IMAGERY INTELLIGENCE TECHNOLOGY FORESIGHT AND MODELING OF MOBILE APPLICATIONS IN THE DEFENSE INDUSTRY

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ABSTRACT

IMAGERY INTELLIGENCE TECHNOLOGY FORESIGHT AND MODELING OF MOBILE APPLICATIONS IN THE DEFENSE INDUSTRY

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Identifying the threats and impacts of an operation field requires continuous planning and emphasizes the importance of intelligence. With the development of electronic systems that support the military decision-making process increases in number, today long- time and high- risk discovery and surveillance operations are performed faster and safer. Therefore, developing technology policies to augment defense- technology research is a crucial step. Reorganization movements, management measures and operational procedures should be in harmony with government objectives. Supporting R&D activities and developing an independent national information infrastructure are required in order to be able to generate strategic plans to support domestic and national production. In this study, imaging intelligence technology foresight of mobile applications in the defense industry has been examined with Delphi Technique. It was aimed to have a consensus of different opinions by directing sequential questionnaire to the experts. As the result of the analysis, short, medium and long-term strategic decisions and strategic target proposals that take the defense industry needs into account are listed. As an example, a roadmap and policy recommendations have been

prepared for the selected strategic target. The impact analysis model proposal is mentioned in order to see how much of the roadmap has been realized. Panoramic mobile application, which is developed as a model, provides an alternative to reconnaissance and surveillance systems as it provides wide-angle field imaging. It is believed that this study will greatly contribute to information intelligence constituent of information warfare technologies that find a place in the technology tree of Vision 2023.

Keywords: Defense Technology Foresight, Science and Technology Policy, Imagery Intelligence, Panoramic Mobile Application Development, Defense Industry

ÖZ

SAVUNMA SANAYİNDE MOBİL UYGULAMALARIN GÖRÜNTÜ İSTİHBARAT TEKNOLOJİ ÖNGÖRÜSÜ VE MODELLEMESİ

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Yüksek Lisans, Bilim ve Teknoloji Politikası Çalışmaları

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Operasyon alanındaki etki ve tehditlerin tanımlanması, sürekli planlama gerektirmekte ve istihbaratın önemini vurgulamaktadır. Elektronik sistemlerin gelişmesiyle günümüzde uzun zaman alan ve yüksek risk taşıyan bir takım keşif gözetleme faaliyetleri çok daha kısa sürede ve emniyetli bir şekilde yapılmaktadır. Bu sebeple savunma teknolojileri çalışmalarını arttırmak için teknoloji politikalarının oluşturulması önemli adımlardan biridir. Yeniden yapılanma hareketleri, yönetim tedbirleri ve işletim prosedürleri, devlet hedefleri ile koordine edilmelidir. Stratejik planlamaların yerli ve milli üretime destek verecek şekilde yapılması için Ar-Ge çalışmalarının desteklenmesi ve bağımsız ulusal bilgi altyapısının geliştirilmesi gerekmektedir. Çalışmada savunma sanayinde mobil uygulamaların görüntü istihbarat teknoloji öngörüsü Delphi Tekniği ile incelenmiştir. Uzmanlara ardışık anket soruları yöneltilerek farklı görüşlerin birleştirilmesi hedeflenmiştir. Analiz sonucunda kısa, orta ve uzun vadeli stratejik karar ve savunma sanayi ihtiyaçları göz önüne alınarak belirlenmiş stratejik hedef önerileri listelenmiştir. Örnek olarak seçilen stratejik hedef ile ilgili yol haritası oluşturularak politika önerileri sunulmuştur. Belirlenen yol

haritasının ne kadarının gerçekleştiğini görebilmek için etki analiz model önerisinden bahsedilmiştir. Bir model olarak geliştirilen panoramik mobil uygulama ise, geniş açılı alan görüntüleme imkânı sağlayarak keşif gözetleme sistemlerine alternatif oluşturmaktadır. Yapılan çalışmanın, Vizyon 2023 projesinin kritik teknoloji ağacında bilgi harbi teknolojileri içinde yer alan bilgi istihbaratına katkı sağlayacağı düşünülmektedir.

Anahtar Kelimeler: Savunma Teknolojisi Öngörüsü, Bilim ve Teknoloji Politikaları, Görüntü İstihbarat, Panaromik Mobil Uygulama Geliştirme, Savunma Sanayi

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LIST OF ABBREVIATIONS

AFATDS	Advanced Field Artillery Tactical Data System
ATARS	Advanced Tactical Airborne Reconnaissance System
BİDEB	Scientific Human Resources Support Department
BSTB	Ministry of Science, Industry and Technology
BTYK	The Supreme Council of Science and Technology
C2	Command Control
C4IFTW	Command and Control, Communications, Computers and Intelligence for The Warrior
COA	Course of Action
Complex IPB	Complex Intelligence Preparation of The Battlefield
CSSCS	Combat Service Support Control System
DARPA	Defense Advanced Research Projects Agency
DIKW	The Data, Information, Knowledge and Wisdom
DISN	Defense Information System Network
DMS	Defense Message System
DoD	Department of Defense
DVM	Dalvik Virtual Machine
EU	European Union
EUSC	The European Union Satellite Center
FBCB2	Force XXI Battle Command, and Brigade and Below
FCSB2	Forward Area Air Defense Command, Control, and Intelligence
GPS	Global Positioning System

HASA	High Altitude Signals Intelligence Architecture
HUMINT	Human Intelligence
IMINT	Imagery Intelligence
INTDIV	The Intelligence Division of the European Military Staff
IPB	Intelligence Preparation of The Battlefield
IPRs	Intellectual Property Rights
ISYSCON	Integrated Systems Control
IT	Information Technologies
JITC	Joint Interoperability Test Command
JROC	The Joint Requirements Oversight Council
JTIDS	Joint Tactical Information Distribution
JVM	Java Virtual Machine
KOSGEB	Small and Medium Enterprises Development Organization
MAM	Marmara Research Center
MCS	Maneuver Control System
MDMP	Military Decision Making Process
MEB	Ministry of National Education
MIT	National Intelligence Organization
MSB	Ministry of Defense
NADGE	NATO Air Defense Ground Environment
NATO	North Atlantic Treaty Organization
NDU	The National Defense University
NILE	NATO Improved Link Eleven

NTDL	National Tactical Data Link
OHA	The Open Handset Alliance
OSINT	Open Source Intelligence
OYTEP	Ten Year Procurement Program
PMESII	Political, Military, Economic, Social, Information, and Infrastructure
RMA	Revolution in Military Affairs
SAP	Systems Analysis and Program
SDK	Software Development Kit
SITCEN	The Joint Situation Center
SSL	Secure Socket Layer
SSB	Presidency of Defense Industries
SWOT	Strengths, Weaknesses, Opportunities, Threats
TAF	Turkish Armed Forces
TDL	Tactical Data Links
TOC	Tactical Operations Center
TPE	Turkish Patent Institute
TTB	Technology to Business
TTGV	The Turkish Technology Development Foundation
TÜBA	The Turkish Academy of Sciences
TÜBİTAK	The Scientific and Technological Research Council of Turkey
UAV	Unmanned Aerial Vehicles
UME	National Metrology Institute
USA	United States of America

CHAPTER 1

INTRODUCTION

The Soviet Union claims that Revolution in Military Affairs (RMA) took place during the WWI (World War I) through planes, motorized land vehicles and chemical warfare, while during WWII (World War II) nuclear weapons, missiles and development of computers triggered the revolution. The next transformation will be realized with microelectronics, sensors and involves advances in automatic control systems (Chapman, 2003). It is not enough to have improvement in military issues just. Political, social and economic factors all affect the technological changes and improvements (Galdi, 1995). The continuity of the work depends on government policy, support and budgetary funding. The force multiplier of the established system is increased when the innovative perspective becomes a standard phase. TÜBA (The Turkish Academy of Sciences) - TÜBİTAK (The Scientific and Technological Research Council of Turkey) – TTGV (The Turkish Technology Development Foundation) science-technology-industry discussions platform, universities, private organizations, TÜBİTAK, workshops, seminars and symposiums are examples of organizations that provide support science and technology policy studies in Turkey (TÜBİTAK, 2003).

The aim of the study is set short, medium- and long-term strategic decisions, set strategic targets, create roadmap and policy recommendations based on the strategic target, to present a proposal for impact analysis model and to contribute to reconnaissance and surveillance activities. In addition, the panoramic mobile application, which is developed as a model, offers an alternative to reconnaissance and surveillance systems as it provides wide-angle field imaging.

My research question is “What is the imagery intelligence technology foresight for mobile applications in the defense industry?”

Intelligence activities are invaluable for the accuracy of the tactical picture and the proper coordination of the processes. For the determination of enemy access routes, friendly and enemy fire zones, and for the detection of hiding areas a terrain analysis is essential (Glinton et al., 2004). It is believed that this study will greatly contribute to information intelligence constituent of information warfare technologies that find a place in the technology tree of Vision 2023.

1.1 General Information for Technology Management

Technology development period includes stages like developing ideas, preliminary research, feasibility study, development activities, testing the process and process improvement (Harrison and Samson, 2002). Subphases of technology management model which plan these advances in the frame of the culture of the organization and the needs of the companies and phases to present these new ideas to the management of corporations are summarized in the titles below (Foden and Berends, 2010).

1.1.1 Technology Acquisition

In-house R&D and external cooperation activities are the stages used in technology acquisition (Harrison and Samson, 2002). Improvements of information exchange and application ability as well as development of corporate venture capital and corporate incubators phase are expected. During the Corporate Venture Capital phase, the first step is the investment of big firms in startup initiatives as a sponsor. Subsequently, the aim is to expand by purchasing developing firms. Google’s buying Nest, a firm that produces home automation systems, for $ 3.2 billion can be given as an example. Likewise, Intel’s buying Omek, a firm that works on movement control technology, Indisys, a firm that works on voice recognition systems, and Olaworks startup, a firm that works on computer vision makes Intel more independent and flexible. As for the

Corporate incubators stage, new ideas that are incompatible with the business modal of the companies are assessed and allow them to turn out as new enterprises. Bosh R&D campus formed a startup platform in itself and sealed the company against outward investors. New products that are produced in this platform can be integrated to the current product line and moreover ensure the continuity of innovation studies. The Siemens – Technology to Business (TTB) Center in Berkeley, in order to follow the new technology follows 1200 project annually and supports some of these projects. Keeping abreast of technological innovations, getting information and acquisition external technologies activities are performed by cooperating other R&D institutions. These studies transform the technological innovations into new products and commercialize them (Weiblen and Chesbrough, 2015).

1.1.2 Technology Exploitation

Products, services and the processes that the firms use are expected to enhance the innovation performance of the firms in technology exploitation. Marketing and transfers of new technology supports this progression (Harrison and Samson, 2002). For instance, SAP (Systems Analysis and Program Development) develop fast data processing system HANA database in 2010 in order to enhance performance and in 2012 formed “Startup Focus” platform to help o startup firms to give introduction support introduce the products, training support for product realization, to activate the market give marketing support with HANA platform. SAP aims to spread over to different marketing areas with this approach. Likewise, in 2008 Microsoft reached more than 100,000 usages by issuing free – off –charge software licenses and expand its market (Weiblen and Chesbrough, 2015). Technology transfer requires reorganization of a company. The operating procedure of the main source where the technology is transferred may have different structures from the operating procedures of the area where the technology wanted to be used (Harrison and Samson, 2002).

1.1.3 Technology Identification

In technology identification, data collection about technology and market, benchmarking and maturity assessment is done (Foden and Berends, 2010). So as to reduce uncertainties organization analysis, commercialization analysis, consumer / market analysis and technology analysis are performed. Organization analysis is collecting data on copyright strategies, documentation of inner and external risks, and gathering data about resource requirements. Commercialization analysis involves marketing strategy and supply chain analysis. Consumer/market analysis involves market assessment that shows the customer needs, market size and emulous. Technology analysis involves forming and testing prototypes and models, functional assessment and partnership strategy analysis (Spitsberg et al., 2015).

By evaluating technological opportunities and threats technology foresight is shaped. Strategic decision-making process steps in after the foresight process. As it is shown in the Figure 1 below, to be able to have right decisions the relation of technology, product and market should be evaluated with organizational abilities (Harrison and Samson, 2002). Marketing needs analysis, rapport of core competency, providing technology capability together make new job opportunities available (Spitsberg etal.,2015).

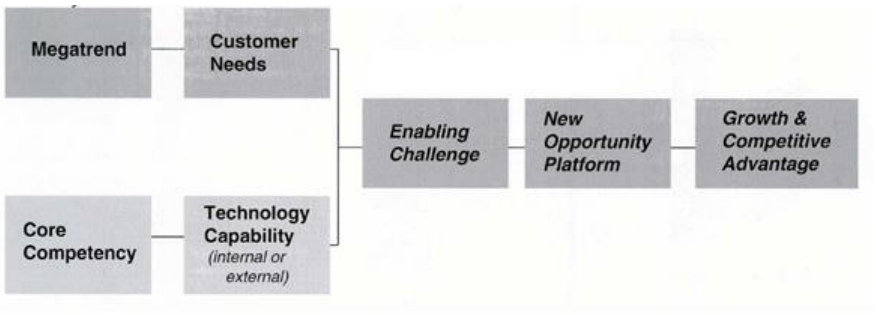


Figure 1 Process of Creating New Business Opportunities

1.1.4 Technology Learning

Learning is a concept related to information management. It is a notion that aims to utilize technological competence (know-how + ability) effectively (Harrison and Samson, 2002). Data is the crude value which represents, acts and concepts that is obtained by combing inner and outer environment. Information is the processed phase of that crude data. Data gain meaning after being categorized and being analyzed statistically. Knowledge is interpretation of information through research, observation or experience. Wisdom is, on the other hand, combination of many knowledge via human mind. It enables predictions for future. The data, information, knowledge and wisdom (DIKW) hierarchy is shown in the Figure 2 below (Hey, 2004). Firms can form a learning organization environment by enabling inside and outside information flow. Basic research, applied research and experimental research form the basis of R&D and innovation activities.

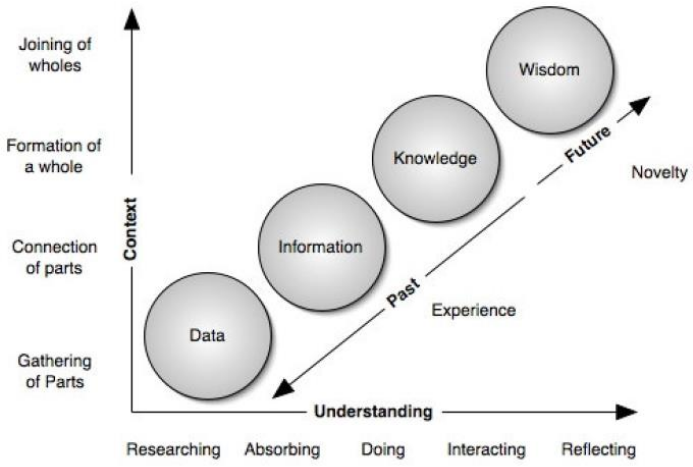


Figure 2 The Data Information Knowledge and Wisdom Hierarchy

When learning becomes a process, organizational change comes naturally. Dissemination of knowledge enables development of know – what, know –how, know – why, and care – why processes.

For the software development process information is a valuable asset. Following the innovation becomes a must because of the continuously changing software technologies. Open innovation is bound to knowledge creation, knowledge sharing and knowledge management. For this reason, information systems help innovation theory. The foundation of open innovation is knowledge creation, communication and commercialization. Knowledge creation modes are shown in Table 1 steps of knowledge creation phases using software technology are summarized in the items below.

Table 1 Knowledge Creation Modes

Knowledge creation-mode	Knowledge creation (from → to)
Socialization	Tacit → tacit
Externalization	Tacit → explicit
Combination	Explicit → explicit
Internalization	Explicit → tacit

1.1.4.1 Socialization

Nonaka explains socialization as transferring tacit information experiences from one person to another. He argues that technical abilities can be gained via observation, imitation and practice, thus without any verbal communication. The dough –kneading machine design is given to illustrate this point.

Socializing in open-source software includes user participation. When any source code is interpreted according to the users' own knowledge, tacit knowledge is formed. Code formation at first does not give all the information of the architecture or algorithm to

the reader. One should have a certain intellectual background in order to interpret this information. The users aid the correction of the mistakes by passing the software mistake over to developers. Developers obtain tacit knowledge during the questioning the reason of the problem.

1.1.4.2 Externalization

Externalization is tacit knowledge's becoming explicit. Explicit knowledge supports collective thinking. Designing Honda and Mazda cars can be given as an example. Dialogues and sharing information enable formation of explicit information. In developing software tacit information's becoming explicit information can be seen more clearly. Team members help the others to reach the information by sharing their own works. Information sharing between software developers occurs when team members share information on subjects interrelated like how an algorithm works or when team members suggests a solution to a problem or when developers explain their own solutions logically. When solutions to a problem presented, the other team members question as to how the proposal mentioned will affect parts of the code, which they have created. This situation illustrates that how much the content of the software is connected to each other. Problems that occur assist to find new solutions. When the software developers encounter a problem during the code writing process sometimes sharing the part of the code they have written with all other team members is not enough to find a solution. When necessary, a small sample or description line should be added to clarify what is intended by the code. It is clear from this example that if a tacit knowledge becomes explicit, it will strengthen the teamwork.

1.1.4.3 Combination

Combination is a reconstruction of existing information. New information spreads as a result of merging, categorizing, or ranking existing information found in written papers such as reports, notes, emails and books.

1.1.4.4 Internalization

Internalization is the step when explicit information becomes tacit. It is based on documentation. According to Nonaka, documentation helps to internalize the information experienced by the individual. Thus, tacit knowledge is formed. Documentation is an important effort in the process of revealing hat is known and understanding what procedures are involved in the work being done. The creation of software test scenarios is an example of this step (Eservel, 2014).

1.1.5 Technology Protection

Technology protection is the protection of technological assets and the intellectual property rights. This precludes the copying and imitation of intellectual capital of a company so the knowledge accumulation cannot be transferred to other companies illegally (Harrison and Samson, 2002). The proportion of intangible assets in the company's capital are increasing. Therefore, they have to be protected (Çakır, 2018). Continuity of national and competitive advantage depends on preservation of core competencies. Thomas Edison summarizes this as: "The secret to creativity is knowing how to hide your sources."

1.1.6. Technology Selection

Technology selection enables organizational business models to make organizational decisions such as manufacture, purchasing and business cooperation. Firms make investment plans after strategic planning and move on to the implementation phase. A wrong decision affects the entire technology management process (Harrison and Samson, 2002).

In the second chapter of the study, intelligence will be explained by giving examples from the world and the world military expenditures will be summarized.

In the third chapter, examples of various communications and reconnaissance and surveillance technologies used in Turkey will be given. Also, the mobile application infrastructure will also be explained.

In the fourth chapter, the panoramic mobile application will be explained in a case study. The preparation stage and the application prototype of the software that provides an alternative to the reconnaissance and surveillance intelligence activities will be mentioned.

In the fifth chapter, the Delphi method used in the defense industry for imagery intelligence technology foresight of mobile applications will be explained, how the sample size of the study is determined and sample selection techniques will be mentioned.

In the sixth chapter, SWOT analysis and Delphi analysis will be explained. Prepared Delphi statements, expertise of Delphi statements and analysis of Delphi results will be evaluated.

The seventh chapter will talk about the short, medium- and long-term strategic decision proposals resulting from the Delphi technique, the strategic target proposals

determined by considering the defense industry needs and the roadmap and policy recommendations prepared by selecting an example from strategic targets.

The eighth chapter will deal with the impact analysis model proposal that is developed to see how much of the planned roadmap is achieved.

In the ninth chapter, results and evaluations of the study will be given. The next section begins with intelligence.

CHAPTER 2

INTELLIGENCE

Collection, evaluation and interpretation of all kinds of data belonging to the theater of operations are included in military intelligence activities. The processing of the obtained crude data makes the information accessible. With the formation of information, analysis, situation judgments and plans are made. In summary, intelligence is the intersection of information and analysis concepts. The threats' becoming predictable and taking precautions accordingly is the result of intelligence activities. Determination of who, how, where, and when to take the measures is also done in the light of the obtained intelligence resources. Intelligence can be classified according to the source obtained.

- Human Intelligence- HUMINT
- Imagery Intelligence- IMINT
- Signals Intelligence- SINGINT
- Open Source Intelligence – OSINT

HUMINT is the intelligence gathering method that the source is human. Field staff, civilians living around the theater of operations, specialists who know the geographical and demographic structure of the theater of operations, and refugees can be given as examples of HUMINT sources. IMINT is information obtained from radar, satellite, aircraft, unmanned aerial vehicles (UAV) and other imaging techniques. IMINT supports human intelligence activities. SIGINT is the capture and analysis of electronic signals belongs to the target. OSINT is information obtained from sources such as TV, newspaper, internet, magazine that everyone can easily reach (Müller, 2005).

2.1 Military Decision Making Process (MDMP)

MDMP is a comprehensive preliminary plan for commanders. MDMP is summarized in this statement: “Within the operations process, planning is the art and science of understanding a situation, envisioning a desired future, and laying out effective ways of bringing about that future” (Army Doctrine Publication 3-0, Unified Land Operations, Oct 11, part 40). According to NATO sources, the MDMP steps are outlined below.

Step-1 Receipt of the mission: Technical experts come together to determine the work steps. Threats and milestones are identified, scenario plans and necessary source analyzes are made. Critical steps for planning are adjusted according to the timeline.

Step-2 Mission analysis: When, how and where the operation will take place is determined according to the threat and risk analysis. Reconnaissance activities (such as maps, field photographs) are the basis for conducting these analyzes. The course of action foreseen via the obtained data are drawn in detail. This step is also supported by the IPB cycle.

Step-3 Alternative course of action- COA: Alternative solutions to problems are produced through various courses of action. These plans should be feasible, acceptable, suitable, distinguishable and complete.

Step-4 Analyzing the course of action: The selected alternative plans examined separately considering the targets and resources. When plans do not meet the specified constraints or when synchronization problems are detected, necessary changes to the plans are made.

Step-5 Comparison of courses of action: The infrastructure of each plan is compared for its positive and negative aspects. The aim is to identify the best planning and create a common vision.

Step-6 Obtaining action approval: Planning is carried out according to the appropriate course of action preferred.

Step-7 Prevention: Support force units are determined for the theater of operation.

Step-8 Military exercise/rehearsal: All scenarios, which can be encountered in the operation, are tested and practiced.

Step-9 Evaluation: Military exercise course is assessed in all aspects, and achievement and failure areas are evaluated. Through the scenarios, threats, communication between command and control units, and situations involving risk are monitored.

Step-10 Action: As a result of all the evaluations, decisions about the theater of operation are taken and applied. The MDMP plan includes the Intelligence Preparation of The Battlefield (IPB) cycle (Knapp, 2016).

2.2 Intelligence Preparation of The Battlefield (IPB)

The IPB analytical model is used by the US to support the military decision-making cycle and to create situational awareness. In this model, the effects of elements such as terrain, enemy, and weather are studied (Carter, 2016). IPB can be evaluated in four steps as shown in the following Figure 3.

