the industry; they have the opportunity to transform their theoretical knowledge into industrial applications. At the same time, industrial employees increase their competencies with new technologies provided by academic knowledge, which strengthens the technological infrastructure of industrial organizations and increases their competitiveness in the sector.

This process directly contributes to **economic growth**, **job creation** and **talent development**; innovative solutions are developed through university-industry cooperation and the technology transfer process accelerates. With the long-term impact of the catalogue, the continuity of the knowledge transfer process is ensured and a broader innovation ecosystem is built.

- ***Innovation Diffusion:***

KTU TTC's Academic R&D Catalogue has been effectively adopted by its stakeholders in order to strengthen university-industry cooperation. **Industrial organizations** use this application to quickly and systematically find the right academic partners and accelerate their R&D processes. Companies see the catalogue as a valuable tool that saves time and cost, as they can quickly find solutions to the technical difficulties they face thanks to this system. One of the concrete indicators of the adoption process is the fact that the companies that have previously worked with the catalogue request catalogues on different subjects again in certain periods.

Academics, on the other hand, seize the opportunity to share their projects with the industry and to conduct applied research, thus gaining the potential to transform their

scientific studies into commercial success. The catalogue has also been welcomed by the academic community, as they reach a wider audience by integrating academic knowledge with industry and find the opportunity to finance their own research through funding and project collaborations.

These stakeholders adopt the application thanks to the transparent, organized and efficient process and contribute to the continuation of their cooperation.

- ***Ecosystem Implications:***

KTU TTC's Academic R&D Catalogue has far-reaching effects on the ecosystem. In terms of promoting cooperation, it acts as an effective bridge between academia and industry, enabling academics from different disciplines to meet in projects suitable for industrial needs. This process encourages **more companies to get involved in R&D projects** and actively participate in the innovation ecosystem.

In terms of increasing **innovation capacity**, thanks to the catalogue, industrial organizations can find innovative solutions to their technological challenges by providing quick access to academic knowledge, which in turn increases Türkiye's innovation capacity. The direct transfer of university research to industry has accelerated the emergence of new products and services and increased competitiveness.

In terms of addressing **social challenges**, university-industry collaborations have been developed in critical areas such as sustainability, health, energy and environment. These projects have produced solutions for the needs of the society and contributed to the elimination of local and national problems. As a result, this practice has not only provided economic benefits, but also created social benefits by producing innovative solutions to the challenges faced by society.

The Academician R&D Catalogue increases the participation of academics in university-industry cooperation projects and strengthens their motivation. The catalogue enables academics to integrate their knowledge and expertise into industrial projects, as well as revealing the commercialization potential of their projects. The technology transfer ecosystem, which is strengthened with the active participation of academicians, accelerates the integration of innovative projects into the industry and enables the transformation of academic knowledge into economic and social benefits.

In this context, KTU TTC's Academic R&D Catalogue not only contributes to economic development, but also supports the development of innovative solutions needed by the society and the achievement of sustainable development goals of the society. The synergy created by this catalogue on the ecosystem encourages academia-industry cooperation and ensures that innovation is used as an effective tool in solving social problems.

1.6. Challenges Overcome:

- ***Key Barriers:***

The main challenges encountered during the establishment and execution of the Academician R&D Catalogue application developed by KTU TTC are as follows:

- **Data Collection and Updating:** In order for the Academician R&D Catalogue to be used effectively, up-to-date and accurate data collection and regular updates are one of the basic requirements. Accessing accurate and up-to-date information on academics' projects, inventions and areas of expertise can be challenging due to the breadth and diversity of the data. In addition, information such as academics' new projects, research results or changes in their areas of expertise need to be constantly updated. Failure to make these updates regularly may prevent the catalogue from staying up to date and may lead to decisions based on incorrect or incomplete information by the industry.
- **Communication and Coordination:** Effective communication and coordination provide the basis for successful cooperation between universities and industrial organizations. However, the different priorities and ways of doing business between academia and industry may cause difficulties in communication processes. It is important to ensure coordination between the parties, to manage the cooperation processes effectively and to ensure the flow of information at every stage of the project. In this process, it is necessary to establish effective communication mechanisms to prevent misunderstandings and to ensure that the process runs smoothly.
- **Creating Awareness:** This is a critical process in terms of increasing the use of the Academic R&D Catalogue and raising awareness in industry and academic circles about the benefits provided by the catalogue. In order for the catalogue to be used effectively by all potential users, it is necessary to carry out awareness-raising activities about the catalogue. For this purpose, various meetings, seminars and information events should be organized to promote the catalogue and to inform users about how this resource can contribute to cooperation.
- **Harmonization of Different Objectives:** Differences between academic and industrial objectives create a harmonization problem that can complicate university-industry cooperation. While academic institutions focus on long-term research, knowledge production and the advancement of science, they aim to keep knowledge sharing open and pursue social benefit. On the other hand, industry prioritizes short or medium-term goals such as rapid commercialization, profitability and competitive advantage, and wants projects to deliver tangible outputs directly addressing market needs. The combination of these different priorities can complicate a harmonious collaboration process by requiring academic research to be aligned with industry expectations, while at the same time requiring industry to accept the academic world's long-term and basic research-oriented approach.
- **Financing and Resource Management:** Financing and resource management is critical to ensure the sustainability of projects. Finding the financial resources required for the long-term continuation of the application and effectively

managing the budget provided stands out as one of the challenging areas of cooperation processes. High budgets are generally required for the realization of projects, which requires the proper use of limited resources, keeping costs under control and managing project costs effectively. Especially the sustainability of the funds received from public and private sector sources is seen as a fundamental requirement for the success of the implementation.

- **Confidentiality and Intellectual Property Rights:** Confidentiality and intellectual property rights are elements that require a delicate balance in academic and industrial cooperation processes. Academics may be concerned about the confidentiality of the projects and inventions they develop; the protection of the intellectual property rights of these studies is very important for the academic community. On the industrial side, the aim is to commercialize these inventions and provide competitive advantage. However, when the protection of inventions and confidentiality rules need to be followed, cooperation processes can become complicated. This situation requires detailed agreements to be made to protect the rights of the parties and to ensure that the cooperation is carried out smoothly by creating trust between both academics and industrial partners.
- **Evaluation and Monitoring:** Evaluation and monitoring processes are critical to understand the effectiveness of the Academician R&D Catalogue and the success level of collaborations. For this purpose, it is necessary to determine appropriate criteria to evaluate the impact of collaborations and the suitability of the catalogue for its purpose. An effective monitoring process enables regular follow-up of the catalogue's utilization rate, its contribution to the industry and the success rate of the projects. However, in order for these processes to be carried out efficiently, monitoring and evaluation mechanisms need to be effectively established and updated with regular feedback.
  - ***Solutions Implemented:***

Here are strategies on how the challenges faced by a practice such as the Academician R&D Catalogue can be successfully addressed:

- **Data Collection and Update**
  - **Automatic Update Systems:** Software is used to automatically update the data of academic projects and inventions.
  - **Regular Feedback:** Receiving regular feedback from academicians and industrial organizations can increase the accuracy and timeliness of the data. Therefore, the timeliness of the data is questioned in every catalogue study.
- **Communication and Coordination**
  - **Joint Working Groups:** Communication is increased by establishing joint working groups consisting of university and industry representatives.
  - **Regular Meetings and Events:** Organizing regular meetings and events between the two parties can help to strengthen relations.
- **Awareness Raising:**
  - **Promotional Activities:** Organizing promotional meetings highlighting the benefits of the catalogue makes it easier to reach the target audience.
  - **Training Programmes:** Offering training programmes for users encourages effective use of the catalogue.

- **Harmonization of Different Objectives:**
  - **Developing Joint Projects:** Harmonization can be achieved by developing joint projects involving both academic and industrial target groups.
  - **Flexible Collaboration Models:** Providing flexible models in the cooperation process can respond to the needs of both parties.
- **Financing and Resource Management:**
  - **Cooperation with Supporting Organizations:** Financing sources can be found by cooperating with public institutions, foundations and the private sector.
  - **Project-Based Financing:** Special financing models can be developed for specific projects.
- **Confidentiality and Intellectual Property Rights:**
  - **Contracts and Agreements:** Contracts clarifying confidentiality and intellectual property issues can be prepared prior to cooperation.
  - **Information Sharing Policies:** Clear policies regulating information sharing between the parties are established.
- **Evaluation and Monitoring**:
  - **Feedback Mechanisms:** The effectiveness of the catalogue can be continuously evaluated with the feedback received from users.

1.7. Lessons Learned / adoption guidelines:

- ***Best Practices:***

One of the most effective strategies contributing to the success of the Academic R&D Catalogue developed by KTU TTC is the creation of the catalogue with detailed analyses to understand the specific R&D needs of industrial enterprises. It offers a systematic approach that directly matches the specific R&D needs of industrial organizations with academic expertise. The catalogue functions as a powerful knowledge transfer tool that makes university-industry cooperation more efficient by quickly identifying the right academic partners. In addition, in order to accelerate the process of transforming R&D projects into commercial value, it both makes the know-how of academics visible and offers solutions with high innovation potential to industrialists. This application, which analyses the needs of the parties in detail throughout the process, enables the establishment of strategic collaborations and paves the way for the development of innovative projects that will contribute to the national economy.

The catalogue has a wide information base including the fields of expertise, projects, publications and technical infrastructure of academicians within KTU. Regularly updating this database and presenting it in a format that industrial organizations can easily access is another strategy that contributes to the success of the application. Thanks to the large and up-to-date database, industrial organizations were able to access the right experts and establish effective collaborations.