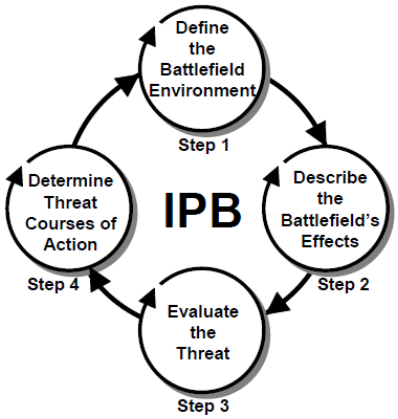


Figure 3 IPB Cycle

Step-1 Define the Battlefield Environment: Friendly and enemy elements in the battlefield are determined. Existing intelligence gaps are being investigated once the boundaries of the area of interest have been identified. To use in throughout all the IPB cycle; the terrain, weather, logistics infrastructure and demographic characteristics are analyzed in detail. The battlefield and the hazard situation information are the primary intelligence requirements.

Step-2 Describe the Battlefield's Effects: The effects of the battlefield on friendly and enemy forces are examined one by one. Geographical features, overlays showing the military aspects and effects of terrain, weather analysis, infrastructure and equipment information are also used in this part.

Step-3 Evaluate the Threat: The effects of the threat on the warfare are assessed. This assessment is also done by considering past intelligence activities. The new threat requires new intelligence work.

Step-4 Determining Threat Courses of Action: Courses of action identify the possible movements of the enemy troops by identifying the opportunities and constraints of the battlefield environment. Precautions are taken by focusing on the situations that threats cannot be prevented.

The outcome of these templates depends on the proper analysis of previous steps. All the cycle mentioned can vary according to the enemy, terrain, unity, mission and the current time (U.S. Government Priming Office, 1994).

2.3 Complex Intelligence Preparation of The Battlefield (Complex IPB)

Complex IPB is a comprehensive framework supporting the IPB cycle for the development of operational plans. The Complex IPB cycle is shown in the following Figure 4. It analyzes the structure of society and its thoughts in six stages. After outlining the theater of operation, “Fitness landscape effects” is determined. “Fitness landscape effects” are determined by PMESII (Political, Military, Economic, Social, Information, and Infrastructure) analysis. The persons in the possible theater of operation are grouped according to their occupation, economic needs, education and family structure, and evaluated whether they will create any threats or not (Morris, 2017). Population structure and culture can be monitored through means such as newspapers, radio, television, etc. (Medby, 2002). As a summary, Complex IPB provides a comprehensive analysis of the theater of operation taking geopolitics and demographics into consideration together (Morris, 2017).

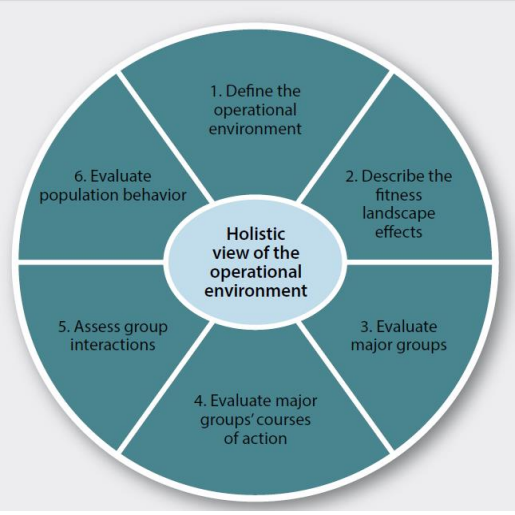


Figure 4 Complex IPB Cycle

IPB provides predictable results against known enemies and traditional war cultures. Use in uncertain and complex environments is not recommended. Karl Popper explains this situation with the likeness of "clouds" and "clocks". The world is divided into two groups as clocks and clouds. Clocks are systematic structures that can be separated into pieces, and repairs can be made on a certain operational area with well-known solutions. Clouds are scattered formations. There is no specific solution, as in the case of clocks, due to their amorphous state. In this study, IPB is compared to clocks and other approaches that focus on environmental systems are likened to clouds. By evaluating these analyzes together, which are used to support the commanders, possible problems can be prevented. Systemic operational design or similar systems theory approaches that focus on environmental systems and provide a more comprehensive view can be used as an alternative to IPB.

Lt. Col. Brigham Mann puts it this way: “In essence, systemic thinkers attempt to ensure the military is doing the right things, which is arguably much more important than just doing things right” (Carter, 2016).

2.4 World Military Expenditures

In the Table 2 below, most cited defense technology research topics are listed by reference numbers. The third place, "Cyber War", is an intensely explored course. This area includes the management and sharing of intelligence / espionage information (Çakır, 2016). For example, USA before declaring war against Iraq in 1992, collapsed the entire telecommunication infrastructure of Iraq by a cyber-attack. With the collapse of the digital communication system, the communication of all Iraqi military units with each other was cut.

Table 2 Most Cited Defense Technology Research Topics

Rank	Most Cited Defense Technology Research Topics
1.	Nanotechnology
2.	Radar
3.	Cyber War
4.	New Material
5.	Unmanned Systems
6.	Mixed / Alternative Energy
7.	Electro-Optical Systems
8.	Simulation Techniques
9.	3-D Printer
10.	Human-Vehicle Interfaces
11.	Engine Technologies
12.	Electronic Monitoring
13.	Direct Energy Weapons
14.	Sensitive Guided Weapons
15.	Kinetic Weapons

Similarly, Israel bombed a construction area 120km from Turkey's border with Syria in 2007. The building was thought to be a nuclear facility and was wiped off the map overnight. Syria has not been able to detect with radar systems that Israeli aircraft entered the airspace, and it was only the morning when the situation was realized. During the moment the incident took place Syrian military authorities watched an immaculate radar image. Israel has sneaked unmanned aerial vehicles into the air defense area of Syria before the attack to create this illusion and sent bad signals to the radar to create malfunction and confusion. At the same time, by installing malware in the computer system that controls that airspace, changed the radar display as desired (Şenkaya and Adar, 2014).

As the end of the Cold War era important weapon producer countries have continued to sell low-priced, high-performance weapons on the international scene to counterbalance their own military spending. These countries have fostered arms for

newly industrialized and developing countries and have prevented these countries from developing independent weapon industry. Although incentives made in the first period have a positive effect on the countries, it is understood that the negative effects are more on the long term. The fact that developing countries depend on foreign resources instead of allocating budget for their own R&D and production costs has an adverse impact on the country's economy. Failure to conduct the necessary researches leads to the failure of developing domestic talents to develop defense technologies. In addition to R&D expenditures, the acquisition of independent technological capability is also required for the development of defense technology capability (Jan, 2005). As shown in Table 3, the United States emerges as the most invested country in militarily technologies to maintain its leadership in defense in the world.

Table 3 World Military Expenditure by Country, in Millions of US$ at Current Prices and Exchange Rates in 2016

Country	US $m
USA	611186
China, P.R.	215176
Russian Federation	69245
Saudi Arabia	63673
India	55923
France	55745
UK	48253
Japan	46126
Germany	41067
Korea, South	36777
Italy	27934
Australia	24617
Brazil	23676
Israel	17977
Canada	15157

Table 3 (continued)

Spain	14893
Turkey	14803
Iran	12685
Algeria	10217
Pakistan	10063

Table 4 shows that Israel maintains its leadership while the United States ranks third in terms of per capita military expenditure in the world.

Table 4 World Military Expenditure per Capita by Country in 2016

Country	**Military Expenditure per Capita US $**
Israel	2193,8
Saudi Arabia	1978,2
USA	1886,2
Australia	1012,7
France	862,4
Korea, South	728,8
Germany	509,3
Russian Federation	483,1
Italy	467,4
Canada	417,8
Japan	365,4
Spain	323,6
Algeria	252,7
Turkey	185,9
Iran	158,4
China, P.R.	155,7

Table 4 (continued)

Brazil	113,0
UK	76,8
Pakistan	52,1
India	42,1

From 1988 to 2016, military expenditure in the world are shown on the Figure 5 below (Stockholm International Peace Research Institute, 2017). Expenditures are seen to increase continually. R & D and innovation activities support this process. The fact that an army has weapons systems does not show that the country has the ability to fight. As Alvin Toffler said: "If you do not have a strategy, you're part of someone else's strategy."

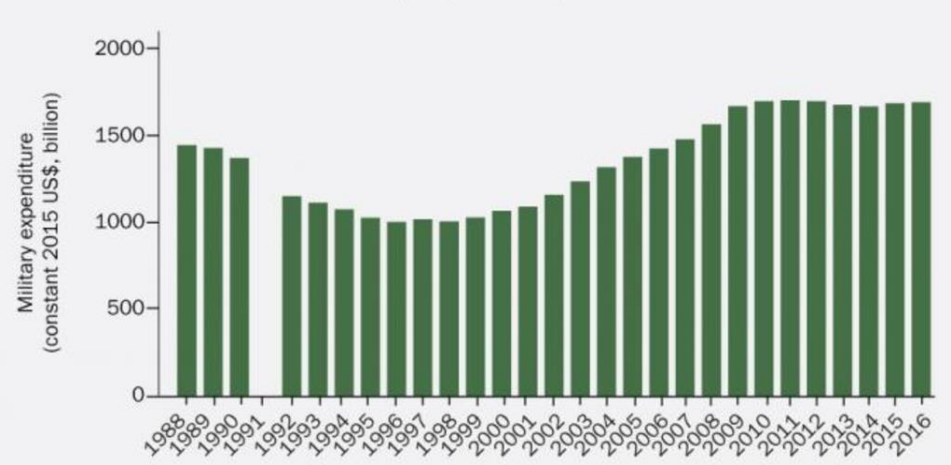


Figure 5 World Military Expenditure, 1988-2016

Weapon systems require a certain military capability and infrastructure. The use of imported weapons creates various integration and speed problems. For this reason, it is difficult to acquire combat effectiveness. The fact that buying foreign equipment is cheaper than producing the equipment domestically makes purchasing rather than production more attractive. But for the lack of strategic plan and technological developments cannot be followed, re-purchasing will always take place. The country

of origin does not use most of the imported systems actively. Purchasing weapons from countries that may threaten national integrity does not eliminate the risks that will come from these countries. In particular, the possibilities of buying faulty equipment increase the level of risk (Jan, 2005). DARPA (Defense Advanced Research Projects Agency), established in 1958 in USA as a response to the Soviet Union's sending the world's first satellite (Sputnik) to the orbit, was established to protect the technological superiority of the US Army. DARPA, which does not focus solely on military use, also finances R & D activities for industry, academia and other public institutions for commercial use (Miranda et al., 2015). Similarly, The Joint Requirements Oversight Council (JROC), The National Defense University (NDU), the Louisiana Maneuvers Task Force, The Army Digitization Office, the Battle Labs, Army War College, Future Technologies Institute, Air Force Information Warfare Center, Fleet Information Warfare Center, Naval War College, and the Marine Corps Commandant's Warfighting Laboratory are important organizational structures of the United States (Galdi, 1995).

Furthermore, for the Intelligence ability, the USA has established the Echelon system to fight against terrorism. This system is a global network system that uses artificial intelligence algorithms. All communication traffic in the world can be traced and all kinds of electronic mail, correspondence, fax and phone calls can be listened to (Ball et al., 2005). "Space Cast 2020" and "Air Force 2025" plans are to form strategies for intelligence, reconnaissance and surveillance activities in command and control projects (Galdi, 1995). Also, in the European Union (EU), The Joint Situation Center (SITCEN), The Intelligence Division of the European Military Staff (INTDIV), The European Union Satellite Center (EUSC) and the Europol centers are agencies that work in the field of intelligence (Müller, 2005). In Turkey, MIT (National Intelligence Organization) and intelligence institutions of Ministry of Defense and Ministry of Interior Affairs work for intelligence activities.

CHAPTER 3

COMMUNICATION TECHNOLOGIES

Command Control Systems aim to perform activities such as intelligence, maneuver, air defense and logistics using automatic ability. Subsystems of Command Control System are as follows: Maneuver Control System (MCS), Advanced Field Artillery Tactical Data System (AFATDS), Forward Area Air Defense Command, Control, and Intelligence (FCSB2), Force XXI Battle Command, and Brigade and Below (FBCB2) and Combat Service Support Control System (CSSCS). Examples of communication technologies used in the USA are shown in Table 5.

Table 5 Examples of Communication Technologies Used in the USA

Technologies	Descriptions
ATARS (Advanced Tactical Airborne Reconnaissance System)	It is an air-reconnaissance system that has telecommunication capability.
C4IFTW (Command and Control, Communications, Computers, and Intelligence for The Warrior)	A comprehensive overview of the battlefield framework to present the needs and information (where, when, how) to the commanders.
DISN (Defense Information System Network)	It is a network of digital information systems that meets the Department of Defense (DoD) needs for voice, video and data communications.

Table 5 (continued)

DMS (Defense Message System)	It is a digital system that enables the Department of Defense to transmit messages.
HASA (High Altitude Signals Intelligence Architecture)	It is a system established for signal intelligence (Galdi, 1995).
Digital Topographic Support System	It used for terrain analysis of the theater of operations.
Integrated Systems Control (ISYSCON) and the Tactical Operations Center (TOC)	It is the system that manages the network and provides tactical support and situational awareness to commanders throughout operations (United States General Accounting Office, 1999).

With the development of digital communication systems, the data transmission speed has increased, the dependence on analog communication systems has decreased and a secure digital communication platform has been provided. The studies that started in the 1950s have been developing and continuing today. Link1, Link11, Link16, Link22 are basic Tactical Data Links (TDL) which are developed in this platform. Link1 has been developed to share the aerial images of radar within the NATO Air Defense Ground Environment (NADGE) with all NATO countries. Today, the use of this standard is not recommended because it is vulnerable against electronic warfare. Link11, being integrated with land command control (C2) systems, was developed by NATO to be used on marine platforms. Due to the fact that it has a nodular structure, the loss of one important component leads to the interruption of all other communication. Link 11A has a networked cryptographic structure; and is used to track information among air, land, over and underwater units. Link11B provides communication between immobile land systems. Like Link1, it is not resistant to electronic warfare. Link16 is a secure, electronic warfare-resistant structure developed

by the USA and it can perform real-time data transmission. It doesn't have nodular structure like Link11. The disappearance of any unit does not cut the communication between the systems. Data transmission is performed according to predetermined time intervals. Link 16 Joint Tactical Information Distribution (JTIDS) program enables all air, surface and underwater tactical units, as well as land tactical units to communicate each other in areas of action such as reconnaissance, surveillance, electronic warfare and task assignment. The Link 16 system is used in about forty countries around the world. For the purpose of interoperability and integration on different platforms The UK Multi Link Test Facility in England, the National Joint Services Interoperability Validation Center in France and the Joint Interoperability Test Command (JITC) in the United States perform necessary testing. Link22, with the NATO Improved Link Eleven (NILE) program in 1982 has a more developed message structure system than Link 16, enables communication of surface units mostly, resistant to electronic warfare and secure. Link22 study continue with the support of USA, France, Germany, Italy, Netherlands and UK and is seen as data link for operational future.

Turkey, on the other hand, started her studies on the tactical data link operation in 1999 with the Peace Eagle project, and then with the F-16 modernization project have continued to work on this field. "Link 16 Interoperability Project" has been signed between STM-SSB for the creation of Link16 requirement documents. In addition, the "National Tactical Data Link (NTDL) Feasibility Project Agreement" with the Presidency of Defense Industries (SSB) was signed in 2012 and come into force. STM works on network design, test, simulation and data recording fields to enable the platforms of the Turkish Armed Forces (TAF) to have Link-16 capability (Bulucu and Çıblak, 2016).

3.1 Reconnaissance and Surveillance Technology Used in Turkey

Examples of the reconnaissance and surveillance technologies used in Turkey are shown in Table 6.

Table 6 Examples of the Reconnaissance and Surveillance Technology Used in Turkey

A100: Single-Eyed Night Vision Glasses	The monocular structure is based on the principle that the two eyes are used independently of each other. While one eye is equipped with Night Vision Eyewear, the other eye is naked.	
A230: Night Vision Hand Binocular	It can be used as non-magnifying glasses with 1X lens change in short-distance surveillance. It is very effective in mid-distance night surveillance.	
A500: Pilot Night Vision Glasses	These glasses are the least affected by sudden flashes that may occur in the monitored area without the loss of clarity and brightness in the detail of the image. It enables pilots to perform more efficient exploration, surveillance and rescue missions under moonlight and starlight.	
A341, A361: 4X/6X Night Vision Weapon Sight	Designed for an effective night vision and engagement; durable, lightweight, watertight and 4x / 6x magnifying Night Vision Gun sight.	

Table 6 (continued)

Mini Thermal Weapon Binocular	It is a high resolution, durable, lightweight and ergonomic next generation thermal weapon binoculars. It enables day / night visibility under negative battle conditions such as fog, haze, dust and smoke.	
PİTON, BOA Thermal Weapon Binocular	PITON; is thermal weapon binoculars with a long-lasting battery life, which improves visibility performance and suitable to carry in hand. BOA, Thermal Weapon Binocular with superior vision and high magnification capability, is used for sniper weapons and heavy machine guns to be detect threats remote.	
ÖNCÜ Thermal Hand Binocular	The wide field of view of the binocular empowers it to detect threats even in adverse weather conditions day and night, or to identify possible hiding places.	

Table 6 (continued)

GEZGİN	It is designed to recognize threats from long distances, to identify them, to detect their coordinates, and to direct fire support elements via communication units. It has embedded Thermal Imaging, Laser Range Finder, and Location Position Receiver, Digital Magnetic Compass and Laser Target Point units.	
GÖZ MOBİL	The thermal imaging sensor allows the device to detect and identify the target over a wide range in day or night.	
KESKİNGÖZ	It is a handheld and ergonomic device consisting of a Thermal Imaging Sensor, Laser Distance Meter, Day Vision Camera, Digital Magnetic Compass, GPS and Laser Target Pointing unit (Aselsan A.Ş., 2016).	
CATS	It is an electro-optical reconnaissance, surveillance and targeting system. This small and light device with superior range and camera performance as well as laser target marking and high altitude can work at very low temperatures (Aselsan A.Ş., 2017a).	

Table 6 (continued)

ASELFLIR-300T	It is an electro-optical reconnaissance, surveillance and targeting system. It is capable of tracking multiple targets with Laser Target Marking / Range Measurement camera systems for detecting, diagnosing and monitoring targets (Aselsan A.Ş., 2017).	
ASELPOD	It is a targeting technology with superior range performance, laser rangefinder, precise target position detection with advanced image-processing capability to be used in reconnaissance and surveillance activities (Aselsan A.Ş., 2017b).	
GÖKTÜRK Satellite	Göktürk-1 and Göktürk-2, are Turkey's high-resolution satellite reconnaissance and surveillance satellites. They are designed to meet the need of obtaining images of any part of the world without geographical restrictions for TAF and public institutions and organizations. They also answer the Turkey's critical needs on the grounds like defense (border control, damage assessment, etc.), environment, urban planning, agriculture and forestry (Tübitak Uzay Teknolojileri Araştırma Enstitüsü ,2018).	

Table 6 (continued)

TEPEGÖZ System	Tepegöz System is an airship capable of operating at an altitude of 10,000 feet, with solar energy and quiet operation. It has areas of use such as surveillance, mobile communications, precision agriculture, disaster and emergency management, search and rescue, early warning, 3D mapping, TV and radio broadcasts, maritime and road traffic management, critical facility management (Otonom Teknoloji ,2018).	
ANKA-S	It is a national and armed unmanned aerial vehicle that uses the CATS imaging system produced by Aselsan, which is controlled via Türksat satellites (Akşam Gazetesi ,2017).	
BAYRAKTAR TB2	It is Turkey's first unmanned aerial vehicle designed and produced national and used for surveillance (Baykar Makina, 2018).	

Table 6 (continued)

KARAYEL Tactical UAV System	It is an unmanned aerial vehicle designed and produced domestic for reconnaissance and surveillance purposes (Akşam Gazetesi ,2017).	
Unmanned Balloon Surveillance System	These are unmanned balloons capable of 360-degree aerial reconnaissance and surveillance. The images obtained are transmitted to the center in real time. The system is affected neither by hard winds nor by light weapon shots and provides intelligence, early warning and border security with the capacity to work for 400 hours (Sabah Gazetesi, 2017).	

3.2 Mobile Application of Infrastructure Technology

In the study, the panoramic mobile application will be described in the next section as a case study to provide an alternative to reconnaissance and surveillance intelligence activities. The general information and working structure of the Android operating system in which the software is developed is summarized below.

3.2.1 Android Operating System

An android mobile operating system was first developed by Android Inc. and the company purchased by Google in 2005 (Shalini et al., 2015). The Open Handset Alliance (OHA) is a mobile platform that adopts open source development consisting of eighty-four technology and mobile companies (Narmatha and Krishna Kumar, 2016). The Open Handset Alliance (OHA) has developed the Google Linux 2.6 kernel by adding drivers and libraries, and has developed the Android operating system for use on mobile devices. This operating system maintains its popularity today (Shalini et al., 2015). With the advancement of technological developments, new android versions have been introduced to the market. Table 7 and Figure 6 show the android versions and distribution percentages shipped to the market (Google Play, 2018). As it can be seen in the graphics, Marshmallow and Nougat are the most popular versions of Android.

Table 7 Android Editions and Distribution Percentages Launched to Market

Version	Codename	API	Distribution
2.3.3 - 2.3.7	Gingerbread	10	0.3%
4.0.3 - 4.0.4	Ice Cream Sandwich	15	0.4%
4.1.x	Jelly Bean	16	1.7%
4.2.x		17	2.6%
4.3		18	0.7%
4.4	KitKat	19	12.0%
5.0	Lollipop	21	5.4%
5.1		22	19.2%
6.0	Marshmallow	23	28.1%
7.0	Nougat	24	22.3%
7.1		25	6.2%
8.0	Oreo	26	0.8%
8.1		27	0.3%

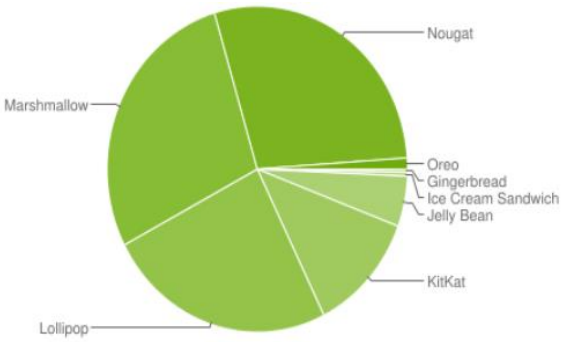


Figure 6 Android Versions Launched to the Market

According to the Statista statistical portal, Android maintains its leadership in the worldwide smartphone market. As shown in Figure 7, IOS follows the Android operating system in market share (Business Insider,2016).

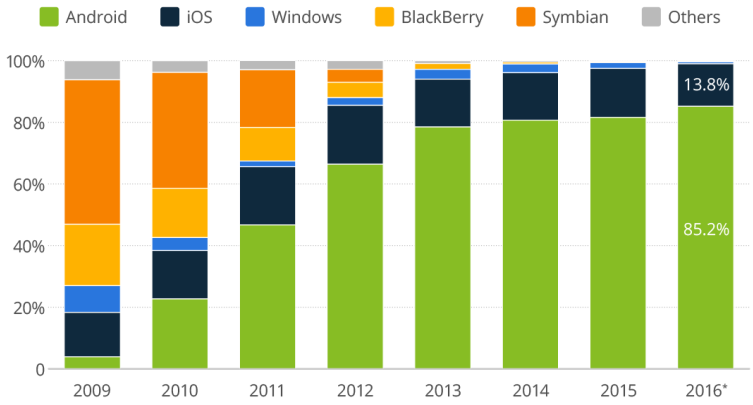


Figure 7 Worldwide Smartphone Platform Market Share

Android operating system is a combination of Linux Kernel, Native Libraries, Android Runtime, Application Framework and Applications. In Figure 8, the Android operating system architecture is shown (Gilski and Stefanski, 2015).