- ***Recommendations:***

The following strategic steps and recommendations can be considered for practice:

- **Needs Analysis:** Information is collected about the business model, existing technology infrastructure and R&D strategies of the contacted company. In this step, technological trends, sectoral innovation needs and competition conditions that stand out in the field in which the company operates are emphasised. The short, medium and long term targets of industrial organizations are determined and it is revealed in which areas they need innovative solutions. The technical problems faced by the company are detailed and specific needs requiring R&D are determined.
- **Creating a Database:** In line with the specific needs of the company, a detailed database containing the projects carried out by academicians, their patents, areas of expertise and previous achievements should be created. This database enables industrial organizations to quickly find suitable academicians and projects according to their needs. Carrying out this process, which is currently carried out in the form of computer and network storage, through a digital platform will facilitate the process.
- **Encouraging Academic and Industrial Collaboration:** Meetings, workshops and promotional activities should be organized to encourage both academics and industrial organizations to collaborate. Demonstrating that academic know-how can add value to industry makes collaborations more attractive. In addition, sharing success stories describing the commercial benefits of this process can create more collaboration opportunities.
- **Utilization of Government Supports and Funds:** Benefiting from government support programmes for R&D collaborations should be encouraged. Supports offered by institutions such as TÜBİTAK and KOSGEB, which provide public support funds, contribute to the financing of projects and contribute to making collaborations more sustainable. By introducing these incentives to both industrialists and academics, projects can be realized rapidly.
- **Mentoring and Support Mechanisms:** Support should be provided in project management, technology transfer and commercialization by providing mentoring and consultancy services for both academics and industrialists. This will help overcome the difficulties encountered in collaboration processes and ensure the successful commercialization of projects.
- **Success Tracking System:** A monitoring and evaluation mechanism should be established to measure the success of the implementation and make continuous improvements. The results of the collaborations should be analyzed, success stories should be shared and strategies should be developed to make the process more effective.

- These steps provide a strong foundation for building a successful academic-industry collaboration model and implementing technology transfer more effectively.

1.8. Future Outlook:

- ***Next Steps:***

Many Academician R&D Catalogues created over the years can be grouped and combined sectorally. Afterwards, these catalogues created on a sectoral basis can be sent to companies without waiting for companies to request them. Thus, industrial organizations are directly informed about the current research projects at the university and the new solution opportunities offered by academics, so that cooperation opportunities can be evaluated earlier.

In addition, digitalization of the database in the catalogue and strengthening it with artificial intelligence-supported matching systems can enable industrial organizations to quickly access the most suitable academics and projects for their needs. Such digital tools can make collaboration processes more efficient, reduce time loss and encourage more project production.

In the future, it may also be aimed to expand the scope of the catalogue and ensure stronger integration with regional innovation ecosystems. Such strategic expansions would also include international collaborations, enabling both local industry and academia to participate in global innovation networks. Thus, the impact of implementation can go beyond contributing to economic growth at the national level and accelerate integration into the global innovation ecosystem.

- ***Potential Impact:***

The long-term effects of good practices such as the Academician R&D Catalogue developed by KTU TTC on the wider technology transfer ecosystem can be profound and multifaceted. The main impacts that such a practice can create in the long term are as follows:

- **Deepening University-Industry Cooperation:** The Academic R&D Catalogue acts as a bridge between universities and industrial organizations, increasing the interactions between these two actors. These continuous interactions enable faster and more effective commercialization of academic knowledge, which in turn strengthens sustainable collaborations in the long term.
- **Increased National Innovation Capacity:** Closer and more efficient collaboration between industry and universities will directly increase the innovation capacity of the country. By
  conducting more applied research in co-operation with industrialists, academics will contribute to the development of products and services that are highly competitive in national and international markets. This will help Türkiye to rise in the innovation rankings and strengthen the technology transfer ecosystem.

- **Increase in Start-up and Spin-off Companies:** Commercialization of academic research will encourage more entrepreneurial-minded academics and students within the university. The potential commercial success of the projects in the catalogue may lead to more spin-off and start-up companies. This may enrich the technology transfer ecosystem by increasing the number of technology-based initiatives.
- **Contribution to Regional and National Economic Growth:** With the spread of good practice, more local and regional industrial organizations can increase their R&D capacity by providing access to academic knowledge. This encourages technological development not only in big cities but also in smaller industrial regions, which contributes to a more balanced economic growth.
- **Increased International Collaboration:** In the long term, a successful technology transfer model such as the Catalogue can attract international attention and enable foreign industrial organizations to collaborate with Turkish universities. Thus, Türkiye can integrate more strongly into global innovation networks and benefit from international flows of knowledge and technology.
- **Impact on Policy and Strategy Developments:** The success of the Academician R&D Catalogue can serve as a model for shaping policies on technology transfer and state-supported R&D incentives. The positive results of the application may inspire the government to invest more in the technology transfer ecosystem and to implement new incentive programmes. This also supports the construction of an innovation-oriented economy.

In the long term, the impact of practices such as the Academician R&D Catalogue can contribute to a more sustainable innovation culture by contributing to a stronger part of not only Türkiye but also the global technology transfer ecosystem.

1.9. Contact Information:

For more detailed information about the Academic R&D Catalogue application, KTU TTC University Industry Cooperation Module experts can be contacted directly. Contact information to communicate with experts;

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1.10. Acknowledgments:

The Academician R&D Catalogue application developed by KTU TTC has played a major role in the development of cooperation between industrial enterprises and academicians in the national arena. In this process, which brings together the needs of the industrial world with academic knowledge, the feedback of industry representatives, the innovative projects of academicians and the devoted work of the KTU TTC team, which shapes the strategic vision of university-industry cooperation, are of critical importance. In addition, government support programmes and the cooperation of stakeholders contributing to the regional innovation ecosystem have enabled this application to have a wider impact.

2. 2nd of good practice of TT process:

TÜBİTAK 1702 - Patent Based Technology Transfer Support Programme

2.1. Introduction:

- ***Background:***

TÜBİTAK's 1702 – Patent Based Technology Transfer Support Programme was formed to ensure the transfer of patented technologies developed in universities, research institutions, technology development zones and technology transfer offices in Türkiye to industry. This support encourages the commercialization of patented technologies and the transfer of innovative products or processes to industry. Within the scope of the support, the adaptation of domestic and innovative patents to industry is facilitated, a bridge is established between the technological needs of industry and the outputs of academic research, and technologies protected by national and international patents are transformed into economic value through licensing or transfer agreements.

As companies in Türkiye are able to adapt to dynamic market conditions and higher education institutions create a market for patented technologies resulting from research and development activities in the academic world, TÜBİTAK (The Scientific and Technological Research Council of Türkiye) has established a national funding source within the scope of 'Innovation Support Programmes'.

The Patent Licensing Programme is a unique programme with state incentives in terms of reimbursing the licensing fee to the licensor with an incentive rate of 75%, determining the economic value of patents, managing patent valuation processes, contributing to cooperation by bringing academia and industry together and ensuring the commercialization of protected ideas.

- ***Objective:***

1702 - Patent Based Technology Transfer Support Programme aims to ensure the transfer of patented technologies developed in universities, research institutions and technology development zones to industry and to support the commercialization of these technologies. The programme aims to contribute to the creation of economic value by bringing innovative solutions obtained as a result of academic research together with industry.

The main success criteria aimed to be achieved with 1702;

- Facilitating the transfer of technologies developed by higher education institutions, research infrastructures, public institutions, public research centers and institutes and early-stage technology companies to industry to be transformed into products, services and processes with high added value,
- Ensuring that companies operating in high technology sectors benefit from the know-how of the above-mentioned organizations,

- Developing holistic solutions required by the industry by bringing together the technologies emerging from research, development and innovation projects carried out by different stakeholders with public resources,
- Ensuring the sustainability of technology transfer centres.

In patent licensing processes in Türkiye, there are various barriers between technology developers and companies wishing to use the technology. Technology developers have difficulty in accurately determining the economic value of their inventions, which creates uncertainty in assessing the commercial potential of patented technologies. This uncertainty also poses a challenge for companies aiming to utilize the technology. In addition to technical risks such as industrial applicability of patented knowledge, market fit and product demand, companies face financial uncertainties regarding these technologies. These factors cause companies to be reluctant to invest and investments are considered risky.

These risks and uncertainties limit the amount of investments in patented technologies and slow down patent licensing processes. Information asymmetry reduces the interest of investors and companies in patented technologies, leading to a lack of resources in the patent and technology development ecosystem in Türkiye.

However, the programme aims to reduce barriers to knowledge and technology transfer through support mechanisms for organizations aiming to commercialize patent-protected technologies. By bridging the gap between technology developers and industry, the programme aims to eliminate the uncertainties encountered in the process of adaptation of patented technologies to industry.

2.2. Good practice overview:

- ***Description:***

The Patent Licensing Programme supports the projects submitted to TUBITAK by client organizations, regardless of sector and scale, in order to license or transfer patents from technology provider organizations, which are found to meet the programme evaluation criteria.

The cooperation for the patents to be licensed or transferred within the scope of the call is carried out between **the Technology Provider Institution** (Higher education institution, research infrastructure, public institution, public research centre/institute, technology transfer office and the institution that transfers the patents and protected technologies to the client institution through licensing or transfer within the framework of the technology transfer agreement) and the **Client Institution** (A Türkiye-based capital company aiming to produce and/or develop products/processes/services by licensing or transferring the technologies protected by national and/or international patents to which the technology provider institution(s) are entitled and which are protected by national and/or international patents within the framework of a technology transfer agreement) based on a technology transfer agreement. The call programme has been made open for continuous application as of 2022.