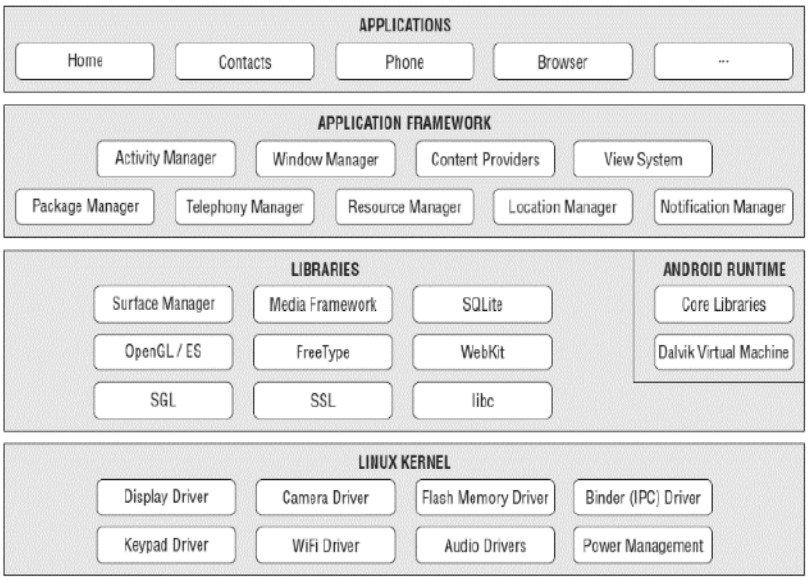


Figure 8 Android Operating System Architecture

Linux Kernel: It is the layer that builds the infrastructure of the entire Android operating systems. Communication with hardware layer is possible via this layer. Display Driver, Camera Driver, Flash Memory Driver, Binder Driver, Keypad Driver, Wi-Fi Driver, Audio Driver, Power Management, Virtual Memory Management and Network and Security take part in this layer.

Native Libraries: It is the layer where the Android native libraries are located. Surface Manager, Media Framework, SQLite, OpenGL|ES, FreeType, WebKit, SGL, Secure Socket Layer (SSL), and libc are found in this layer. Descriptions of the mentioned libraries are shown in Table 8.

Table 8 Android Native Libraries

Libraries	Descriptions
Surface Manager	The device display windows are managed.
Media Framework	Different media formats such as picture / audio / video are managed.
SQLite	It is an android relational database.
OpenGL|ES	Manages 3D graphics.
FreeType	It is Bitmap and font library.
WebKit	It is a browser infrastructure that displays HTML content.
SGL	Manages 2D graphics.
SSL	It is the standard that provides secure communication.
libc	It is system C library.

Android Runtime: It is the layer where Core Libraries and Dalvik Virtual Machine (DVM) parts are located. Core libraries are libraries where libraries required for the Java programming language are found (Shalini et al., 2015). DVM, on the other hand, is a virtual machine specific to the Android operating system with low memory requirements developed by Dan Bornstein. The DVM's difference from the Java Virtual Machine (JVM) is shown in Figure 9 (Narmatha and KrishnaKumar, 2016).

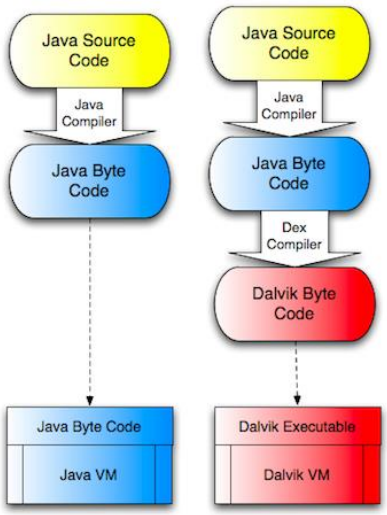


Figure 9 JVM and DVM Structure

The dx tool in the Android SDK translates .class files into. dex (Dalvik-Executable) form. DVM runs the generated .dex files. The said process is illustrated in Figure 10 (Techback's Blog, 2015).

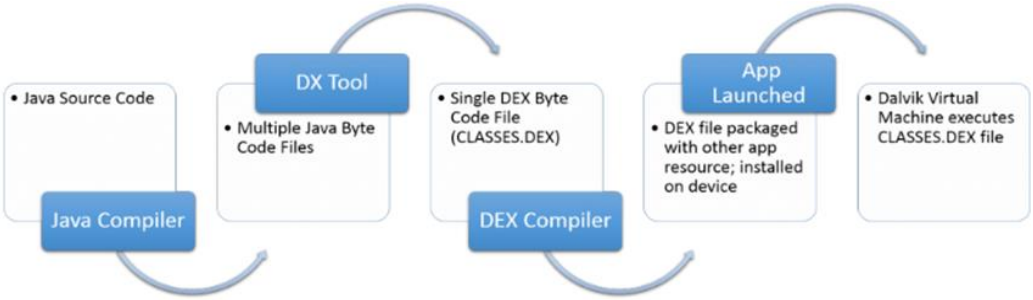


Figure 10 DVM Process

Application Framework: They are application services that provide platform for developers. Activity Manager, Window Manager, Content Providers, View System, Package Manager, Telephony Manager, Resource Manager, Location Manager, Notification Manager are located in this layer. Descriptions of said application services are summarized in Table 9 (Narmatha and KrishnaKumar, 2016).

Table 9 Application Framework

Application Framework	Descriptions
Activity Manager	Management of applications is controlled.
Window Manager	Window management of applications is performed.
Content Providers	Access between data and applications is managed.
View System	User interfaces are managed.
Package Manager	It is the system where the information belonging to the application is kept.
Telephony Manager	Operations related to telephone services are managed.
Resource Manager	Different data types used in the application are managed.
Location Manager	Location data such as GPS are managed.
Notification Manager	Notifications and warnings about applications are managed.

Applications: Native applications that are pre-installed are located in this layer. Web browser, calendar, phone book, and Google Maps are examples of these applications (Shalini et al., 2015).

CHAPTER 4

CASE STUDY MOBILE APPLICATION

The panoramic mobile application discussed in the scope of this study provides an alternative to reconnaissance and surveillance systems by providing wide-angle field imaging. It sending panoramic photos automatically to the desired email address contributes to the imagery intelligence.

4.1 Panoramic Photo

A panoramic photo is a wide-angle photograph consisting of horizontal and vertical framed photographs taken in a single frame (Soeborg, 2012). In Figure 11, a 180-degree panoramic photo sample is shown (Digital Photography School, 2018).

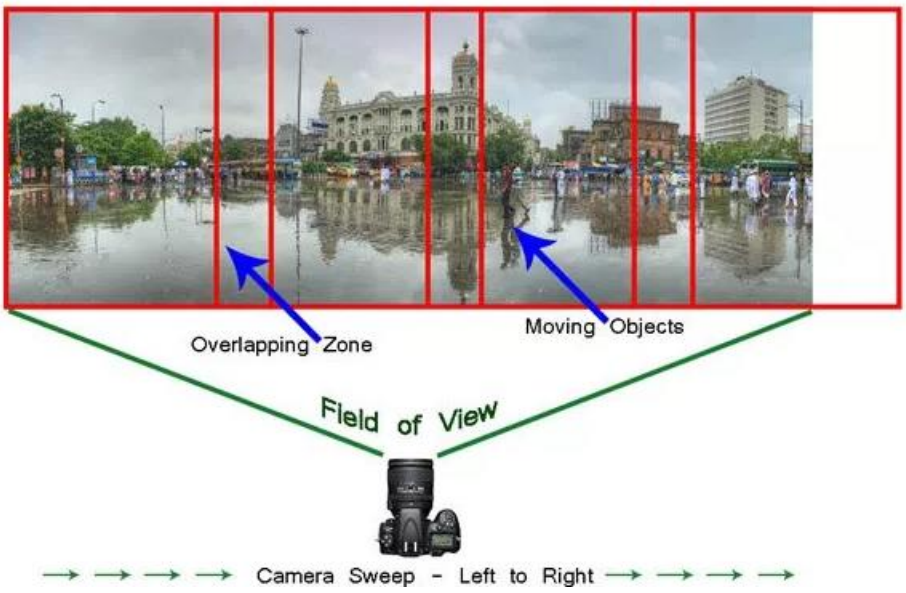


Figure 11 180 Degree Panoramic Photo Sample

4.2 Software Development Model

Software development involves planning, analysis, design, coding and testing phases (Sabale and Dani, 2012). The prototype software development model used in the study is shown in Figure 12.

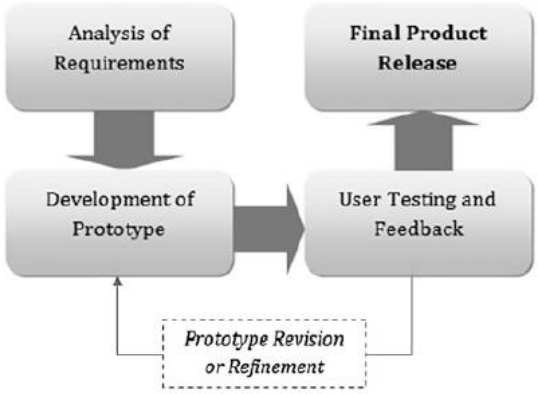


Figure 12 Prototype Software Development Model

In the first stage of the prototype software development model, the needs and requirements of the client are determined. In the second phase, prototypes are created according to the needs. Developed and tested with user feedback every time, the prototype becomes the final product when it meets user needs (Isaias and Issa, 2015).

4.3 Mobile Application

The application was implemented in the Eclipse IDE development environment using the Android SDK and computer graphics libraries in the Java programming language. By shooting successive photographs each of which overlapping the 30% of the previous photo panoramic photographs up to 180 degrees are obtained. A black edge problem occurs when overlapping the photos. The image is corrected by cropping the photo. The corrected photo is saved to the gallery and automatically sent to a pre-defined mail address. The described process is illustrated in Figure 13 nad sample screenshots of the application are shown in Table 10 below.

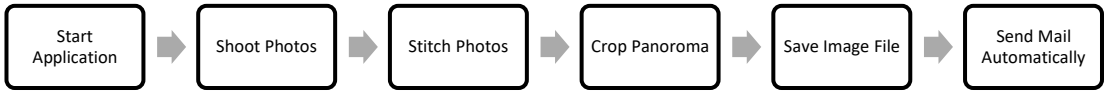


Figure 13 Panoramic Mobile Application Process

Table 10 Sample Screenshots of The Application

Table 10 (continued)

CHAPTER V

RESEARCH METHOD

Research method is a combination of methods that collect, sort and analyze information used in research. Targets such as categorize, describe, explain, evaluate, compare, correlate, predict, and control are within the scope of the research.

The Empiricist Approach in Epistemology Theory aims to achieve a general conclusion with specific observations or sensory experiences using inductive reasoning. However, determining the number of observers needed to achieve the mentioned result or the number of observations to be made in order to reach the correct conclusion is the restrictions of the method. Therefore, it is very important to select the sample size appropriately for the research structure or to analyze the study under adequate conditions. The research theory used for this research is Inductive Reasoning-The Empiricist's Approach.

Positivism; is an understanding of science that uses inductive and scientific methods, based on objective, logical and world facts (Çakır, 2018). Positivism Approach has been adopted as a scientific method in this study.

The research process is illustrated in Figure 14. This four-phase arrangement planned what the research topic will be, why, how and when the research will be conducted.

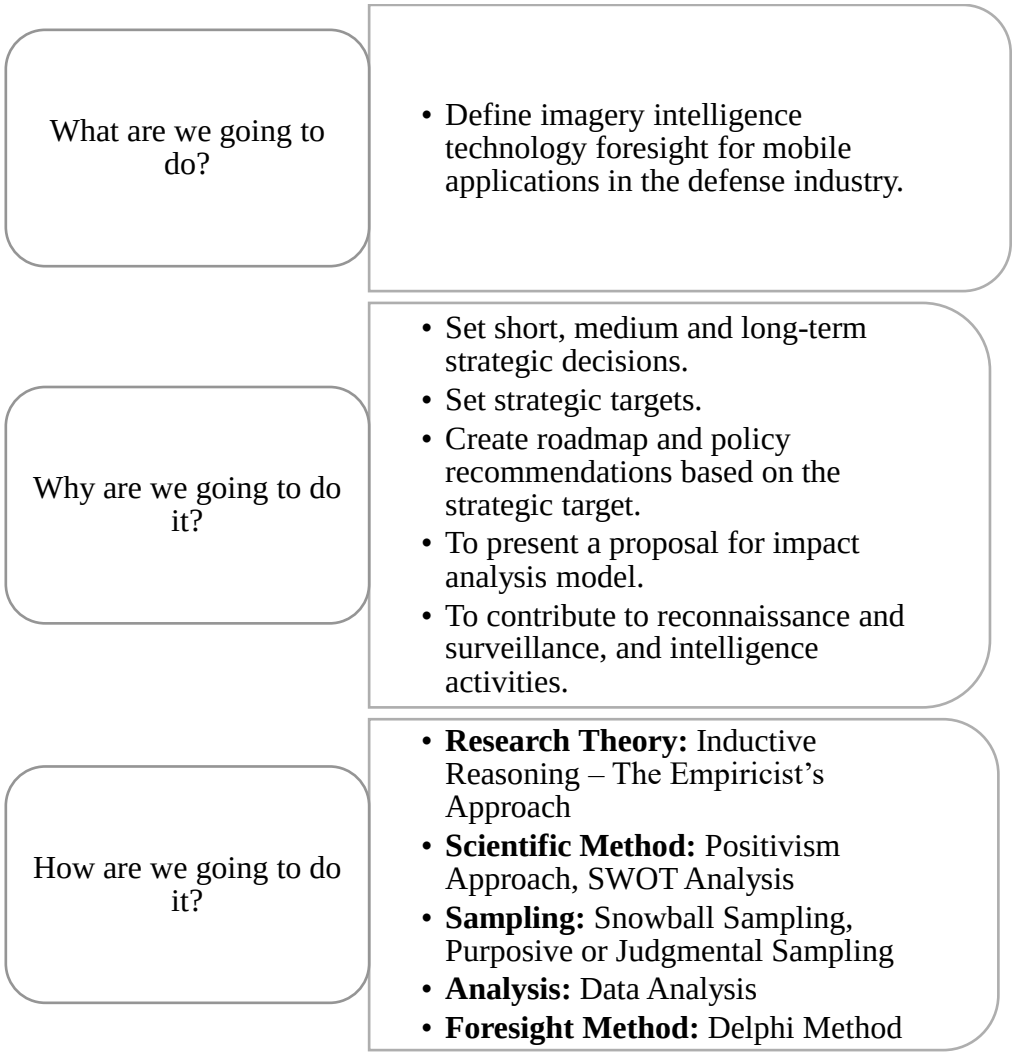


Figure 14 The Study's Research Process

5.1 Delphi Method

The RAND Corporation, backed by the US Air Force, developed the Delphi technique in the 1950s. For the solution of complex problems, the opinions of experts are used for future predictions. Its aim is to blend different opinions of experts by directing consecutive questionnaires. Participation anonymity, feedback and statistical analysis are three fundamental features of the Delphi technique While the experts report their opinions, the person's information is kept secret. Negative effects such as social pressure, prejudice, hesitation, deceit, and disagreements are prevented by anonymous participation. Data is obtained from the surveys which are conducted at least two

rounds. Intermediate results after each questionnaire are relayed to the participants and participants are asked to repeat the evaluation by taking the intermediates into consideration. With this reviewing process, the person is given the opportunity to see other participants' evaluations and to change (add or correct) their own interpretation. Delphi survey tours go on until the experts reach an agreement (Rowe and Wright, 1999). The process of the Delphi technique used in the study is shown in Figure 15 (Pinterest ,2018).

Figure 15 Delphi Technique Process

There are also some restrictions of Delphi Technique. The fact that the selected experts are not knowledgeable enough to contribute to the research, the fact that prepared questionnaires are not understood in the same way by every expert, the fact that experts do not give the same importance to or not participate to each round of questionnaire constitute a constraint on the continuity of the research (Rowe and Wright, 1999). In addition, the fact that the Delphi statements are not sufficient and that they do not include the whole of the subject also prevent the achievement of a healthy result.

In the researches no consensus has been reached about in which statistical analysis can Delphi technique be classified. Some researchers argue that this technique is qualitative, and the others argue that it is both quantitative and qualitative research

method, and stated that classifying Delphi technique is a controversial issue. For this reason, Delphi analysis can be used in both research methods (Skulmoski et al., 2007).

Delphi technique is a method that can be used in many areas. For example, in the US the potential applications which can be used to improve the propensity of technology users to innovate and to acquire knowledge are determined by Delphi technique (Nambisan et al., 1999). Similarly, information systems managers have used this technique to identify the most critical problems they may face in the next three to five years. Canadian information security experts have used Delphi technique to identify critical information security issues that may be encountered over the next five years. In another Delphi study involving experienced software project managers from Hong Kong, Finland and the United States, it was aimed to identify common risk factors in software projects (Okoli and Pawlowski, 2004). In order to contribute to the United Nations Millennium Development Goals, ten application areas that nanotechnologies will benefit from have been identified with the Delphi technique (Salamanca et al., 2005).

And in Turkey, Gebze in Turkey in 2015 IT (Information Technologies) Valley project has got a go. As a part of the project incubation centers, international innovation and technology transfer offices and fab-labs will be in operation and innovations in information technologies will be followed. Delphi technique has been used to find answers to questions such as when to start the project and which areas of activity to focus on (Emen et al., 2015). Moreover, in order to determine Turkey's future R & D and innovation vision in the scope of Vision-2023 Delphi survey with broad participation was conducted (Çakır, 2016).

5.2 Determination of Sample Size

The difficulty of reaching the experts in imagery intelligence, the size of the target population due to information sharing constraints and security is based on the

estimates. N number is determined by taking into consideration the departments in Turkey. These departments and the estimated number of employees are listed below.

Research question: What is the imaging intelligence technology foresight of mobile applications in the defense industry?

Population: People working in the defense industry

Target population (N): Experts working on imagery intelligence in the defense industry

- Turkish Armed Forces (Land, Naval and Air) = 60 experts
- General Directorate of Security = 15 experts
- Civil Sector, Foundation Institutions = 15 experts
- Universities = 10 experts
- Total (N) = 100 experts

At the 95% confidence interval $\alpha = 0.05$ and $z = 1.96$ were taken. In the Delphi survey; $p = 0.5$, $q = 0.5$ (heterogeneous) probability values were accepted because the participant to be asked for the level of expertise (I'm expert, I have an idea, I have no idea) for each Delphi statement. As nature of the survey, it is a must to ask the experts about the subject, the sampling error is $d = 0.10$ were taken. In the qualitative research, the n value for the finite population ($N < 10000$) was calculated according to Eq.1 (Doğanay et al., 2012). For the calculation used in the study, an oral interview was held with Assoc. Professor Özlem İLK DAĞ, the Department of Statistics of Metrics METU.

$$n = \frac{N.p.q.z^2}{(N-1).d^2 + z^2.p.q} \qquad (1)$$

With this formula, n= 100. (0,5). (0,5). $(1,96)^2$ / (99. (0.01)) + $((1.96)^2$. (0.5). (0.5)) ≅ 49 is calculated. As it is seen, the sample size n can be at least 49.

5.3 Sampling Selection Techniques

In nonprobability Sampling Technique individuals are chosen non-randomly for a specific purpose. For this sampling expert persons with the ability to respond to Delphi research questions with Snowball Sampling or Purposive / Judgmental Sampling techniques were selected. Detailed explanations of the aforementioned techniques are given below.

5.3.1 Snowball Sampling

Snowball Sampling is the technique which is used when it is difficult to reach the individuals who make up the target population or when it is difficult to determine who will fit in the sample group. The researcher aims to reach out to other people with the same qualities by interviewing several people whom he thinks are appropriate for his sample group. Thanks to the established network, sufficient sample size is reached (Babbie, 2011).

5.3.2 Purposive or Judgmental Sampling

It is including the individuals who are suitable for purpose of the research to the sampling. Data are gathered by selecting the individuals who have the most appropriate feature for the research problem (Etikan et al., 2016).

According to the sampling selection techniques mentioned above, fifty experts have been reached from four different sectors: software engineer, senior software engineer, system engineer, technical team leader, project manager and academician. Due to the anonymous nature of the participation, the names of the specialists are not listed but the institutions they are working are listed below.

- Ministry of Defense
- Turkey Union of Notaries
- Ziraat Technology
- Havelsan Inc.
- Aselsan Inc.
- TAI Inc.
- Innova
- SoftTech
- Simsoft
- Netaş
- Bites Defense industry

CHAPTER 6

DATA ANALYSIS

6.1 SWOT Analysis

Due to technological breakdowns, the formation of modules and the determination of sub-work steps facilitate analysis work. With SWOT (Strengths, Weaknesses, Opportunities, Threats) analysis it is aimed to identify the strengths and weaknesses of a technology, as well as opportunities and threats that may arise. This method, imparted to strategic management, provides situational awareness on the subject of research. The effects of the using mobile applications in imagery intelligence are examined by this analysis, and the current situation assessment of experts is shown in Table 11.

Table 11 SWOT Analysis of the Use of Mobile Applications in Imagery Intelligence

Strengths
• Contributes to reconnaissance and surveillance activities of the battlefield. • Can be used in imagery intelligence and image assessment systems. • Information transmission speed increases. • Increases the survival ability and performance of the soldiers. • Supports the military decision making process.

Table 11 (continued)

• Is used for drone control as well. • Decreases the dependence on analog communication systems. • Terrain analysis facilitates the understanding of the tactical effect of land. • Eases the identification of defense and fire control line. • Enables the identification of enemy vulnerabilities. • Eases the control of the accuracy of the intelligence obtained.
Weaknesses
• Mobile applications should be integrated with the systems used. Thus, technological infrastructure needs to be established. • Technology literacy training should be given to the people who will use the technology. • There is a shortage of platform, simulation and application center required to develop mobile applications. • National strategy, policy and development plans are inadequate for technological development. • There is a risk of breakdown of electronic devices that are running mobile applications. • It is possible that the documentation of the software going to be used is not done at the necessary detailed level and so it is possible that software becomes dependent on the developer. • University-industry collaboration infrastructure is not adequate as required. • The operation of mobile applications depends on the battery life.

Table 11 (continued)

Opportunities
• The more the use of mobile applications increases, the more R & D work is done. • New studies are expected to prepare an environment for new technological developments. • New investment areas will emerge. • Developments will strengthen the economy. • Domestic and national know-how infrastructure is expected to occur. • Continuity of production through the double use of technology will support development.
Threats
• The possibility of being captured of mobile devices poses a risk to information security. • Unauthorized access to systems can be done via software vulnerabilities. • The interruption of technology supply poses a risk. • Meeting the electronic components for mobile devices from other countries poses a threat. • The possibility that specialists are not involved in R & D work poses a risk. • Potential competitors' new product development (disruptive technologies presence) is a threat. • Difficulty in protecting the rights of intellectual property pose a risk.

6.2 Delphi Analysis

6.2.1. Prepared Delphi Statements

The Delphi statements prepared within the scope of the study and the descriptions of these statements are shown in Table 12. The statements are grouped under the headings of technology management. The Vision 2023 Delphi statements corresponding to some items are also given, and the situation is assessed at the end of the study.

Table 12 Prepared Delphi Statements and Descriptions

Code	Delphi Statement	Description	Vision 2023 Delphi Statement
	Technology Acquisition		
D1	In the Defense Industry, the imagery intelligence mobile applications will be developed to be used by both civilian and military purposes (dual usage).		
D2	In the Defense Industry, the imagery intelligence mobile applications will be developed with domestic and national solutions in the direction of R & D and innovation studies.	R & D; is an abbreviation for Research and Development activities. Software development will be domestic and national.	Implementation of military conventional electronic warfare and cyber space warfare applications will be realized in full with national solutions (H18)

Table 12 (continued)

	Technology Exploitation		
D3	In the Defense Industry, the imagery intelligence mobile applications will play a leading role in increasing the current image intelligence quality.	The images obtained from mobile applications would enhance the impact and quality of intelligence by increasing the data diversity of the theater of operations (union zones, obstacle areas, mined terrains, weapon emplacements, etc.)	
D4	In the Defense Industry, the imagery intelligence mobile applications will play an important role to augment the pace of the operation.	With the development of digital communication systems, the theater of operations will be evaluated faster.	
D5	In the Defense Industry, imagery intelligence mobile applications will minimize the possible attritions in the theater of operations.	Necessary safety precautions will be taken against possible threats by obtaining theater of operations data.	In land, sea, air and space, in dangerous missions, in order to replace people, to increase efficiency or to reduce costs; development of robotic technologies by unmanned (remote controlled or autonomous) vehicles (H02)

Table 12 (continued)

D6	In the Defense Industry, the imagery intelligence mobile applications will accelerate the decision-making process of decision makers.	The evaluation of enemy capabilities by the help of technological support will affect decision making process.	
D7	In the Defense Industry, the imagery intelligence mobile applications will contribute significantly to interdisciplinary studies in ensuring national security.	Other units will use images obtained.	
D8	In the Defense Industry, the imagery intelligence mobile applications will contribute significantly to the identification of define high-priority targets.	High-priority targets are defined according to the importance of the targets.	
D9	In the Defense Industry, the imagery intelligence mobile applications will significantly facilitate intelligence sharing in joint and combined operations.	Joint operation is the operation carried out by land, sea and air forces together. Combined operation is an operation carried out together with allied powers.	
D10	In the Defense Industry, the imagery intelligence mobile applications will facilitate the course of action of deep zone operations.	Deep zone operation is the operation carried out behind the enemy front lines.	

Table 12 (continued)

D11	In the Defense Industry, the imagery intelligence mobile applications will be used intensively to assess the effectiveness of fire support elements in the target area.	Assessment is the determination of the impact of the ammunition used by the fire support elements on the target.	
D12	In the Defense Industry, the imagery intelligence mobile applications will enable to pursue a safe operation by providing instant intelligence support to the maneuvering elements.	Maneuvering elements are the name given to the units that are performing the military operation.	

Questions and the choices of the answers for each Delphi statement are listed in Table 13.

Table 13 Questions and the Choices of Answer for each Delphi Statement

Questions Asked for each Delphi Statement	**Answer Choices**
What is your level of expertise for this statement?	I have no idea
	I have an idea
	I'm expert
What is the probability of occurrence / realization of this statement?	High
	Medium
	Low
	Never

Table 13 (continued)

How long is the realization period of this statement?	Before 2025
	Between 2025-2035
	After 2035
How does this statement affect the competitiveness of the defense industry in Turkey?	High positive
	High negative
	Indefinitely high
	There is no effect
Will this statement be effective in increasing the defense industry R&D studies?	High positive
	High negative
	Indefinitely high
	There is no effect
What is the effect of this statement on the imagery intelligence?	High positive
	High negative
	Indefinitely high

6.2.2. Expertise of Delphi Statements

The total professional experience and work place graphs of the persons participating in the Delphi analysis are shown in Figure 16 and Figure 17.

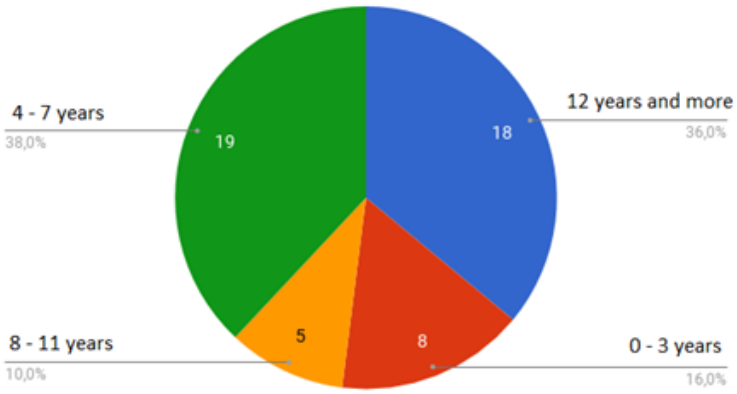


Figure 16 Total Professional Experience

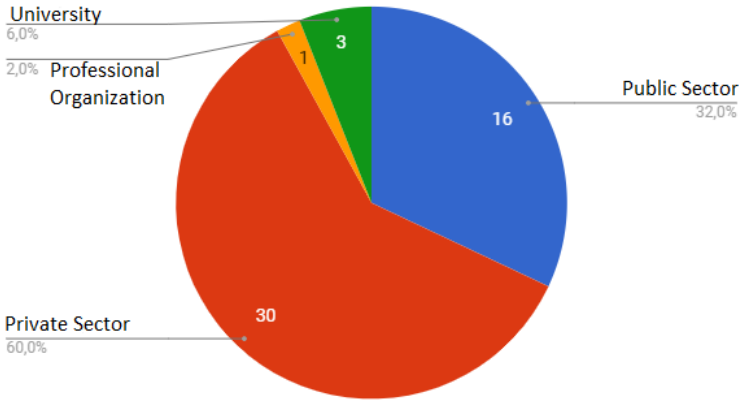


Figure 17 Type of Workplace

In the Table 14 below, the expertise for the 12 Delphi statements are shown.

Table 14 Expertise for the 12 Delphi Statements

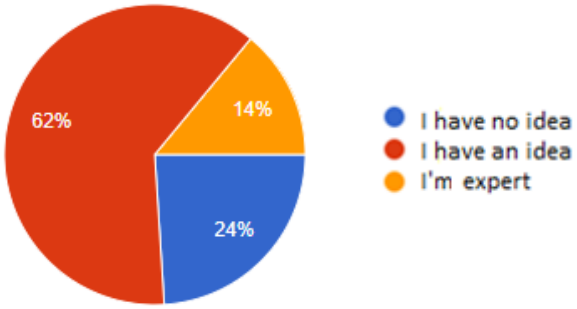
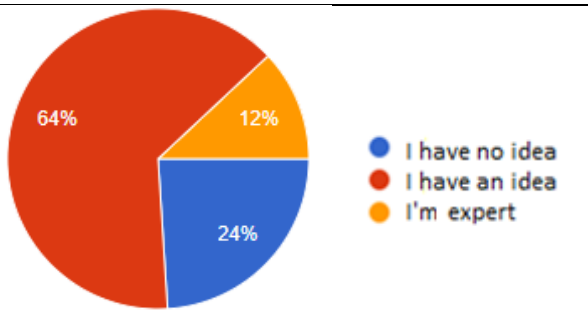
Code	Delphi Statement	Expertise
D1	In the Defense Industry, the imagery intelligence mobile applications will be developed to be used by both civilian and military purposes (dual usage).	
D2	In the Defense Industry, the imagery intelligence mobile applications will be developed with domestic and national solutions in the direction of R & D and innovation studies.	

Table 14 (continued)

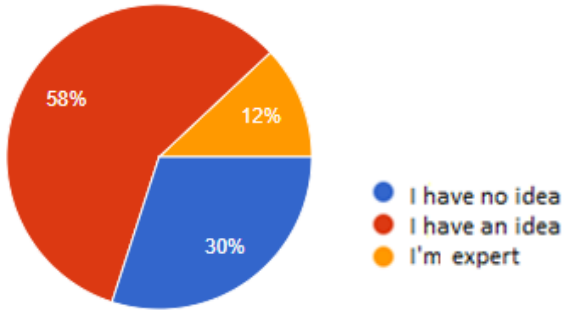
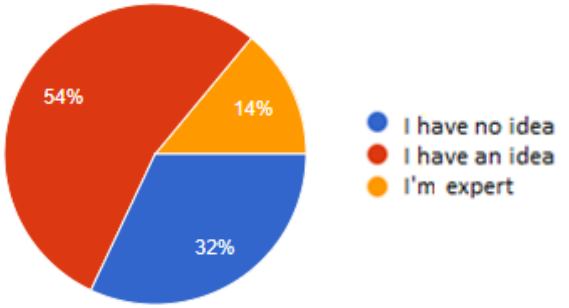
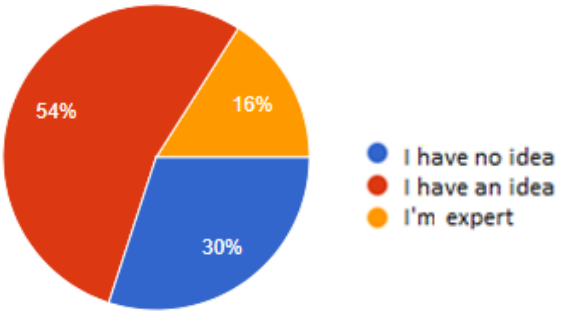
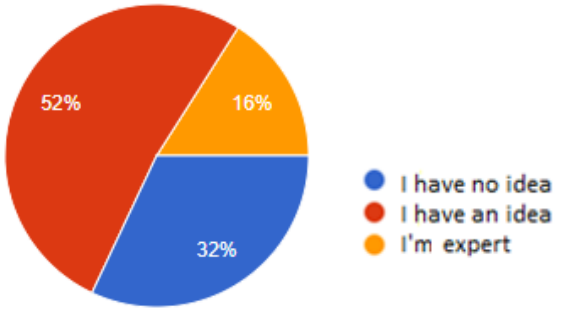
D3	In the Defense Industry, the imagery intelligence mobile applications will play a leading role in increasing the current image intelligence quality.	
D4	In the Defense Industry, the imagery intelligence mobile applications will play an important role to augment the pace of the operation.	
D5	In the Defense Industry, imagery intelligence mobile applications will minimize the possible attritions in the theater of operations.	
D6	In the Defense Industry, the imagery intelligence mobile applications will accelerate the decision-making process of decision makers.	

Table 14 (continued)

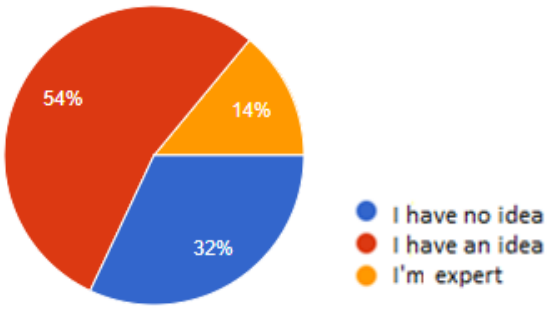
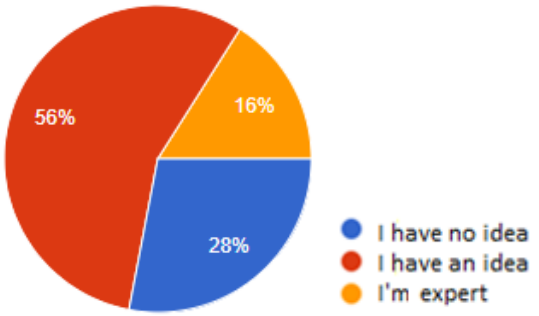
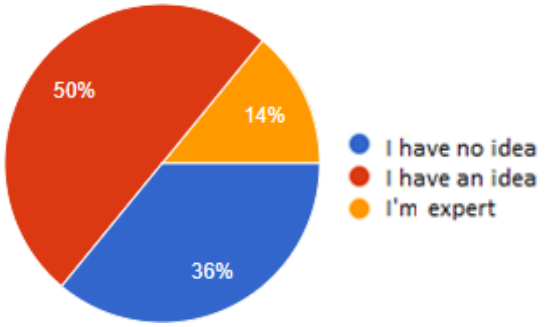
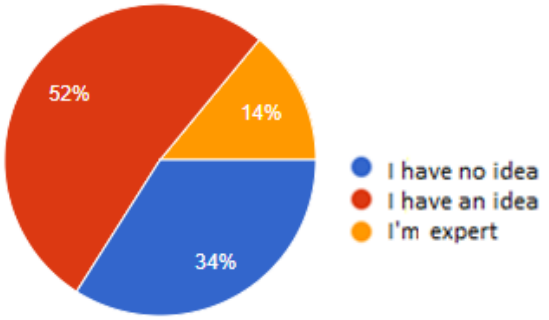
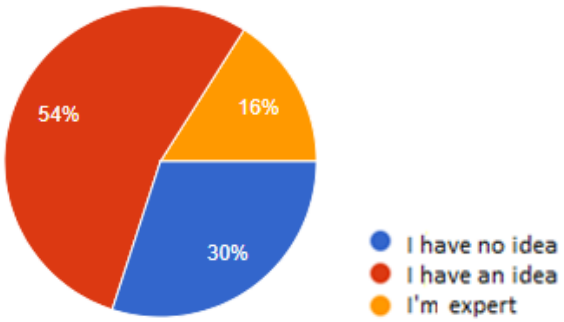
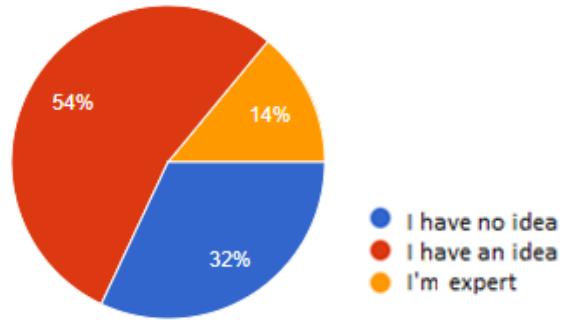
D7	In the Defense Industry, the imagery intelligence mobile applications will contribute significantly to interdisciplinary studies in ensuring national security.	
D8	In the Defense Industry, the imagery intelligence mobile applications will contribute significantly to the identification of define high-priority targets.	
D9	In the Defense Industry, the imagery intelligence mobile applications will significantly facilitate intelligence sharing in joint and combined operations.	
D10	In the Defense Industry, the imagery intelligence mobile applications will facilitate the course of action of deep zone operations.	

Table 14 (continued)

D11	In the Defense Industry, the imagery intelligence mobile applications will be used intensively to assess the effectiveness of fire support elements in the target area.	
D12	In the Defense Industry, the imagery intelligence mobile applications will enable to pursue a safe operation by providing instant intelligence support to the maneuvering elements.	

6.2.3. Analysis of Delphi Results

6.2.3.1 1st Round Delphi Total and 2nd Round Delphi Total Evaluation

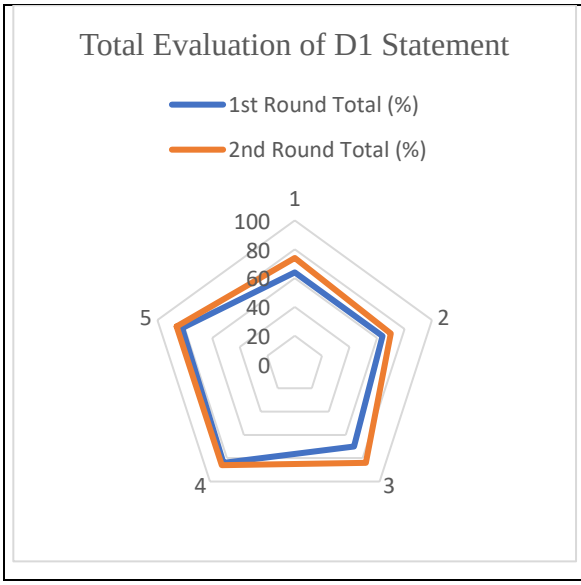
6.2.3.1.1 D1 Statement

In the Defense Industry, the imagery intelligence mobile applications will be developed to be used by both civilian and military purposes (dual usage).

Table 15 1st and 2nd Round Total Statistics of the D1 Statement

	1	2	3	4	5
	What is the probability of occurrence / realization of this statement?	How long is the realization period of this statement?	How does this statement affect the competitiveness of the Defense Industry in Turkey?	Will this statement be effective in increasing the Defense Industry R&D studies?	What is the effect of this statement on the imagery intelligence?
1st Round Total (%)	64	64	70	84	82
2nd Round Total (%)	74	70	84	86	86
Answers	High	Before 2025	High Positive	High Positive	High Positive

Table 16 1st and 2nd Round Total Evaluation of the D1 Statement



Explanation: The answers to question 4 and 5 are close to each other in the 1st and 2nd round of the total evaluation. There is a consensus on this issue.

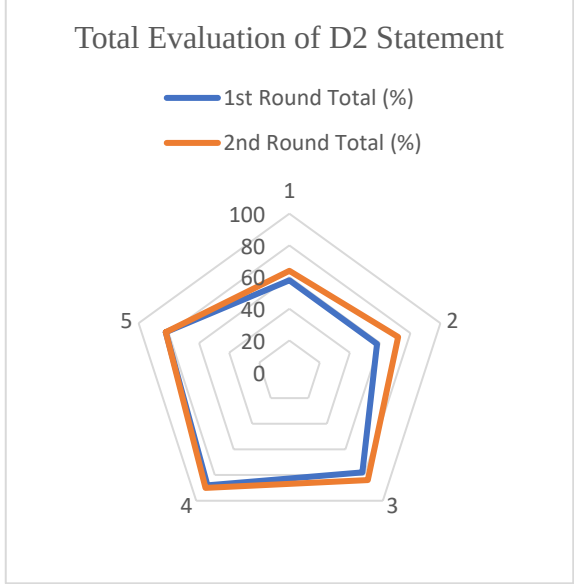
6.2.3.1.2 D2 Statement

In the Defense Industry, the imagery intelligence mobile applications will be developed with domestic and national solutions in the direction of R & D and innovation studies.

Table 17 1st and 2nd Round Total Statistics of the D2 Statement

	1	2	3	4	5
	What is the probability of occurrence / realization of this statement?	How long is the realization period of this statement?	How does this statement affect the competitiveness of the Defense Industry in Turkey?	Will this statement be effective in increasing the Defense Industry R&D studies?	What is the effect of this statement on the imagery intelligence?
1st Round Total (%)	58	58	78	88	82
2nd Round Total (%)	64	72	84	90	82
Answers	High	Before 2025	High Positive	High Positive	High Positive

Table 18 1st and 2nd Round Total Evaluation of the D2 Statement



Explanation: The answers to question 4 are close to each other in the 1st and 2nd round of the total evaluation, the answers to question 5 are exactly the same in the 1st and 2nd round of the total evaluation. There is a consensus on this issue.

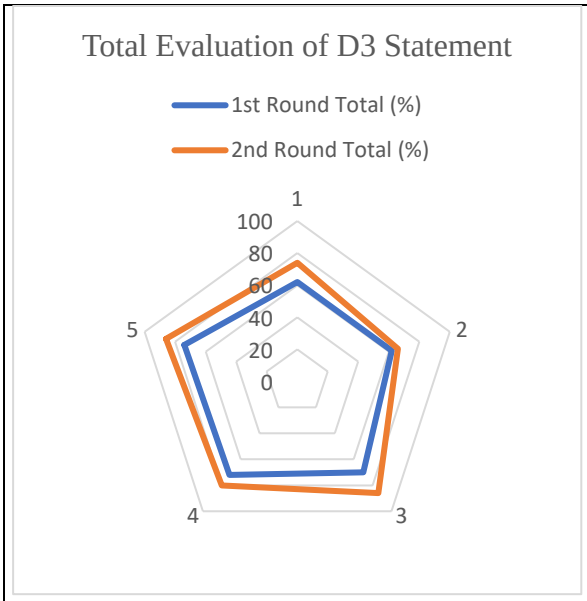
6.2.3.1.3 D3 Statement

In the Defense Industry, the imagery intelligence mobile applications will play a leading role in increasing the current image intelligence quality.

Table 19 1st and 2nd Round Total Statistics of the D3 Statement

	1	2	3	4	5
	What is the probability of occurrence / realization of this statement?	How long is the realization period of this statement?	How does this statement affect the competitiveness of the Defense Industry in Turkey?	Will this statement be effective in increasing the Defense Industry R&D studies?	What is the effect of this statement on the imagery intelligence?
1st Round Total (%)	62	62	70	72	74
2nd Round Total (%)	74	66	86	80	86
Answers	High	Before 2025	High Positive	High Positive	High Positive

Table 20 1st and 2nd Round Total Evaluation of the D3 Statement



Explanation: The answers to question 2 are close to each other in the 1st and 2nd round of the total evaluation. There is a consensus on this issue.

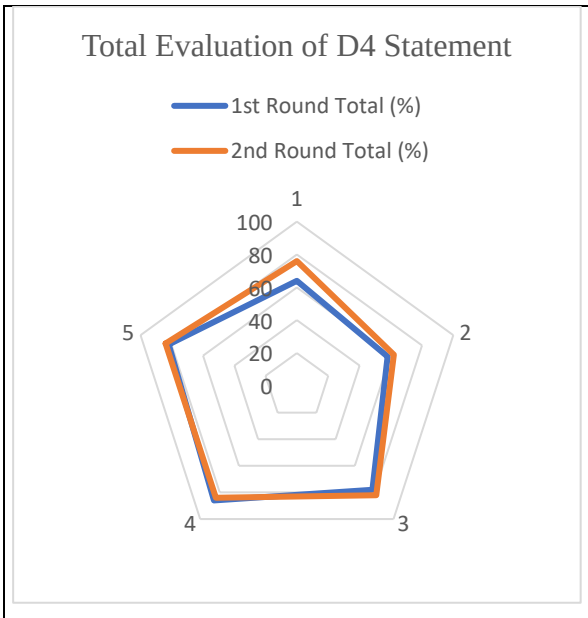
6.2.3.1.4 D4 Statement

In the Defense Industry, the imagery intelligence mobile applications will play an important role to augment the pace of the operation.

Table 21 1st and 2nd Round Total Statistics of the D4 Statement

	1	2	3	4	5
	What is the probability of occurrence / realization of this statement?	How long is the realization period of this statement?	How does this statement affect the competitiveness of the Defense Industry in Turkey?	Will this statement be effective in increasing the Defense Industry R&D studies?	What is the effect of this statement on the imagery intelligence?
1st Round Total (%)	64	58	78	86	82
2nd Round Total (%)	76	62	82	84	84
Answers	High	Before 2025	High Positive	High Positive	High Positive

Table 22 1st and 2nd Round Total Evaluation of the D4 Statement



Explanation: The answers to question 2, 3, 4 and 5 are close to each other in the 1st and 2nd round of the total evaluation. There is a consensus on this issue.