Patent Licensing Programme Support Content,

- Expenditures and expenses related to licensing or transfer methods and service purchases made from the technology provider for licensing
- Concept validation, prototype development and test-analysis service procurements to be made by the client organization from the technology provider organization for the implementation of the transferred technology
- Technology valuation service purchases related to patents to be licensed or transferred

Special conditions for application,

- It is essential that the patents to be transferred or licensed to the Client Organization are registered.
- In case of application to the programme with patents that have not yet been registered, support is provided for the transfer or licence fees after the registration of these patents.
- Patents to be licensed or transferred by the Technology Provider Institution to the Client Institution must have a minimum protection period of 10 years as of the project application date.
- The right owner of the patents to be transferred or licensed to the client organization must be the technology provider organization.
- The analysis regarding the valuation of the patents to be licensed or transferred must be submitted in the annex of the project proposal.
- One organization that meets the definition of client organization and at least one organization that meets the definition of technology provider organization can apply to this Call as a partner. More than one technology provider organization can be a project partner.
- There cannot be more than one client organization in the application.

- ***Achievements:***

According to the Global Innovation Index* 2020 data, Türkiye ranked 51st globally in terms of innovation capacity. In this evaluation, it has been determined that patented technologies created by higher education institutions in our country cannot be commercialized at the desired level. While the ratio of the number of licensing agreements made annually to the number of patent applications in universities and federal research laboratories in the USA varies between 40% and 50%, this ratio was 5% on average between 2015-2020 in 30 universities supported within the framework of TÜBİTAK Technology Transfer Offices Support Programme in our country.

Türkiye's increasing private sector and government research and development expenditures with a focus on innovation-based growth increases the number of innovative projects in the technology transfer ecosystem, supports start-ups and entrepreneurship, and encourages the realization of new ideas. Collaborations with foreign universities and research institutions enable knowledge and technology transfer, while the adoption of new technologies strengthens TT dynamics.

The Global Innovation Index 2024, prepared by WIPO, analyses the innovation ecosystem performance of 133 economies and reveals the world's most innovative economies while tracking the latest global innovation trends. Thanks to the support mechanisms developed in line with Türkiye's innovative growth targets, Türkiye ranked 3rd in the ranking of upper-middle income economies and has been ranked as a rapidly developing country since 2013**.

According to the index, Türkiye rose from 5th to 1st place in the trademarks indicator, from 4th to 1st place in the design indicator, from 11th to 9th place in the utility model indicator, and from 60th to 55th place in the ratio of intellectual property revenues to total trade indicator.

In the 'Türkiye's Patent Report' published by 'Patent Effect' every year, Türkiye's patent champion companies and universities, patent trends according to 20 different technology segments, patent and investment performances of patented startups, commercialization achievements of universities, performances of patent attorney companies and performances of patented startups in technoparks are analysed up-to-date. This report also covers the contributions of the 1702 programme to the ecosystem. According to the Türkiye Patent Report data published every year in our country in order to observe the place of TÜBİTAK 1702 Programme in the technology transfer ecosystem in depth, which was published in the last quarter of 2019, the commercialization data after the call period has started a significant increase compared to the pre-support period. The number of commercialization of patents licensed and transferred by universities before the call period reached figures never seen in the past, reaching 33 in 2019, 59 in 2020 and 70 in 2023.

It has been determined that the ratio of patent applications of universities and research centres in total applications (according to the date of first publication) in Türkiye will be 11% in 2023 (TR-Patent-Report-2023.pdf). When the patent applications of universities and research centres are analyzed according to their first publication dates, it is seen that there is a 3% increase in patent applications published in 2023 compared to the previous year. According to Türkiye's Patent Report 2023 data, it is seen that the significant increase in the number of commercialization in 2020, 2021 and 2022 is due to the '1702 Patent License call' implemented by TÜBİTAK in 2022.

*Annual ranking of countries according to their innovation capacity and success in innovation, published by the World Intellectual Property Organization (WIPO).

** https://www.wipo.int/web-publications/global-innovation-index-2024/en/gii-2024-at-a-glance.html

- ***Source:***

The 1702 Patent Licensing Programme has a state-funded grant mechanism and the programme authority in Türkiye is TÜBİTAK.

It has been assessed that knowledge and technology transfer processes can be facilitated with the support to be provided to organizations aiming to turn patent-protected technologies into practice. This issue was also included in the 11th Development Plan of Türkiye and in the policy measure numbered '351.3', it was targeted to 'transfer patent-protected technologies resulting from R&D and innovation projects to companies located in Türkiye through licensing or transfer'. Accordingly, within the framework of TUBITAK Innovation Support Programme, a call was launched with the code 1702 Patent Licence-2022-1 and titled 'Patent-Based Technology Transfer Support Call'.