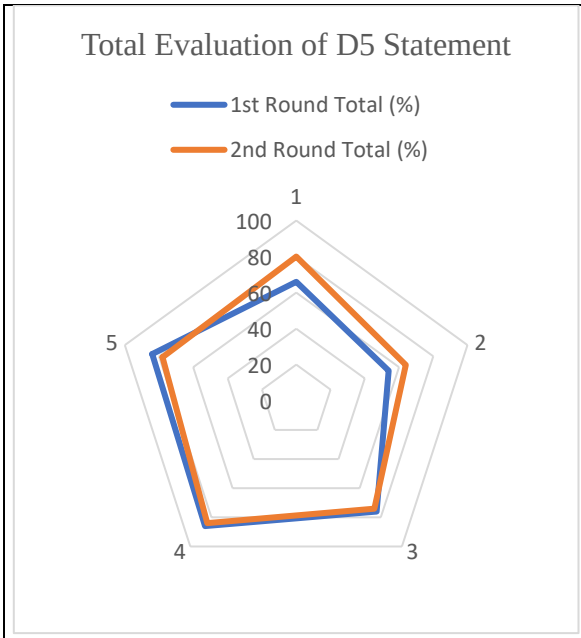
6.2.3.1.5 D5 Statement

In the Defense Industry, imagery intelligence mobile applications will minimize the possible attritions in the theater of operations.

Table 23 1st and 2nd Round Total Statistics of the D5 Statement

	1	2	3	4	5
	What is the probability of occurrence / realization of this statement?	How long is the realization period of this statement?	How does this statement affect the competitiveness of the Defense Industry in Turkey?	Will this statement be effective in increasing the Defense Industry R&D studies?	What is the effect of this statement on the imagery intelligence?
1st Round Total (%)	66	54	76	86	84
2nd Round Total (%)	80	64	74	84	78
Answers	High	Before 2025	High Positive	High Positive	High Positive

Table 24 1st and 2nd Round Total Evaluation of the D5 Statement



Explanation: The answers to question 3 and 4 are close to each other in the 1st and 2nd round of the total evaluation. There is a consensus on this issue.

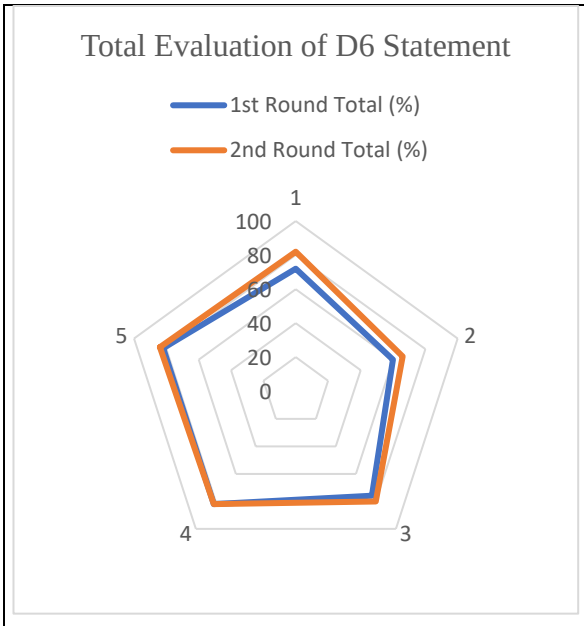
6.2.3.1.6 D6 Statement

In the Defense Industry, the imagery intelligence mobile applications will accelerate the decision-making process of decision makers.

Table 25 1st and 2nd Round Total Statistics of the D6 Statement

	1	2	3	4	5
	What is the probability of occurrence / realization of this statement?	How long is the realization period of this statement?	How does this statement affect the competitiveness of the Defense Industry in Turkey?	Will this statement be effective in increasing the Defense Industry R&D studies?	What is the effect of this statement on the imagery intelligence?
1st Round Total (%)	72	60	76	82	82
2nd Round Total (%)	82	66	80	82	84
Answers	High	Before 2025	High Positive	High Positive	High Positive

Table 26 1st and 2nd Round Total Evaluation of the D6 Statement



Explanation: The answers to question 3 and 5 are close; and the answers to question 4 are the same in the 1st and 2nd round of the total evaluation. There is a consensus on this issue.

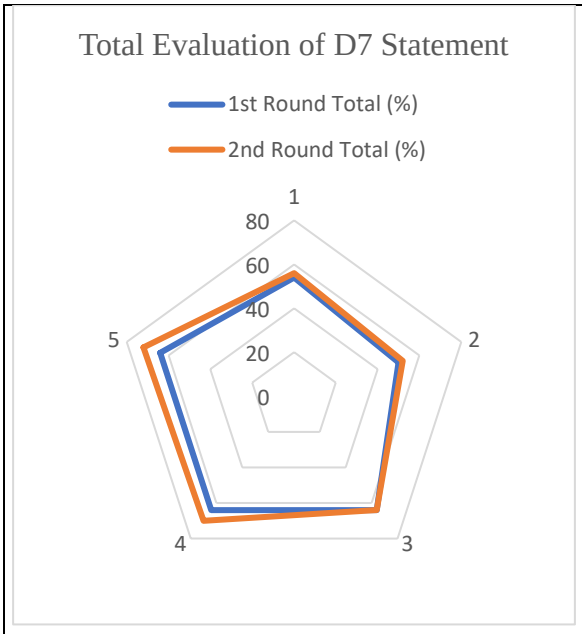
6.2.3.1.7 D7 Statement

In the Defense Industry, the imagery intelligence mobile applications will contribute significantly to interdisciplinary studies in ensuring national security.

Table 27 1st and 2nd Round Total Statistics of the D7 Statement

	1	2	3	4	5
	What is the probability of occurrence / realization of this statement?	How long is the realization period of this statement?	How does this statement affect the competitiveness of the Defense Industry in Turkey?	Will this statement be effective in increasing the Defense Industry R&D studies?	What is the effect of this statement on the imagery intelligence?
1st Round Total (%)	54	50	64	64	64
2nd Round Total (%)	56	52	64	70	72
Answers	High	Before 2025	High Positive	High Positive	High Positive

Table 28 1st and 2nd Round Total Evaluation of the D7 Statement



Explanation: The answers to question 3 and 5 are close; and the answers to question 4 are the same in the 1st and 2nd round of the total evaluation. There is a consensus on this issue.

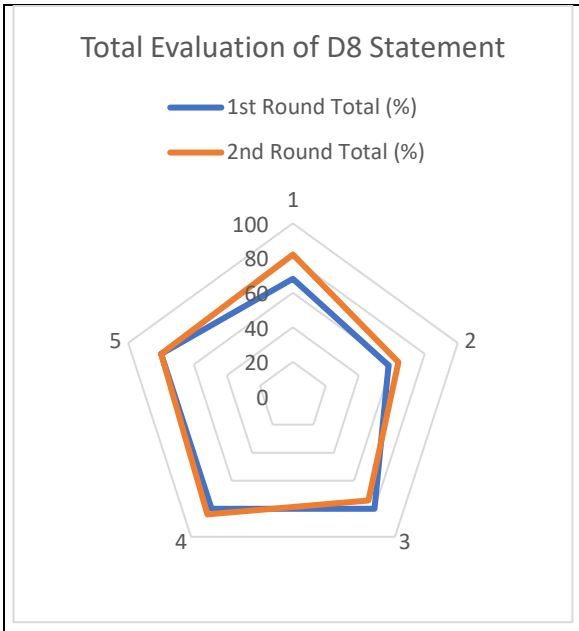
6.2.3.1.8 D8 Statement

In the Defense Industry, the imagery intelligence mobile applications will contribute significantly to the identification of define high-priority targets.

Table 29 1st and 2nd Round Total Statistics of the D8 Statement

	1	2	3	4	5
	What is the probability of occurrence / realization of this statement?	How long is the realization period of this statement?	How does this statement affect the competitiveness of the Defense Industry in Turkey?	Will this statement be effective in increasing the Defense Industry R&D studies?	What is the effect of this statement on the imagery intelligence?
1st Round Total (%)	68	58	80	80	80
2nd Round Total (%)	82	64	74	84	80
Answers	High	Before 2025	High Positive	High Positive	High Positive

Table 30 1st and 2nd Round Total Evaluation of the D8 Statement



Explanation: The answers to question 4 are close; and the answers to question 5 are the same in the 1st and 2nd round of the total evaluation. There is a consensus on this issue.

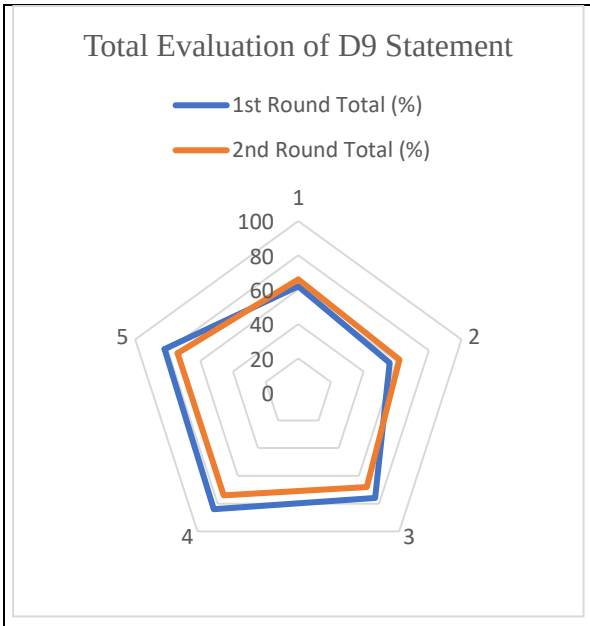
6.2.3.1.9 D9 Statement

In the Defense Industry, the imagery intelligence mobile applications will significantly facilitate intelligence sharing in joint and combined operations.

Table 31 1st and 2nd Round Total Statistics of the D9 Statement

	1	2	3	4	5
	What is the probability of occurrence / realization of this statement?	How long is the realization period of this statement?	How does this statement affect the competitiveness of the Defense Industry in Turkey?	Will this statement be effective in increasing the Defense Industry R&D studies?	What is the effect of this statement on the imagery intelligence?
1st Round Total (%)	62	56	76	84	82
2nd Round Total (%)	66	62	68	74	74
Answers	High	Before 2025	High Positive	High Positive	High Positive

Table 32 1st and 2nd Round Total Evaluation of the D9 Statement



Explanation: The answers to question 1 are close to each other in the 1st and 2nd round of the total evaluation. There is a consensus on this issue.

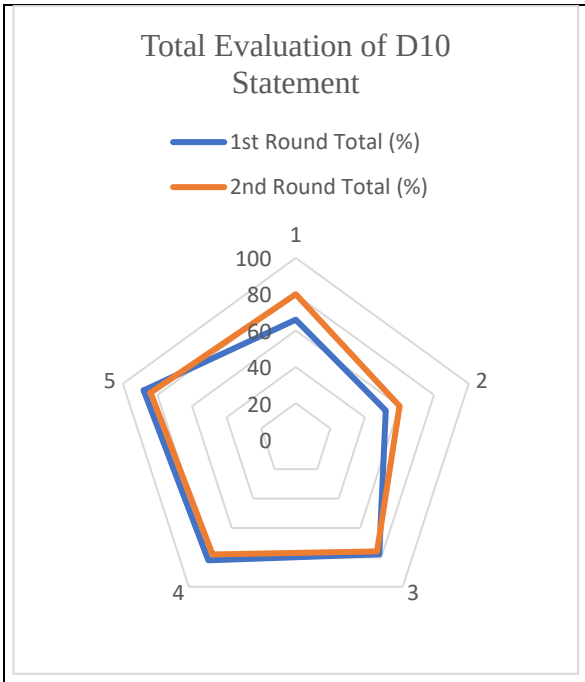
6.2.3.1.10 D10 Statement

In the Defense Industry, the imagery intelligence mobile applications will facilitate the course of action of deep zone operations.

Table 33 1st and 2nd Round Total Statistics of the D10 Statement

	1	2	3	4	5
	What is the probability of occurrence / realization of this statement?	How long is the realization period of this statement?	How does this statement affect the competitiveness of the Defense Industry in Turkey?	Will this statement be effective in increasing the Defense Industry R&D studies?	What is the effect of this statement on the imagery intelligence?
1st Round Total (%)	66	52	78	82	88
2nd Round Total (%)	80	60	76	78	84
Answers	High	Before 2025	High Positive	High Positive	High Positive

Table 34 1st and 2nd Round Total Evaluation of the D10 Statement



Explanation: The answers to question 3, 4 and 5 are close to each other in the 1st and 2nd round of the total evaluation. There is a consensus on this issue.

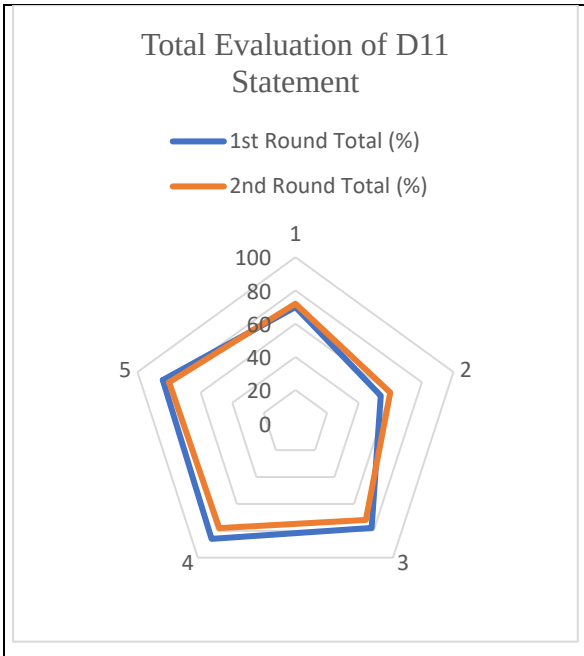
6.2.3.1.11 D11 Statement

In the Defense Industry, the imagery intelligence mobile applications will be used intensively to assess the effectiveness of fire support elements in the target area.

Table 35 1st and 2nd Round Total Statistics of the D11 Statement

	1	2	3	4	5
	What is the probability of occurrence / realization of this statement?	How long is the realization period of this statement?	How does this statement affect the competitiveness of the Defense Industry in Turkey?	Will this statement be effective in increasing the Defense Industry R&D studies?	What is the effect of this statement on the imagery intelligence?
1st Round Total (%)	70	54	78	86	84
2nd Round Total (%)	72	60	72	78	80
Answers	High	Before 2025	High Positive	High Positive	High Positive

Table 36 1st and 2nd Round Total Evaluation of the D11 Statement



Explanation: The answers to question 1 and 5 are close to each other in the 1st and 2nd round of the total evaluation. There is a consensus on this issue.

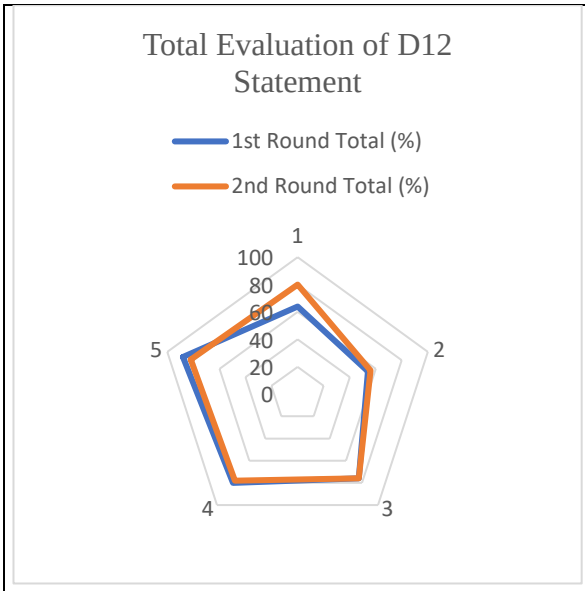
6.2.3.1.12 D12 Statement

In the Defense Industry, the imagery intelligence mobile applications will enable to pursue a safe operation by providing instant intelligence support to the maneuvering elements.

Table 37 1st and 2nd Round Total Statistics of the D12 Statement

	1	2	3	4	5
	What is the probability of occurrence / realization of this statement?	How long is the realization period of this statement?	How does this statement affect the competitiveness of the Defense Industry in Turkey?	Will this statement be effective in increasing the Defense Industry R&D studies?	What is the effect of this statement on the imagery intelligence?
1st Round Total (%)	64	54	76	80	88
2nd Round Total (%)	80	56	76	78	82
Answers	High	Before 2025	High Positive	High Positive	High Positive

Table 38 1st and 2nd Round Total Evaluation of the D12 Statement



Explanation: The answers to question 2 and 4 are close; and the answers to question 3 are the same in the 1st and 2nd round of the total evaluation. There is a consensus on this issue.

6.2.3.2 1st Round Delphi Expert and 2nd Round Delphi Expert Evaluation

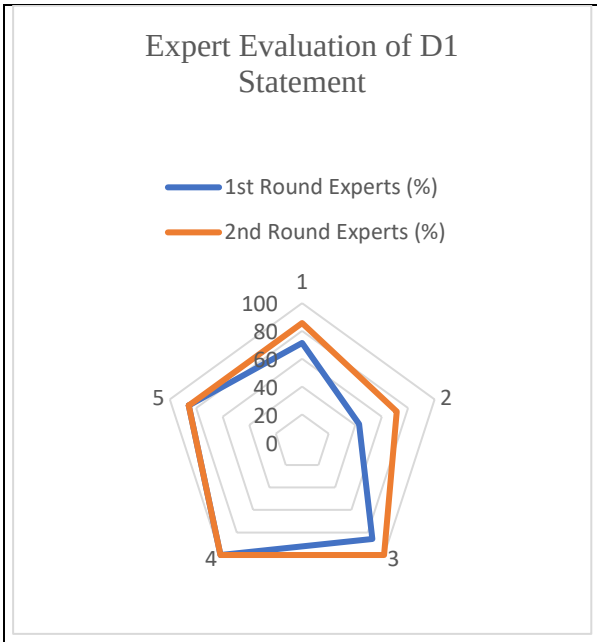
6.2.3.2.1 D1 Statement

In the Defense Industry, the imagery intelligence mobile applications will be developed to be used by both civilian and military purposes (dual usage).

Table 39 1st and 2nd Round Expert Statistics of the D1 Statement

	1	2	3	4	5
	What is the probability of occurrence / realization of this statement?	How long is the realization period of this statement?	How does this statement affect the competitiveness of the Defense Industry in Turkey?	Will this statement be effective in increasing the Defense Industry R&D studies?	What is the effect of this statement on the imagery intelligence?
1st Round Experts (%)	71,4	42,9	85,7	100	85,7
2nd Round Experts (%)	85,7	71,4	100	100	85,7
Answers	High	Before 2025	High Positive	High Positive	High Positive

Table 40 1st and 2nd Round Expert Evaluation of the D1 Statement

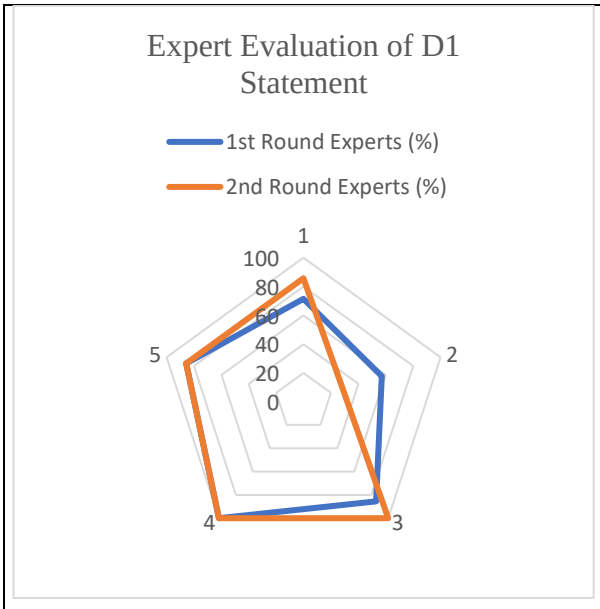


Explanation: The answers to question 4 and 5 are exactly the same in the 1st and 2nd round expert evaluation. There is a consensus on this issue. There was no consistent result in question 2.

Table 41 Between 2025-2035, 1st and 2nd Round Expert Statistics of the D1 Statement

	1	2	3	4	5
	What is the probability of occurrence / realization of this statement?	How long is the realization period of this statement?	How does this statement affect the competitiveness of the Defense Industry in Turkey?	Will this statement be effective in increasing the Defense Industry R&D studies?	What is the effect of this statement on the imagery intelligence?
1st Round Experts (%)	71,4	57,1	85,7	100	85,7
2nd Round Experts (%)	85,7	28,6	100	100	85,7
Answers	High	Between 2025-2035	High Positive	High Positive	High Positive

Table 42 Between 2025-2035, 1st and 2nd Round Expert Evaluation of the D1 Statement



Explanation: The answers to question 4 and 5 are exactly the same in the 1st and 2nd round expert evaluation. There is a consensus on this issue. There was no consistent result in question 2.

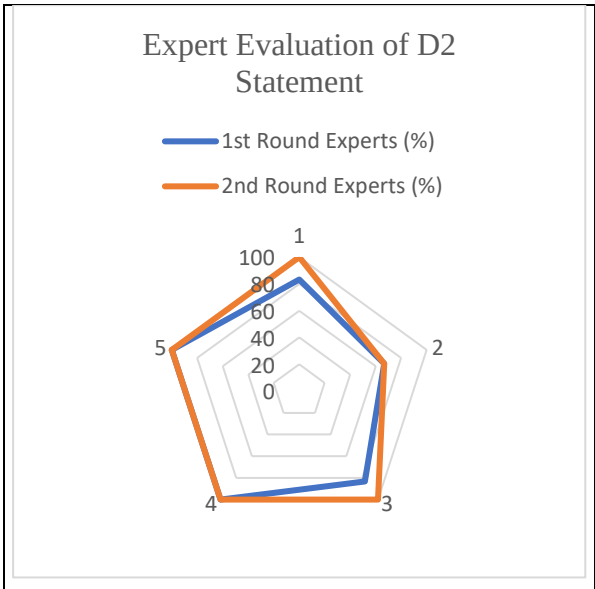
6.2.3.2.2 D2 Statement

In the Defense Industry, the imagery intelligence mobile applications will be developed with domestic and national solutions in the direction of R & D and innovation studies.

Table 43 1st and 2nd Round Expert Statistics of the D2 Statement

	1	2	3	4	5
	What is the probability of occurrence / realization of this statement?	How long is the realization period of this statement?	How does this statement affect the competitiveness of the Defense Industry in Turkey?	Will this statement be effective in increasing the Defense Industry R&D studies?	What is the effect of this statement on the imagery intelligence?
1st Round Experts (%)	83,3	66,7	83,3	100	100
2nd Round Experts (%)	100	66,7	100	100	100
Answers	High	Before 2025	High Positive	High Positive	High Positive

Table 44 1st and 2nd Round Expert Evaluation of the D2 Statement



Explanation: The answers to question 2, 4 and 5 are exactly the same in the 1st and 2nd round expert evaluation. There is a consensus on this issue.

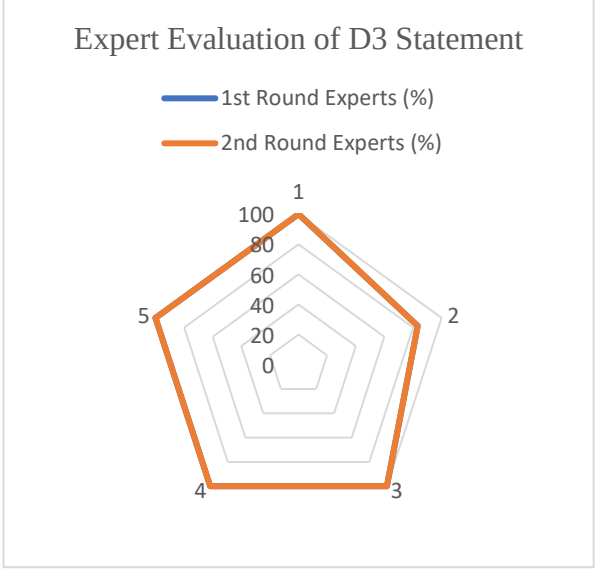
6.2.3.2.3 D3 Statement

In the Defense Industry, the imagery intelligence mobile applications will play a leading role in increasing the current image intelligence quality.

Table 45 1st and 2nd Round Expert Statistics of the D3 Statement

	1	2	3	4	5
	What is the probability of occurrence / realization of this statement?	How long is the realization period of this statement?	How does this statement affect the competitiveness of the Defense Industry in Turkey?	Will this statement be effective in increasing the Defense Industry R&D studies?	What is the effect of this statement on the imagery intelligence?
1st Round Experts (%)	100	83,3	100	100	100
2nd Round Experts (%)	100	83,3	100	100	100
Answers	High	Before 2025	High Positive	High Positive	High Positive

Table 46 1st and 2nd Round Expert Evaluation of the D3 Statement



Explanation: All the answers are exactly the same in the 1st and 2nd round expert evaluation. There is a consensus for all questions.

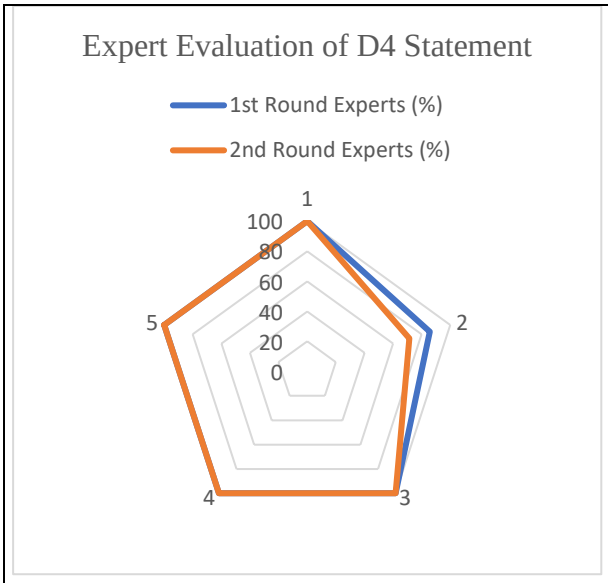
6.2.3.2.4 D4 Statement

In the Defense Industry, the imagery intelligence mobile applications will play an important role to augment the pace of the operation.

Table 47 1st and 2nd Round Expert Statistics of the D4 Statement

	1	2	3	4	5
	What is the probability of occurrence / realization of this statement?	How long is the realization period of this statement?	How does this statement affect the competitiveness of the Defense Industry in Turkey?	Will this statement be effective in increasing the Defense Industry R&D studies?	What is the effect of this statement on the imagery intelligence?
1st Round Experts (%)	100	85,7	100	100	100
2nd Round Experts (%)	100	71,4	100	100	100
Answers	High	Before 2025	High Positive	High Positive	High Positive

Table 48 1st and 2nd Round Expert Evaluation of the D4 Statement



Explanation: The answers to question 1, 3, 4 and 5 are exactly the same in the 1st and 2nd round expert evaluation. There is a consensus on this issue.

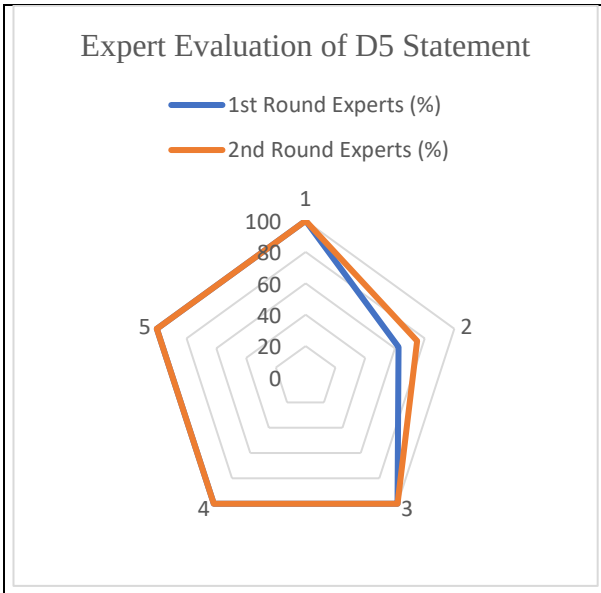
6.2.3.2.5 D5 Statement

In the Defense Industry, imagery intelligence mobile applications will minimize the possible attritions in the theater of operations.

Table 49 1st and 2nd Round Expert Statistics of the D5 Statement

	1	2	3	4	5
	What is the probability of occurrence / realization of this statement?	How long is the realization period of this statement?	How does this statement affect the competitiveness of the Defense Industry in Turkey?	Will this statement be effective in increasing the Defense Industry R&D studies?	What is the effect of this statement on the imagery intelligence?
1st Round Experts (%)	100	62,5	100	100	100
2nd Round Experts (%)	100	75	100	100	100
Answers	High	Before 2025	High Positive	High Positive	High Positive

Table 50 1st and 2nd Round Expert Evaluation of the D5 Statement



Explanation: The answers to question 1, 3, 4 and 5 are exactly the same in the 1st and 2nd round expert evaluation. There is a consensus on this issue.

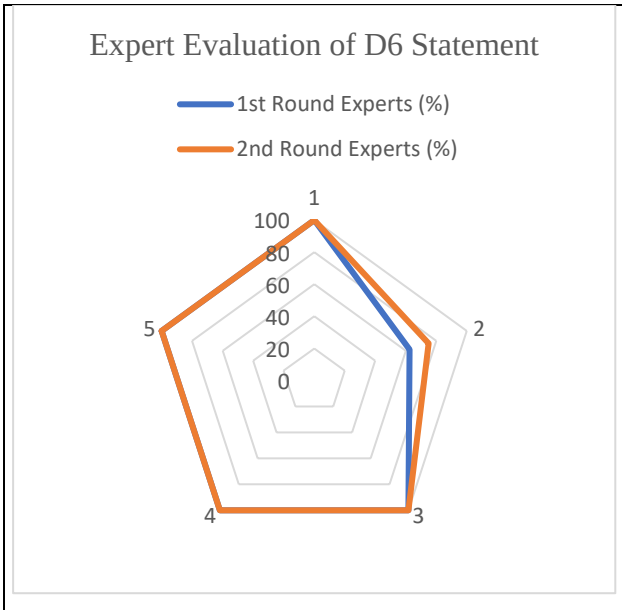
6.2.3.2.6 D6 Statement

In the Defense Industry, the imagery intelligence mobile applications will accelerate the decision-making process of decision makers.

Table 51 1st and 2nd Round Expert Statistics of the D6 Statement

	1	2	3	4	5
	What is the probability of occurrence / realization of this statement?	How long is the realization period of this statement?	How does this statement affect the competitiveness of the Defense Industry in Turkey?	Will this statement be effective in increasing the Defense Industry R&D studies?	What is the effect of this statement on the imagery intelligence?
1st Round Experts (%)	100	62,5	100	100	100
2nd Round Experts (%)	100	75	100	100	100
Answers	High	Before 2025	High Positive	High Positive	High Positive

Table 52 1st and 2nd Round Expert Evaluation of the D6 Statement



Explanation: The answers to question 1, 3, 4 and 5 are exactly the same in the 1st and 2nd round expert evaluation. There is a consensus on this issue.

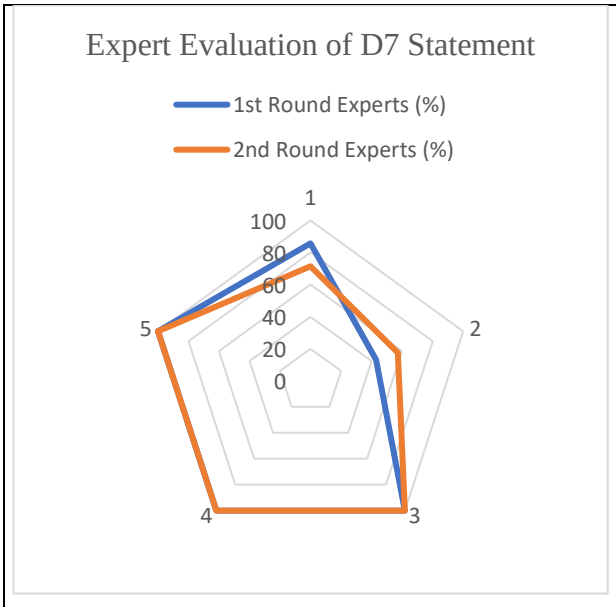
6.2.3.2.7 D7 Statement

In the Defense Industry, the imagery intelligence mobile applications will contribute significantly to interdisciplinary studies in ensuring national security.

Table 53 1st and 2nd Round Expert Statistics of the D7 Statement

	1	2	3	4	5
	What is the probability of occurrence / realization of this statement?	How long is the realization period of this statement?	How does this statement affect the competitiveness of the Defense Industry in Turkey?	Will this statement be effective in increasing the Defense Industry R&D studies?	What is the effect of this statement on the imagery intelligence?
1st Round Experts (%)	85,7	42,9	100	100	100
2nd Round Experts (%)	71,4	57,1	100	100	100
Answers	High	Before 2025	High Positive	High Positive	High Positive

Table 54 1st and 2nd Round Expert Evaluation of the D7 Statement

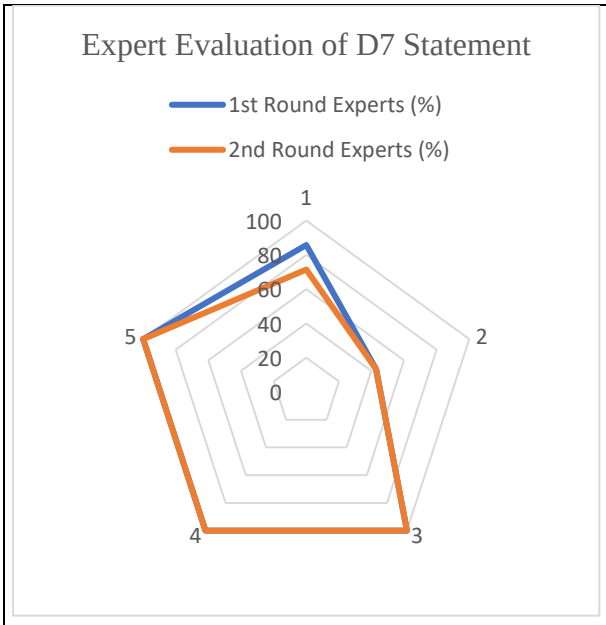


Explanation: The answers to question 3, 4 and 5 are exactly the same in the 1st and 2nd round expert evaluation. There is a consensus on this issue.

Table 55 Between 2025-2035, 1st and 2nd Round Expert Statistics of the D7 Statement

	1	2	3	4	5
	What is the probability of occurrence / realization of this statement?	How long is the realization period of this statement?	How does this statement affect the competitiveness of the Defense Industry in Turkey?	Will this statement be effective in increasing the Defense Industry R&D studies?	What is the effect of this statement on the imagery intelligence?
1st Round Experts (%)	85,7	42,9	100	100	100
2nd Round Experts (%)	71,4	42,9	100	100	100
Answers	High	Between 2025-2035	High Positive	High Positive	High Positive

Table 56 Between 2025-2035, 1st and 2nd Round Expert Evaluation of the D7 Statement



Explanation: The answers to question 2, 3, 4 and 5 are exactly the same in the 1st and 2nd round expert evaluation. There is a consensus on this issue.

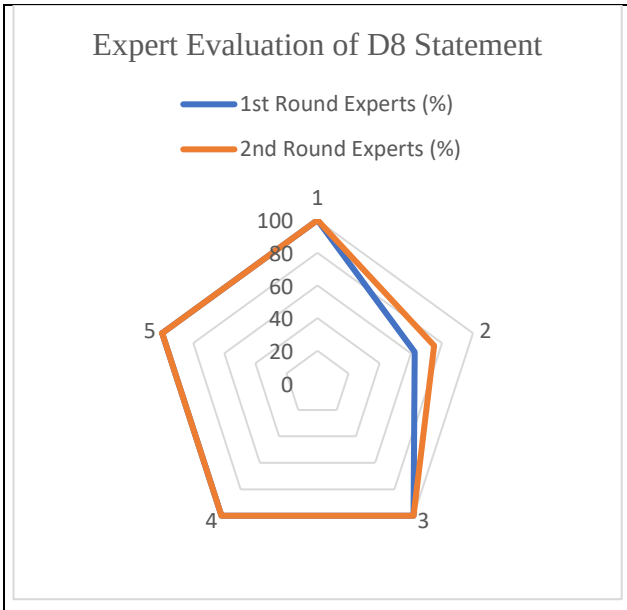
6.2.3.2.8 D8 Statement

In the Defense Industry, the imagery intelligence mobile applications will contribute significantly to the identification of define high-priority targets.

Table 57 1st and 2nd Round Expert Statistics of the D8 Statement

	1	2	3	4	5
	What is the probability of occurrence / realization of this statement?	How long is the realization period of this statement?	How does this statement affect the competitiveness of the Defense Industry in Turkey?	Will this statement be effective in increasing the Defense Industry R&D studies?	What is the effect of this statement on the imagery intelligence?
1st Round Experts (%)	100	62,5	100	100	100
2nd Round Experts (%)	100	75	100	100	100
Answers	High	Before 2025	High Positive	High Positive	High Positive

Table 58 1st and 2nd Round Expert Evaluation of the D8 Statement



Explanation: The answers to question 1, 3, 4 and 5 are exactly the same in the 1st and 2nd round expert evaluation. There is a consensus on this issue.

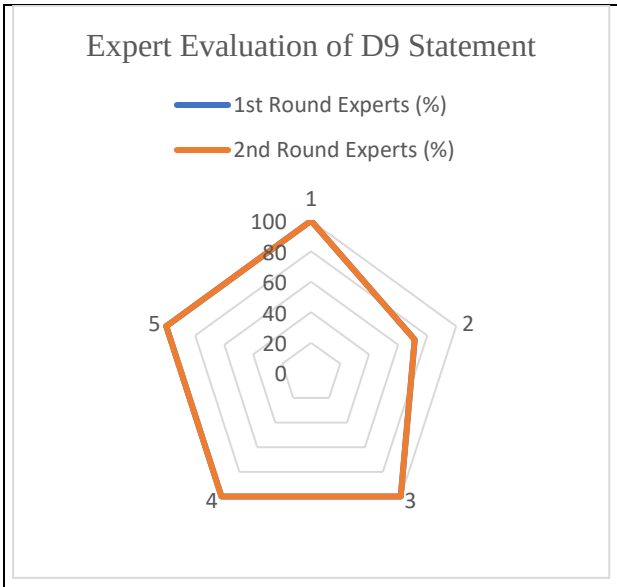
6.2.3.2.9 D9 Statement

In the Defense Industry, the imagery intelligence mobile applications will significantly facilitate intelligence sharing in joint and combined operations.

Table 59 1st and 2nd Round Expert Statistics of the D9 Statement

	1	2	3	4	5
	What is the probability of occurrence / realization of this statement?	How long is the realization period of this statement?	How does this statement affect the competitiveness of the Defense Industry in Turkey?	Will this statement be effective in increasing the Defense Industry R&D studies?	What is the effect of this statement on the imagery intelligence?
1st Round Experts (%)	100	71,4	100	100	100
2nd Round Experts (%)	100	71,4	100	100	100
Answers	High	Before 2025	High Positive	High Positive	High Positive

Table 60 1st and 2nd Round Expert Evaluation of the D9 Statement



Explanation: All the answers are exactly the same in the 1st and 2nd round expert evaluation. There is a consensus for all questions.

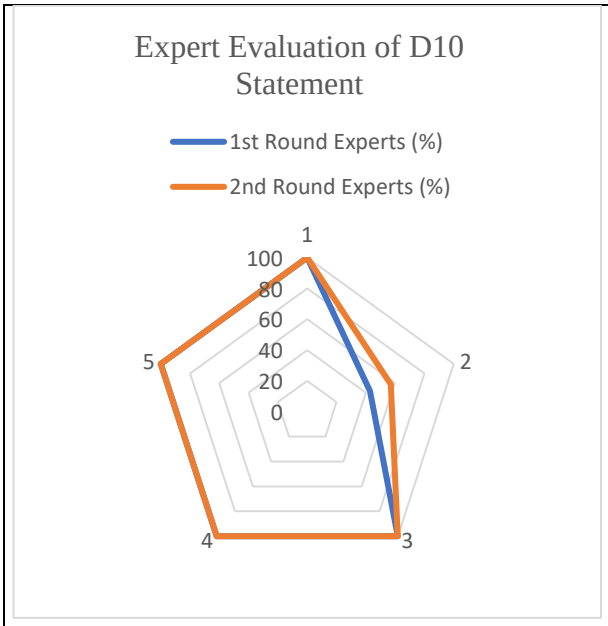
6.2.3.2.10 D10 Statement

In the Defense Industry, the imagery intelligence mobile applications will facilitate the course of action of deep zone operations.

Table 61 1st and 2nd Round Expert Statistics of the D10 Statement

	1	2	3	4	5
	What is the probability of occurrence / realization of this statement?	How long is the realization period of this statement?	How does this statement affect the competitiveness of the Defense Industry in Turkey?	Will this statement be effective in increasing the Defense Industry R&D studies?	What is the effect of this statement on the imagery intelligence?
1st Round Experts (%)	100	42,9	100	100	100
2nd Round Experts (%)	100	57,1	100	100	100
Answers	High	Before 2025	High Positive	High Positive	High Positive

Table 62 1st and 2nd Round Expert Evaluation of the D10 Statement

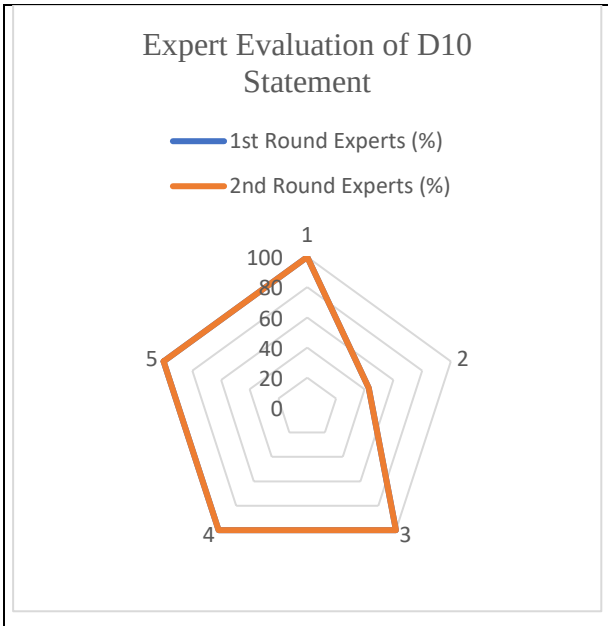


Explanation: The answers to question 1, 3, 4 and 5 are exactly the same in the 1st and 2nd round expert evaluation. There is a consensus on this issue.

Table 63 Between 2025-2035, 1st and 2nd Round Expert Statistics of the D10 Statement

	1	2	3	4	5
	What is the probability of occurrence / realization of this statement?	How long is the realization period of this statement?	How does this statement affect the competitiveness of the Defense Industry in Turkey?	Will this statement be effective in increasing the Defense Industry R&D studies?	What is the effect of this statement on the imagery intelligence?
1st Round Experts (%)	100	42,9	100	100	100
2nd Round Experts (%)	100	42,9	100	100	100
Answers	High	Between 2025-2035	High Positive	High Positive	High Positive

Table 64 Between 2025-2035, 1st and 2nd Round Expert Evaluation of the D10 Statement



Explanation: All the answers are exactly the same in the 1st and 2nd round expert evaluation. There is a consensus for all questions.

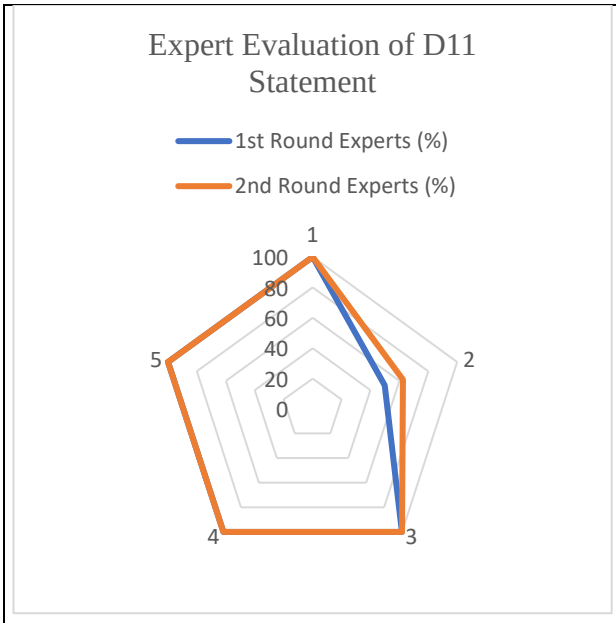
6.2.3.2.11 D11 Statement

In the Defense Industry, the imagery intelligence mobile applications will be used intensively to assess the effectiveness of fire support elements in the target area.

Table 65 1st and 2nd Round Expert Statistics of the D11 Statement

	1	2	3	4	5
	What is the probability of occurrence / realization of this statement?	How long is the realization period of this statement?	How does this statement affect the competitiveness of the Defense Industry in Turkey?	Will this statement be effective in increasing the Defense Industry R&D studies?	What is the effect of this statement on the imagery intelligence?
1st Round Experts (%)	100	50	100	100	100
2nd Round Experts (%)	100	62,5	100	100	100
Answers	High	Before 2025	High Positive	High Positive	High Positive

Table 66 1st and 2nd Round Expert Evaluation of the D11 Statement

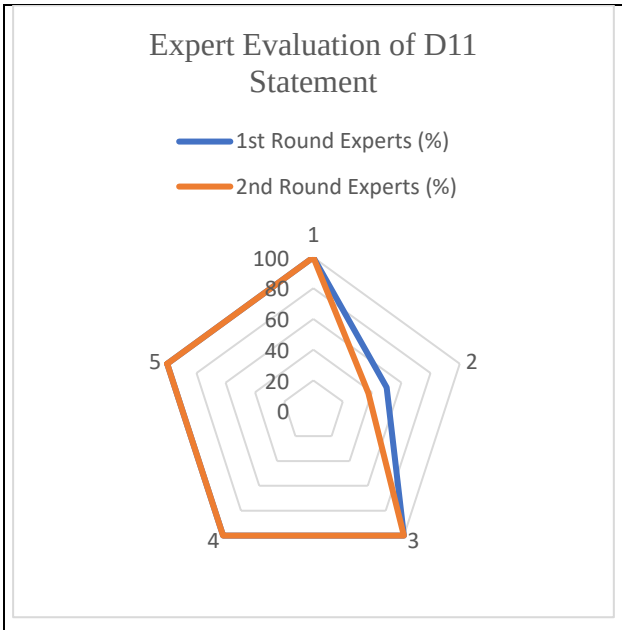


Explanation: The answers to question 1, 3, 4 and 5 are exactly the same in the 1st and 2nd round expert evaluation. There is a consensus on this issue.