2.3. Partnerships:

- ***Stakeholders Involved:***

1702 Patent Licence Programme's process management (application, eligibility, evaluation, monitoring, call closure) is carried out by TÜBİTAK as the competent authority. The patent licence programme has been adopted by each actor of the technology transfer ecosystem and included in the business process management. Awareness-raising and dissemination activities regarding the programme and the support offered throughout the country were carried out by universities, technology transfer centres, technology development zones, patent attorney firms, start-ups, companies and governmental institutions in the patent ecosystem.

All technology transfer actors benefiting from the licensing programme have participated in the support programme with various outputs such as licensing their patented technologies, evaluating the licensed technologies in production processes, preparation of patent valuation reports, bilateral cooperation negotiations.

The relevant actors are included in the programme as follows;

<u>Technology provider organization:</u> Higher education institution, research infrastructure, public institution, public research centre/institute, technology transfer office or capital company operating in a technology development zone, which transfers the technologies protected by patents/patents to the client organization by licensing or transfer within the framework of a technology transfer agreement.

<u>Client Organization:</u> A capital company resident in Türkiye that aims to produce and/or develop products/processes/services by licensing or transferring the technologies protected by national and/or international patents to which the technology provider organization(s) has rights within the framework of the technology transfer agreement.

- ***Role of Each Partner:***

Private equity companies that meet the definition of client organizations and higher education institutions, research infrastructures, public institutions, public research centres/institutes, technology transfer offices or private equity companies operating in technology development zones that meet the definition of technology provider organizations can submit project proposals under this Call. Within the scope of the Call, joint applications of a Client Organization and at least one Technology Provider Organization are accepted.

While Technology Provider Organizations have an instrument to develop a commercialization strategy for their patented technologies resulting from their R&D activities, Client Organizations have a support mechanism to evaluate patent-protected technologies whose net value is uncertain and which are at risky technology readiness levels for technical and financial investment.

2.4. Process:

- ***TT process methodology:***
  - **Bilateral Meeting and Negotiation Process between the Client Organization and the Technology Provider Organization:** Bilateral cooperation meetings are held between the parties for the licensing processes of patented technologies.
  - **Patent Valuation:** Services can be obtained for the valuation of patents to be licensed or transferred within the scope of the project, or applicants can prepare a valuation report on these technologies themselves.
  - **Technology transfer agreement:** A contract signed between the technology provider organization and the client organization, submitted to TUBITAK as an annex to the project application, is prepared and signed by the parties on issues such as the description of the project, the responsibilities of the parties, the use or transfer of intellectual property rights, the resolution of legal disputes, and the provisions regarding the issues not regulated in the Innovation Support Programme Implementation Principles Directive and related legislation.
  - **Patent Licence Project Application:** Within the scope of the call, which is open throughout the year, joint applications of a Client Organization and at least one Technology Provider Organization are made through the TÜBİTAK online system.
  - **TÜBİTAK Evaluation:** TÜBİTAK evaluates the project regarding the technology to be licensed according to the R&D content, technology level, innovative aspect, infrastructure suitability of the client organization, transformation of outputs into economic benefit and national gain, and the evaluation results are notified to the parties.
  - **Project Management Processes:** The project management process is initiated by signing the contracts of the projects accepted by TÜBİTAK.

Payments for licensing are made to the account of the Client Organization based on the period reports regarding the activities completed by the Client Organization during the project.

- **Licence (Partial Licence, Full Licence) - Transfer Processes:** The Client Organization may acquire patent-protected technologies to which the Technology Provider Organization is entitled through partial licence, full licence or transfer. Within the scope of the Licence Programme, the licence fee to be paid to the Client Organization is determined as a result of patent valuation and paid to the Client Organization in the periods determined by TÜBİTAK.
- **Monitoring Process:** The projects supported within the framework of the call are monitored by TÜBİTAK throughout the project implementation period. The works carried out within the scope of the project, the progress of the project according to the envisaged target, the client organization's technology transfer agreement with the technology provider organization.

- ***Key Milestones:***

The patent licence programme is updated in line with the demands of the sector according to the version it was first published.

While only registered technologies were included in the first call prepared within the scope of the Patent Licence programme, this process has been improved in the new call period. Now, the application process is carried out for patents for which a research report is obtained within the scope of the licence call. In the new period, the call programme is open for application throughout the year and collects requests without any deadline.

Technology valuation service purchases related to patents to be licensed or transferred within the scope of the call have been included in the scope of support.

Since 2022, within the scope of the call programme, which has been in practice in Türkiye, additional supports have been added in subsequent call periods as follows, and these additional supports have indirectly contributed to studies in related fields;

- In cases where the Client Organization operates in high technology sectors published by TÜBİTAK or the licensed patent includes one of the high technology IPC classes, 15% is added to the support rates.
- If the technology transfer within the scope of the project contributes to the targets in the action areas determined within the framework of the Green Deal, 15% is added to the support rate.
- For patents registered before EPO, JPO, KIPO, CNIPA or USPTO, 10% is added to the support rate.
- If the Client Organization licenses or takes over at least two patents from one or more technology provider organizations, 10% is added to the support rate.