Table 67 Between 2025-2035, 1st and 2nd Round Expert Statistics of the D11 Statement

	1	2	3	4	5
	What is the probability of occurrence / realization of this statement?	How long is the realization period of this statement?	How does this statement affect the competitiveness of the Defense Industry in Turkey?	Will this statement be effective in increasing the Defense Industry R&D studies?	What is the effect of this statement on the imagery intelligence?
1st Round Experts (%)	100	50	100	100	100
2nd Round Experts (%)	100	37,5	100	100	100
Answers	High	Between 2025-2035	High Positive	High Positive	High Positive

Table 68 Between 2025-2035, 1st and 2nd Round Expert Evaluation of the D11 Statement



Explanation: The answers to question 1, 3, 4 and 5 are exactly the same in the 1st and 2nd round expert evaluation. There is a consensus on this issue.

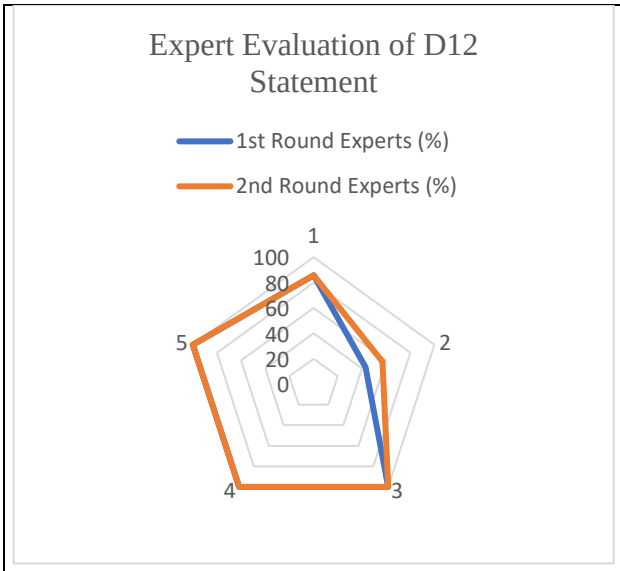
6.2.3.2.12 D12 Statement

In the Defense Industry, the imagery intelligence mobile applications will enable to pursue a safe operation by providing instant intelligence support to the maneuvering elements.

Table 69 1st and 2nd Round Expert Statistics of the D12 Statement

	1	2	3	4	5
	What is the probability of occurrence / realization of this statement?	How long is the realization period of this statement?	How does this statement affect the competitiveness of the Defense Industry in Turkey?	Will this statement be effective in increasing the Defense Industry R&D studies?	What is the effect of this statement on the imagery intelligence?
1st Round Experts (%)	85,7	42,9	100	100	100
2nd Round Experts (%)	85,7	57,1	100	100	100
Answers	High	Before 2025	High Positive	High Positive	High Positive

Table 70 1st and 2nd Round Expert Evaluation of the D12 Statement

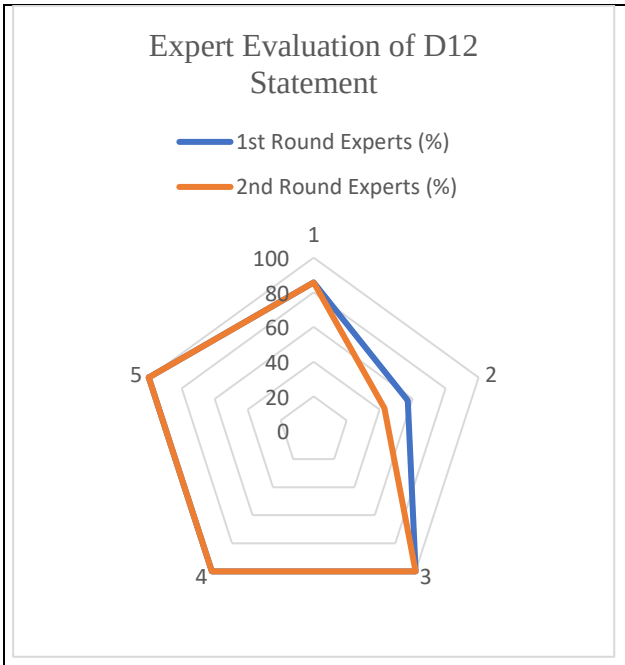


Explanation: The answers to question 1, 3, 4 and 5 are exactly the same in the 1st and 2nd round expert evaluation. There is a consensus on this issue.

Table 71 Between 2025-2035, 1st and 2nd Round Expert Statistics of the D12 Statement

	1	2	3	4	5
	What is the probability of occurrence / realization of this statement?	How long is the realization period of this statement?	How does this statement affect the competitiveness of the Defense Industry in Turkey?	Will this statement be effective in increasing the Defense Industry R&D studies?	What is the effect of this statement on the imagery intelligence?
1st Round Experts (%)	85,7	57,1	100	100	100
2nd Round Experts (%)	85,7	42,9	100	100	100
Answers	High	Between 2025-2035	High Positive	High Positive	High Positive

Table 72 Between 2025-2035, 1st and 2nd Round Expert Evaluation of the D12 Statement



Explanation: The answers to question 1, 3, 4 and 5 are exactly the same in the 1st and 2nd round expert evaluation. There is a consensus on this issue.

6.2.3.3 2nd Round Delphi Expert and 2nd Round Delphi Total Evaluation

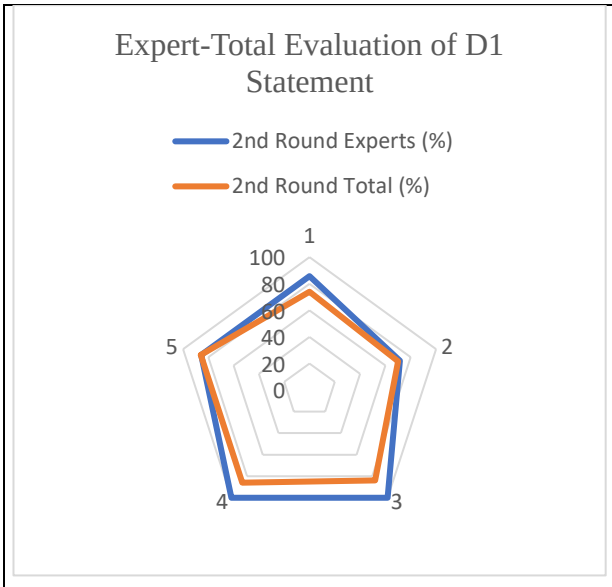
6.2.3.3.1 D1 Statement

In the Defense Industry, the imagery intelligence mobile applications will be developed to be used by both civilian and military purposes (dual usage).

Table 73 2nd Round Expert-Total Statistics of the D1 Statement

	1	2	3	4	5
	What is the probability of occurrence / realization of this statement?	How long is the realization period of this statement?	How does this statement affect the competitiveness of the Defense Industry in Turkey?	Will this statement be effective in increasing the Defense Industry R&D studies?	What is the effect of this statement on the imagery intelligence?
2nd Round Experts (%)	85,7	71,4	100	100	85,7
2nd Round Total (%)	74	70	84	86	86
Answers	High	Before 2025	High Positive	High Positive	High Positive

Table 74 2nd Round Expert-Total Evaluation of the D1 Statement



Explanation: The answers to question 2 and 5 are close to each other in the 2nd round expert-total evaluation. There is a consensus on this issue.

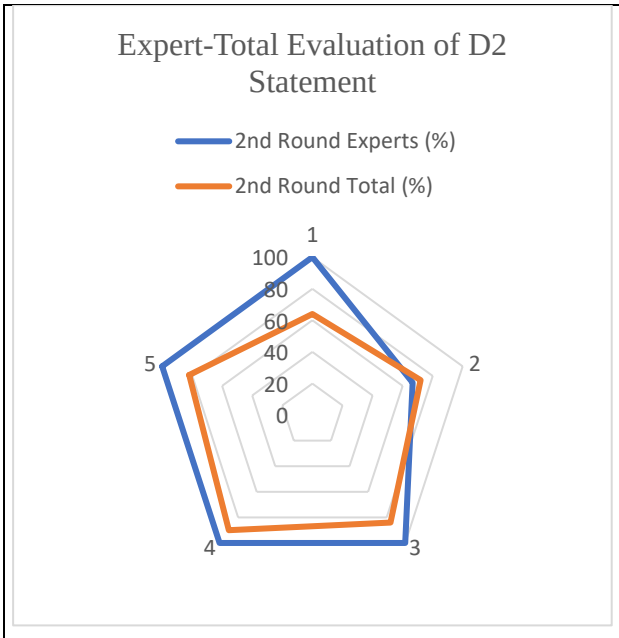
6.2.3.3.2 D2 Statement

In the Defense Industry, the imagery intelligence mobile application will be developed with domestic and national solutions in the direction of R & D and innovation studies.

Table 75 2nd Round Expert-Total Statistics of the D2 Statement

	1	2	3	4	5
	What is the probability of occurrence / realization of this statement?	How long is the realization period of this statement?	How does this statement affect the competitiveness of the Defense Industry in Turkey?	Will this statement be effective in increasing the Defense Industry R&D studies?	What is the effect of this statement on the imagery intelligence?
2nd Round Experts (%)	100	66,7	100	100	100
2nd Round Total (%)	64	72	84	90	82
Answers	High	Before 2025	High Positive	High Positive	High Positive

Table 76 2nd Round Expert-Total Evaluation of the D2 Statement



Explanation: The answers to question 2 are close to each other in the 2nd round expert-total evaluation. There is a consensus on this issue. In Question 1, there is a divergence between the expert and the total.

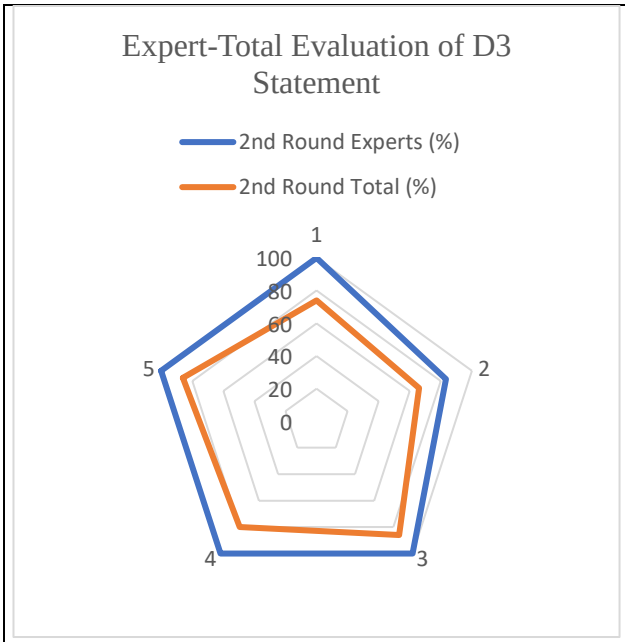
6.2.3.3.3 D3 Statement

In the Defense Industry, the imagery intelligence mobile applications will play a leading role in increasing the current image intelligence quality.

Table 77 2nd Round Expert-Total Statistics of the D3 Statement

	1	2	3	4	5
	What is the probability of occurrence / realization of this statement?	How long is the realization period of this statement?	How does this statement affect the competitiveness of the Defense Industry in Turkey?	Will this statement be effective in increasing the Defense Industry R&D studies?	What is the effect of this statement on the imagery intelligence?
2nd Round Experts (%)	100	83,3	100	100	100
2nd Round Total (%)	74	66	86	80	86
Answers	High	Before 2025	High Positive	High Positive	High Positive

Table 78 2nd Round Expert-Total Evaluation of the D3 Statement



Explanation: In the 2nd round expert-total evaluation, there is no consensus in the answers. The expert opinion is more positive.

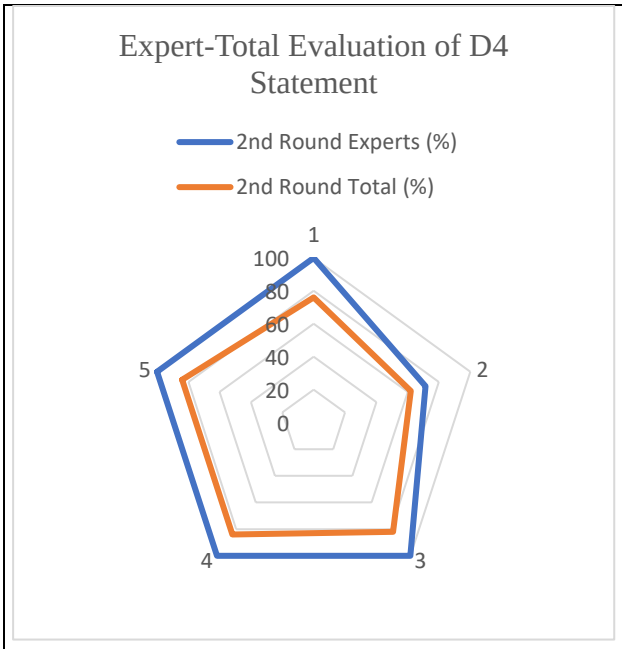
6.2.3.3.4 D4 Statement

In the Defense Industry, the imagery intelligence mobile applications will play an important role to augment the pace of the operation.

Table 79 2nd Round Expert-Total Statistics of the D4 Statement

	1	2	3	4	5
	What is the probability of occurrence / realization of this statement?	How long is the realization period of this statement?	How does this statement affect the competitiveness of the Defense Industry in Turkey?	Will this statement be effective in increasing the Defense Industry R&D studies?	What is the effect of this statement on the imagery intelligence?
2nd Round Experts (%)	100	71,4	100	100	100
2nd Round Total (%)	76	62	82	84	84
Answers	High	Before 2025	High Positive	High Positive	High Positive

Table 80 2nd Round Expert-Total Evaluation of the D4 Statement



Explanation: In the 2nd round expert-total evaluation, there is no consensus in the answers. The expert opinion is more positive.

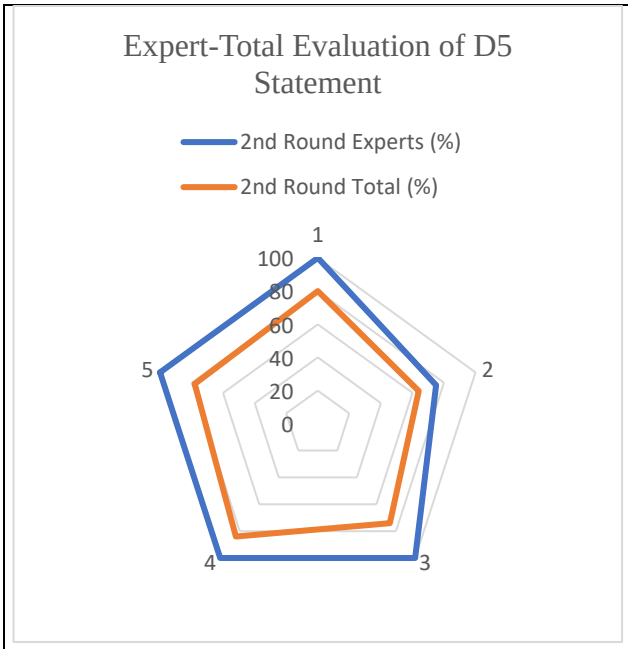
6.2.3.3.5 D5 Statement

In the Defense Industry, imagery intelligence mobile applications will minimize the possible attritions in the theater of operations.

Table 81 2nd Round Expert-Total Statistics of the D5 Statement

	1	2	3	4	5
	What is the probability of occurrence / realization of this statement?	How long is the realization period of this statement?	How does this statement affect the competitiveness of the Defense Industry in Turkey?	Will this statement be effective in increasing the Defense Industry R&D studies?	What is the effect of this statement on the imagery intelligence?
2nd Round Experts (%)	100	75	100	100	100
2nd Round Total (%)	80	64	74	84	78
Answers	High	Before 2025	High Positive	High Positive	High Positive

Table 82 2nd Round Expert-Total Evaluation of the D5 Statement



Explanation: In the 2nd round expert-total evaluation, there is no consensus in the answers. The expert opinion is more positive.

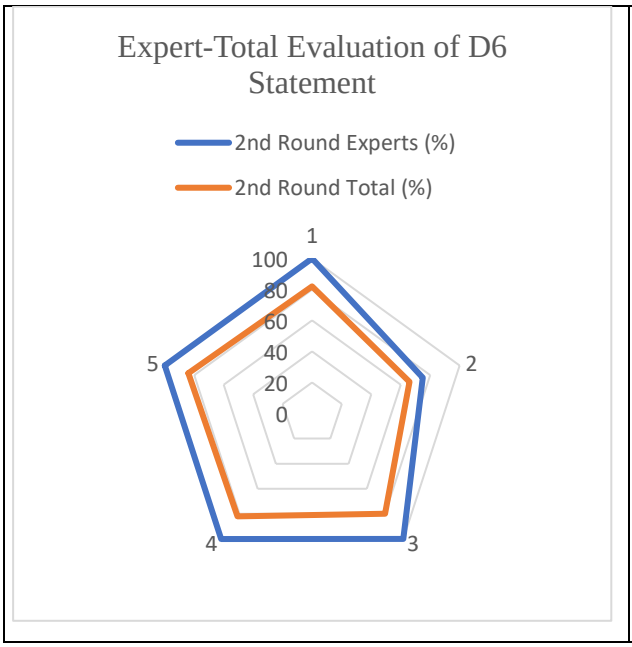
6.2.3.3.6 D6 Statement

In the Defense Industry, the imagery intelligence mobile applications will accelerate the decision-making process of decision makers.

Table 83 2nd Round Expert-Total Statistics of the D6 Statement

	1	2	3	4	5
	What is the probability of occurrence / realization of this statement?	How long is the realization period of this statement?	How does this statement affect the competitiveness of the Defense Industry in Turkey?	Will this statement be effective in increasing the Defense Industry R&D studies?	What is the effect of this statement on the imagery intelligence?
2nd Round Experts (%)	100	75	100	100	100
2nd Round Total (%)	82	66	80	82	84
Answers	High	Before 2025	High Positive	High Positive	High Positive

Table 84 2nd Round Expert-Total Evaluation of the D6 Statement



Explanation: In the 2nd round expert-total evaluation, there is no consensus in the answers. The expert opinion is more positive.

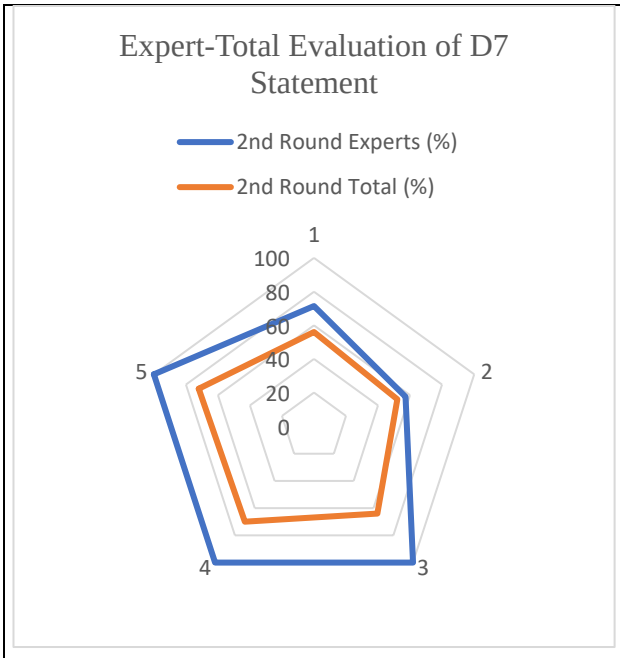
6.2.3.3.7 D7 Statement

In the Defense Industry, the imagery intelligence mobile applications will contribute significantly to interdisciplinary studies in ensuring national security.

Table 85 2nd Round Expert-Total Statistics of the D7 Statement

	1	2	3	4	5
	What is the probability of occurrence / realization of this statement?	How long is the realization period of this statement?	How does this statement affect the competitiveness of the Defense Industry in Turkey?	Will this statement be effective in increasing the Defense Industry R&D studies?	What is the effect of this statement on the imagery intelligence?
2nd Round Experts (%)	71,4	57,1	100	100	100
2nd Round Total (%)	56	52	64	70	72
Answers	High	Before 2025	High Positive	High Positive	High Positive

Table 86 2nd Round Expert-Total Evaluation of the D7 Statement



Explanation: The answers to question 2 are close to each other in the 2nd round expert-total evaluation. There is a consensus on this issue.

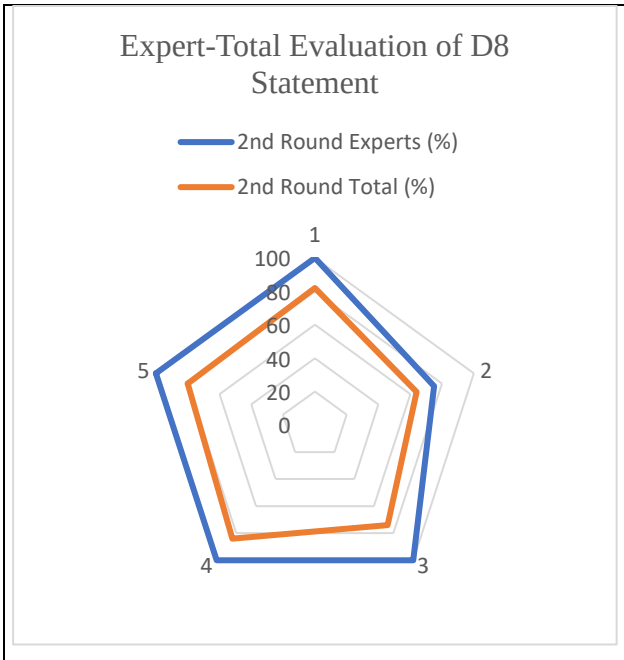
6.2.3.3.8 D8 Statement

In the Defense Industry, the imagery intelligence mobile applications will contribute significantly to the identification of define high-priority targets.

Table 87 2nd Round Expert-Total Statistics of the D8 Statement

	1	2	3	4	5
	What is the probability of occurrence / realization of this statement?	How long is the realization period of this statement?	How does this statement affect the competitiveness of the Defense Industry in Turkey?	Will this statement be effective in increasing the Defense Industry R&D studies?	What is the effect of this statement on the imagery intelligence?
2nd Round Experts (%)	100	75	100	100	100
2nd Round Total (%)	82	64	74	84	80
Answers	High	Before 2025	High Positive	High Positive	High Positive

Table 88 2nd Round Expert-Total Evaluation of the D8 Statement



Explanation: In the 2nd round expert-total evaluation, there is no consensus in the answers. The expert opinion is more positive.

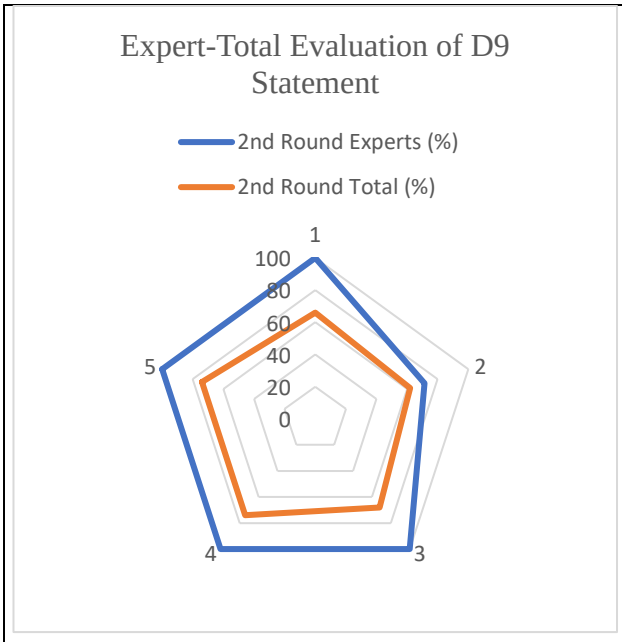
6.2.3.3.9 D9 Statement

In the Defense Industry, the imagery intelligence mobile applications will significantly facilitate intelligence sharing in joint and combined operations.