- ***Innovation:***

The programme is designed with an innovative approach to ensure that patented technologies are converted into economic value. By facilitating the direct transfer of knowledge and technology between technology developers and industry, the programme reduces information asymmetry and minimizes uncertainty for potential investors. By addressing patent valuation processes in a systematic framework, it enables the commercial potential of inventions to be determined more accurately and reliably. In addition, by covering 60% to 75% of the licensing fee, the financial risks related to technology transfer are minimized, thus enabling the commercialization of patented technologies and the achievement of these objectives by organizations aiming to turn patent-protected technologies into practice. These innovations offered by the programme support the rapid introduction of knowledge-based technological products to industry and the creation of a sustainable innovation ecosystem.

Patent License Support implemented in our country is not implemented in any country at the global level. Within the scope of patent support programs, it has been observed that the support elements in other countries are limited to patent application processes and reward programs linked to registration.

2.5. Outcomes:

- ***Impact on Stakeholders:***

The support rate of 75% for SME-scale client organizations and 60% for large-scale client organizations is applied to the technology valuation service procurement expenses related to the patents to be licensed or transferred within the scope of the project, and to the service procurement expenses related to the concept validation, prototype development and test-analysis works to be performed by the client organization from the technology provider organization in order to put the licensed or transferred patents into practice. The upper limit of the Patent Licensing Programme project budget is 4.000.000 TL. These support elements have an incentive effect on Client Organizations and technology provider organizations in patent licensing processes and have created an increase in the conversion of patent-protected technologies into practice and in the rates of commercialization.

- ***Innovation Diffusion:***

The TÜBİTAK 1702 Patent Licensing Programme, which was launched in May 2020 to close the commercialization gap of the ecosystem, was enthusiastically welcomed by the stakeholders of the technology transfer ecosystem as it has a non-refundable grant structure.

In Türkiye, with the Industrial Property Law No. 6769, higher education institutions can have rights on inventions resulting from scientific research conducted within their own bodies, which has increased the number of participants in the commercialization ecosystem. In addition, companies in need of new technologies to bring their products to the market faster were looking for patented technology, but the lack of realistic valuation methods for licensing or financial risk aversion caused them to stay away from the process.

Since the following expenses can be supported by TÜBİTAK within the scope of the relevant Programme, there has been an increase in the actions of the relevant stakeholders to acquire technology through licensing or transfer methods by applying the programme.

- Expenditures and expenses related to the service purchases to be made by the client organization from the technology provider organization for the acquisition of technologies protected by patents or patents that meet the conditions specified in the call announcement and to which the technology provider organization is entitled, through licensing or transfer methods,
- Concept validation, prototype development and test-analysis service procurements to be made by the client organization from the technology provider organization for the implementation of the transferred technology
- Technology valuation service purchases related to patents to be licensed or transferred within the scope of the project

- ***Ecosystem Implications:***

In Türkiye, with the Industrial Property Law No. 6769 dated 22/12/2016, higher education institutions can have rights on inventions resulting from scientific research conducted within their own organization. One of the reasons for this regulation is that higher education institutions can generate income from intellectual property rights to ensure the continuity of research and development activities. With the development of interface structures that can reveal the economic potential of the technologies produced, a market has started to emerge from the patents of research institutions. The relevant programme has contributed to higher education institutions to generate income from patented technologies owned by higher education institutions.

In order to adapt to dynamic market conditions, companies need to continuously develop new competences and update their existing competences. The licensing of technologies developed in research institutions contributes to companies commercializing their own technologies more effectively and can also facilitate the development of new technologies. Companies that need new technologies to bring their products to market faster may prefer to licence patented technologies. With the support of the relevant programme, it is observed that companies that can add patented technologies to their know-how through licensing can bring their products to the market faster than their competitors.

On the other hand, there are various factors that prevent companies from licensing technologies developed in other research institutions. One of the important reasons preventing the commercialization of patented technologies is information asymmetry. In this context, technology developers cannot fully determine the value of their inventions, while companies that want to use the technology find the investment risky due to technical and financial uncertainties. Since investments in patented technologies are considered risky due to information asymmetry, sufficient resources are not allocated to this field. The valuation service support offered within the scope of the relevant programme eliminates the uncertainties of companies and facilitates their decision-making processes by determining the exact value of inventions.

It has been assessed that the support provided to organizations aiming to transform patent-protected technologies into practice improves, facilitates and increases the processes of knowledge and technology transfer.

2.6. Challenges Overcome:

- ***Key Barriers:***
    - The low number of applications made in the first periods due to the fact that the programme rules or the content of the support were not fully understood by the target group after the launch of the programme as a completely new support mechanism in 2022,
    - Bureaucratic process complexities encountered during the implementation of the projects entitled to receive support in the first periods due to the fact that the programme is a completely new concept for everyone,
    - Lack of platforms where the Client Organization and technology provider organizations can cooperate and bring the parties together,
    - Disputes/appeals that may arise after the patent valuation envisaged by the technology provider organization and the valuation results obtained from the expert company may differ

- ***Solutions Implemented:***
    - The Technology Transfer Mechanisms Support Group of TÜBİTAK Technology and Innovation Support Programmes Directorate (TEYDEB), which is responsible for the implementation of the programme, carried out intensive awareness-raising activities to eliminate the uncertainties and lack of information after the first call period, prepared publications with clear answers to all questions raised by the target group, and elaborated the programme regulations.
    - Structures such as TTOs acted as an interface and managed the support process to bring the parties of the client organization and technology provider organizations together and to cooperate.
    - The contract signed between the technology provider organization and the client organization at the very beginning of the process and submitted to TÜBİTAK as an annex to the project application, which sets out the provisions regarding issues not regulated in the Innovation Support Programme Implementation Principles Directive and related legislation, such as the description of the project, the responsibilities of the parties, the use or

transfer of intellectual property rights, and the resolution of legal disputes, has clarified many uncertainties at the very beginning of the process.

- The inclusion of the patent valuation service fee in the programme support items is one of the most important elements that creates value in terms of future market forecasting by eliminating financial uncertainties for the parties. The fact that the incentive programme, which enables cooperation between the parties, is provided by the state institution in the form of a non-refundable grant quickly attracts the parties to the process.

2.7. Lessons Learned / adoption guidelines:

- ***Best Practices:***
  - Incentive programme has a government based structure
  - Inclusion of patent valuation expenditures in project support limits
  - 60% or more of the licence fee is paid by the state institution
  - Technology transfer agreement: The agreement, which is signed between the technology provider and the client organization at the very beginning of the process and submitted to TUBITAK as an annex to the project application, defines the description of the project, the responsibilities of the parties, the use or transfer of intellectual property rights, and the resolution of legal disputes, and sets out the provisions on issues not regulated in the Innovation Support Programme Implementation Principles Directive and related legislation.
  - It is planned to support the projects submitted by all client organizations to TÜBİTAK to license or take over the patents of technology provider organizations, regardless of sector and scale.
  - The fact that the support rate will increase in cases where the client organization is at the SME scale, the licensed or acquired patent is in the specified high technology fields or the client organization operates in the specified high technology sectors, the technology transfer within the scope of the project contributes to the targets in the action areas envisaged in the Green Deal, the patent is registered in the United States of America, the European Union, Japan, South Korea or the People's Republic of China, and more than one patent is licensed or transferred within the scope of the project.

- ***Recommendations:***

It was assessed that knowledge and technology transfer processes could be facilitated with the support to be provided to organizations aiming to turn patent-protected technologies into practice. This issue was also included in the 11th Development Plan of Türkiye and in the policy measure numbered '351.3', it was aimed to 'transfer the technologies protected by patents resulting from R&D and innovation projects to companies located in Türkiye through licensing or transfer'. In this direction, TUBITAK, a subsidiary of the Ministry, launched a call with the code 1702 Patent Licence-2022-1 and the title 'Patent-Based Technology Transfer Support Call' within the framework of the Innovation Support Programme. The relevant support programme is a good practice for countries and their relevant ministries that aim to add value to technologies through licensing/transfer. The programme in question can be created and developed in line with the measures and targets in the state policies, strategies and development plans of other countries.

2.8. Future Outlook:

- ***Next Steps:***

The patent licence programme is being updated in line with the demands of the sector compared to the version it was first published. At the same time, it is possible to develop and update its content in line with the measures and targets included in Türkiye's state policies, strategies and development plans. It is expected that the number of applications to the call will increase in the coming periods thanks to innovative approaches that can be developed in line with the needs and requirements arising in the ecosystem. In addition, with the support to be provided to organizations aiming to transform patent-protected technologies into practice in Türkiye, it is evaluated that the processes of knowledge and technology transfer will become easier and the processes will gain speed.

- ***Potential Impact:***

The impacts targeted to be achieved in the medium and long term with the projects supported by this Call are as follows.

  - Facilitating the transfer of technologies developed by higher education institutions, research infrastructures, public institutions, public research centres and institutes and early-stage technology companies to industry to be transformed into products, services and processes with high added value,
  - Ensuring that companies operating in high technology sectors benefit from the know-how of the above-mentioned organizations,
  - Developing holistic solutions required by the industry by bringing together the technologies emerging from research, development and innovation projects carried out by different stakeholders with public resources,
  - Ensuring the sustainability of technology transfer offices.

2.9. Contact Information:

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