Table 89 2nd Round Expert-Total Statistics of the D9 Statement

	1	2	3	4	5
	What is the probability of occurrence / realization of this statement?	How long is the realization period of this statement?	How does this statement affect the competitiveness of the Defense Industry in Turkey?	Will this statement be effective in increasing the Defense Industry R&D studies?	What is the effect of this statement on the imagery intelligence?
2nd Round Experts (%)	100	71,4	100	100	100
2nd Round Total (%)	66	62	68	74	74
Answers	High	Before 2025	High Positive	High Positive	High Positive

Table 90 2nd Round Expert-Total Evaluation of the D9 Statement



Explanation: In the 2nd round expert-total evaluation, there is no consensus in the answers. The expert opinion is more positive.

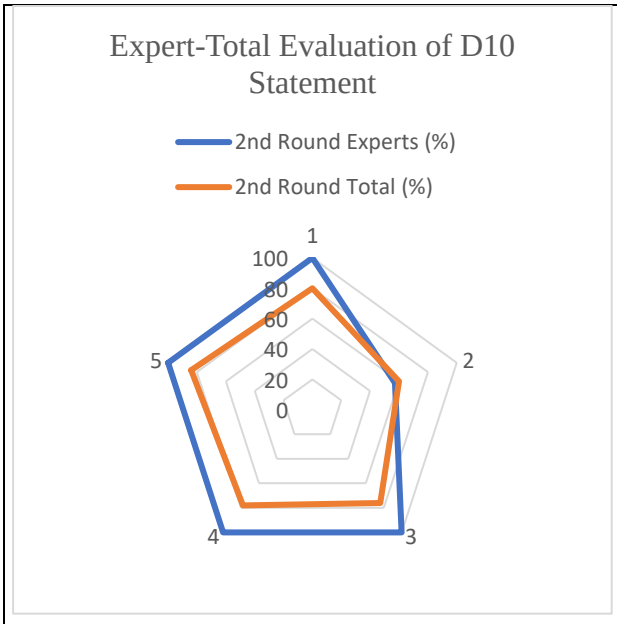
6.2.3.3.10 D10 Statement

In the Defense Industry, the imagery intelligence mobile applications will facilitate the course of action of deep zone operations.

Table 91 2nd Round Expert-Total Statistics of the D10 Statement

	1	2	3	4	5
	What is the probability of occurrence / realization of this statement?	How long is the realization period of this statement?	How does this statement affect the competitiveness of the Defense Industry in Turkey?	Will this statement be effective in increasing the Defense Industry R&D studies?	What is the effect of this statement on the imagery intelligence?
2nd Round Experts (%)	100	57,1	100	100	100
2nd Round Total (%)	80	60	76	78	84
Answers	High	Before 2025	High Positive	High Positive	High Positive

Table 92 2nd Round Expert-Total Evaluation of the D10 Statement



Explanation: The answers to question 2 are close to each other in the 2nd round expert-total evaluation. There is a consensus on this issue.

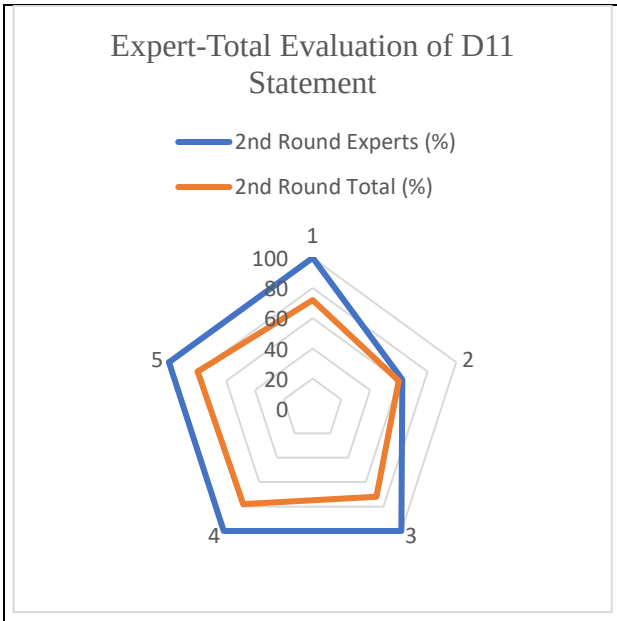
6.2.3.3.11 D11 Statement

D11 Statement: In the Defense Industry, the imagery intelligence mobile applications will be used intensively to assess the effectiveness of fire support elements in the target area.

Table 93 2nd Round Expert-Total Statistics of the D11 Statement

	1	2	3	4	5
	What is the probability of occurrence / realization of this statement?	How long is the realization period of this statement?	How does this statement affect the competitiveness of the Defense Industry in Turkey?	Will this statement be effective in increasing the Defense Industry R&D studies?	What is the effect of this statement on the imagery intelligence?
2nd Round Experts (%)	100	62,5	100	100	100
2nd Round Total (%)	72	60	72	78	80
Answers	High	Before 2025	High Positive	High Positive	High Positive

Table 94 2nd Round Expert-Total Evaluation of the D11 Statement



Explanation: The answers to question 2 are close to each other in the 2nd round expert-total evaluation. There is a consensus on this issue.

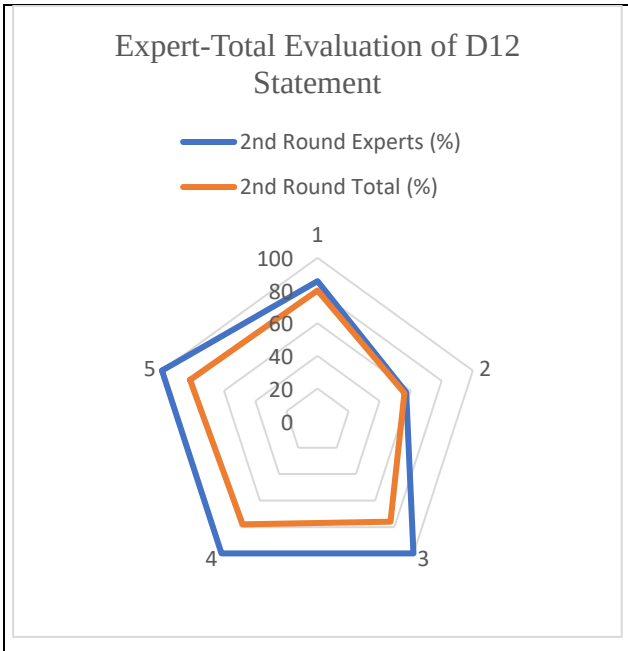
6.2.3.3.12 D12 Statement

In the Defense Industry, the imagery intelligence mobile applications will enable to pursue a safe operation by providing instant intelligence support to the maneuvering elements.

Table 95 2nd Round Expert-Total Statistics of the D12 Statement

	1	2	3	4	5
	What is the probability of occurrence / realization of this statement?	How long is the realization period of this statement?	How does this statement affect the competitiveness of the Defense Industry in Turkey?	Will this statement be effective in increasing the Defense Industry R&D studies?	What is the effect of this statement on the imagery intelligence?
2nd Round Experts (%)	85,7	57,1	100	100	100
2nd Round Total (%)	80	56	76	78	82
Answers	High	Before 2025	High Positive	High Positive	High Positive

Table 96 2nd Round Expert-Total Evaluation of the D12 Statement



Explanation: The answers to question 1 and 2 are close to each other in the 2nd round expert-total evaluation. There is a consensus on this issue.

1st Round Delphi "I have an Idea" and 2nd Round Delphi “I have an Idea” Evaluation graphics are in Appendix A, 2nd Round Delphi “I have an Idea” and 2nd Round Delphi Total Evaluation graphics are in Appendix B, 1st Round Delphi Expert and 1st Round Delphi Total Evaluation charts are in Appendix C.

6.2.3.4 According to Probability of Occurrence / Realization, Statements That Can Take Place in Short-Term (Before 2025), Medium-Term (Between 2025-2035) and Long-Term (After 2035)

In the graphic below, the 2nd Round Delphi Expert and the 2nd Round Delphi Total results are shown. The results of the experts are shown in red.

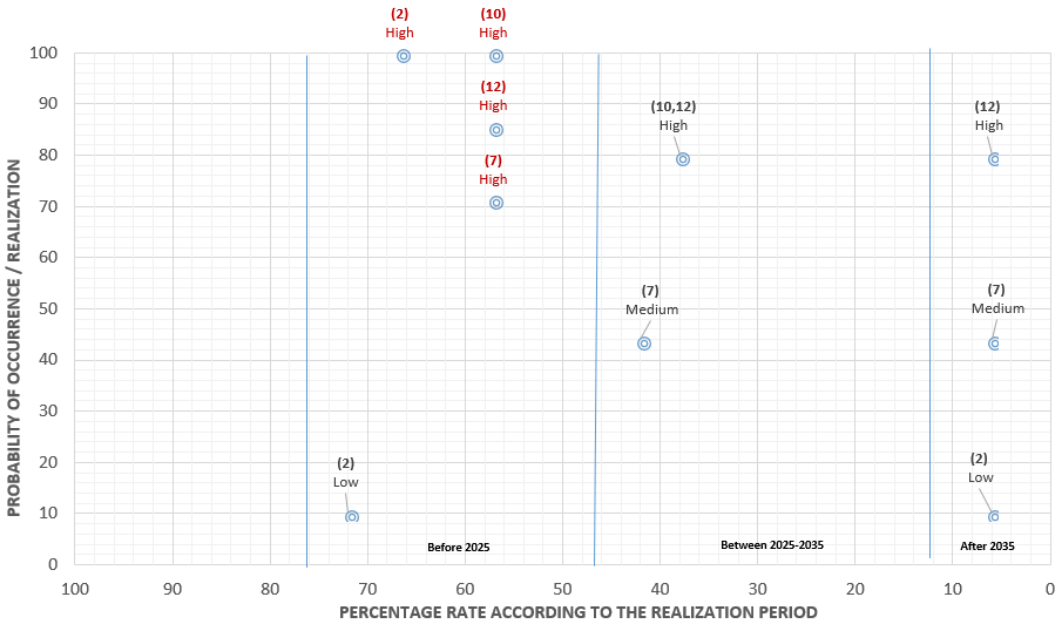


Figure 18 According to Probability of Occurrence / Realization, Statements That Can Take Place in Short-Term, Medium-Term and Long-Term

Table 97 Realization Period - Probability of Occurrence / Realization Table

Realization Period	2nd Round Expert-Total	Delphi Statement	Probability of Occurrence / Realization
Short Term (Before 2025)	2nd Round Experts	2	High
		7	High
		10	High
		12	High
	2nd Round Total	2	Low
Medium Term (Between 2025-2035)	2nd Round Experts	-	-
	2nd Round Total	7	Medium
		10	High
		12	High
Long Term (After 2035)	2nd Round Experts	-	-
	2nd Round Total	2	Low
		7	Medium
		12	High

According to experts, D2, D7, D10 and D12 statements can occur before 2025, and the Probability of Occurrence / Realization is High.

- For the Statement D2;

Experts' comments: In all of the Delphi statements, it is the statement whose realization period before 2025 as well as the Probability of Occurrence / Realization is the highest. The expert opinion is more positive.

Total comment: It is the Delphi statement which can be realized before 2025 / after 2035; but whose Probability of Occurrence / Realization is Low. In general, there is an uncertainty about the realization period.

- For the Statement D7;

Experts' Comments: It is the Delphi statement which can be realized before 2025 and whose Probability of Occurrence / Realization is High. The expert opinion is more positive.

Total Comment: It is the Delphi statement whose realization period between 2025-2035 and after 2035 as well as the Probability of Occurrence / Realization is Medium.

- For the Statement D10;

Experts' Comments: It is the Delphi statement which can be realized before 2025 and whose Probability of Occurrence / Realization is High. The expert opinion is more positive.

Total Comment: It is the Delphi statement whose realization period between 2025-2035 as well as the Probability of Occurrence / Realization is Medium.

- For the Statement D12;

Experts' Comments: It is the Delphi statement whose realization period before 2025 as well as the Probability of Occurrence / Realization is High. The expert opinion is more positive.

Total Comment: It is the Delphi statement whose realization period between 2025-2035 and after 2035 as well as the Probability of Occurrence / Realization is High.

6.2.3.5 According to their Effect on Turkey's Defense Industry Competitiveness, Statements That Can Take Place in Short-Term (Before 2025), Medium-Term (Between 2025-2035) and Long-Term (After 2035)

In the graphic below, the 2nd Round Delphi Expert and the 2nd Round Delphi Total results are shown. The results of the experts are shown in red.

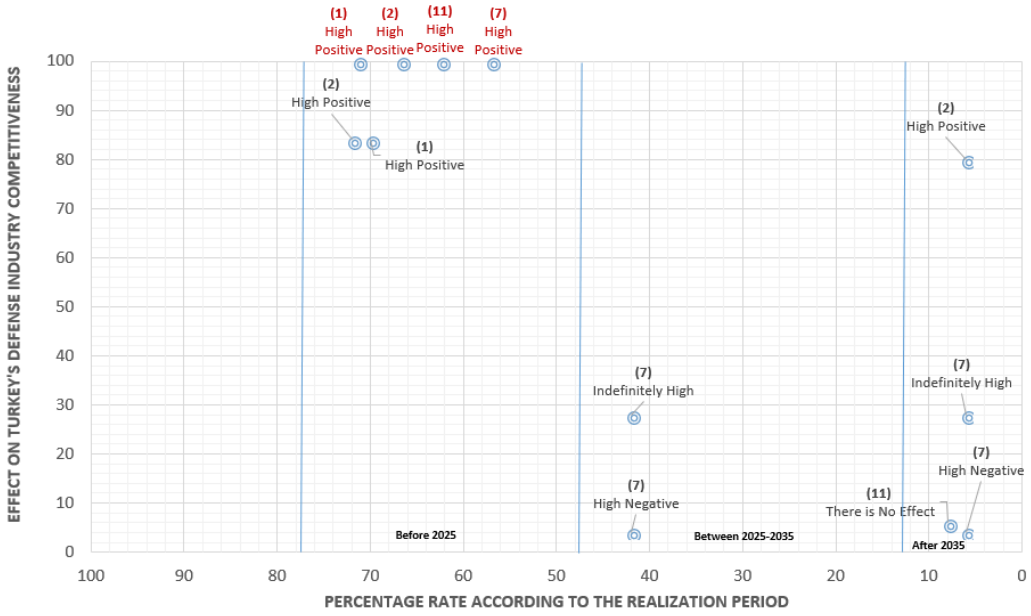


Figure 19 According to their Effect on Turkey's Defense Industry Competitiveness, Statements That Can Take Place in Short-Term, Medium-Term and Long-Term

Table 98 Realization Period - Effect on Turkey's Defense Industry Competitiveness Table

Realization Period	**2nd Round Expert-Total**	**Delphi Statement**	**Effect on Turkey's Defense Industry Competitiveness**
Short Term (Before 2025)	2nd Round Experts	1	High Positive
		2	High Positive
		7	High Positive
		11	High Positive

Table 98 (continued)

	2nd Round Total	1	High Positive
		2	High Positive
Medium Term (Between 2025-2035)	2nd Round Experts	-	-
		7	Indefinitely High High Negative
Long Term (After 2035)	2nd Round Experts	-	-
	2nd Round Total	2	High Positive
		7	Indefinitely High High Negative
		11	There is No Effect

According to experts, statements D1, D2, D7 and D11 can be realized before 2025, and their Effect on Turkey's Defense Industry Competitiveness is the High Positive.

- For the Statement D1;

Experts' Comments: In all of the Delphi statements, it is the statement whose realization period before 2025 as well as its Effect on Turkey's Defense Industry Competitiveness is the High Positive. The expert opinion is more positive.

Total Comment: It is the Delphi statement whose realization period before 2025 and its Effect on Turkey's Defense Industry Competitiveness is the High Positive.

- For the Statement D2;

Experts' Comments: In all of the Delphi statements, it is the statement whose realization period before 2025 as well as its Effect on Turkey's Defense Industry Competitiveness is the High Positive. The expert opinion is more positive.

Total Comment: It is the Delphi statement whose realization period before 2025/ after 2035 and its Effect on Turkey's Defense Industry Competitiveness is the High Positive. In general, there is an ambiguity about the realization period.

- For the Statement D7;

Experts' Comments: In all of the Delphi statements, it is the statement whose realization period before 2025 as well as its Effect on Turkey's Defense Industry Competitiveness is the High Positive. The expert opinion is more positive. The experts' comment contradicts the total interpretation.

Total Comment: It is the Delphi statement whose realization period between 2025-2035 / after 2035 as well as its Effect on Turkey's Defense Industry Competitiveness is Indefinitely High and High Negative. In general, there is an ambiguity about the realization period and Effect on Turkey's Defense Industry Competitiveness is on the negative side.

- For the Statement D11;

Experts' Comments: In all of the Delphi statements, it is the statement whose realization period before 2025 as well as its Effect on Turkey's Defense Industry Competitiveness is the High Positive. The experts' comment contradicts the total interpretation.

Total Comment: It is the Delphi statement whose realization period after 2035 as well as its Effect on Turkey's Defense Industry Competitiveness is There is No Effect.

6.2.3.6 According to their Effect on Increasing of Defense Industry R & D Studies, Statements That Can Take Place in Short-Term (Before 2025), Medium-Term (Between 2025-2035) and Long-Term (After 2035)

In the graphic below, the 2nd Round Delphi Expert and the 2nd Round Delphi Total results are shown. The results of the experts are shown in red.

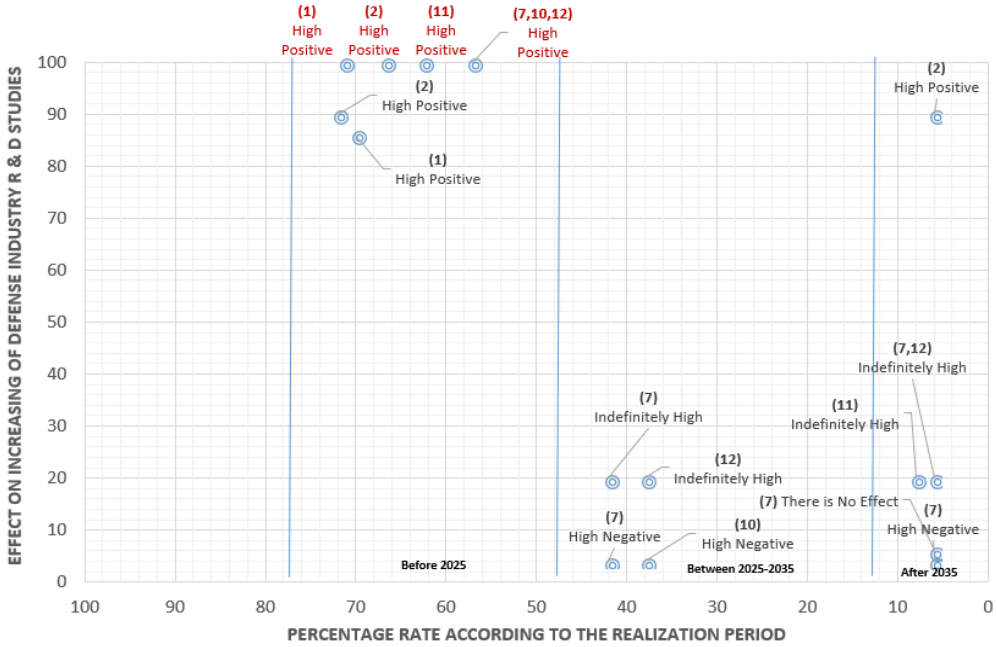


Figure 20 According to their Effect on Increasing of Defense Industry R & D Studies, Statements That Can Take Place in Short-Term, Medium-Term and Long-Term

Table 99 Realization Period - Effect on Increasing of Defense Industry R & D Studies Table

Realization Period	2nd Round Expert-Total	Delphi Statement	Effect on Increasing of Defense Industry R & D Studies
Short Term (Before 2025)	2nd Round Experts	1	High Positive
		2	High Positive
		7	High Positive
		10	High Positive
		11	High Positive
		12	High Positive
	2nd Round Total	1	High Positive
		2	High Positive

Table 99 (continued)

Medium Term (Between 2025-2035)	2nd Round Experts	-	-
	2nd Round Total	7	Indefinitely High High Negative
		10	High Negative
		12	Indefinitely High
Long Term (After 2035)	2nd Round Experts	-	-
	2nd Round Total	2	High Positive
		7	Indefinitely High High Negative
		11	Indefinitely High
		12	Indefinitely High

According to experts, statements D1, D2, D7, D10, D11, and D12 can be realized before 2025, and their Effect on Increasing of Defense Industry R & D studies is the High Positive.

- For the Statement D1;

Experts' Comments: In all of the Delphi statements it is the statement whose realization period before 2025 as well as its Effect on Increasing of Defense Industry R & D studies is the High Positive. The expert opinion is more positive.

Total Comment: It is the Delphi statement whose realization period before 2025 and its Effect on Increasing of Defense Industry R & D studies is the High Positive.

- For the Statement D2;

Experts' Comment: It is the Delphi statement whose realization period before 2025 as well as its Effect on Increasing of Defense Industry R & D studies is the High Positive. The expert opinion is more positive.

Total Comment: It is the Delphi statement which can be realized before 2025/ after 2035 and its Effect on Increasing of Defense Industry R & D studies is the High Positive. In general, there is an ambiguity about the realization period.

- For the Statement D7;

Experts' Comment: It is the Delphi statement whose realization period before 2025 as well as its Effect on Increasing of Defense Industry R & D studies is the High Positive. The expert opinion is positive. The experts' comment contradicts the total interpretation.

Total Comment: It is the Delphi statement whose realization period between 2025-2035 / after 2035 as well as its Effect on Increasing of Defense Industry R & D studies is Indefinitely High, High Negative.

- For the Statement D10;

Experts' Comment: It is the Delphi statement whose realization period before 2025 as well as its Effect on Increasing of Defense Industry R & D studies is the High Positive. The expert opinion is positive. The experts' comment contradicts the total interpretation.

Total Comment: It is the Delphi statement whose realization period between the years 2025 and 2035 as well as its Effect on Increasing of Defense Industry R & D studies is High Negative.

- For the Statement D11;

Experts' Comment: It is the Delphi statement whose realization period before 2025 as well as its Effect on Increasing of Defense Industry R & D studies is High Positive. The expert opinion is positive. The experts' comment contradicts the total interpretation.

Total Comment: It is the Delphi statement whose realization period after 2035 as well as its Effect on Increasing of Defense Industry R & D studies is Indefinitely High.

- For the Statement D12;

Experts' Comment: It is the Delphi statement whose realization period before 2025 as well as its Effect on Increasing of Defense Industry R & D studies is High Positive. The expert opinion is positive.

Total Comment: It is the Delphi statement whose realization period between 2025-2035/ after 2035 and as well as its Effect on Increasing of Defense Industry R & D studies is Indefinitely High.

6.2.3.7 According to Their Effect on Imagery Intelligence, Statements That Can Take Place in Short-Term (Before 2025), Medium-Term (Between 2025-2035) and Long-Term (After 2035)

In the graphic below, the 2nd Round Delphi Expert and the 2nd Round Delphi Total results are shown. The results of the experts are shown in red.

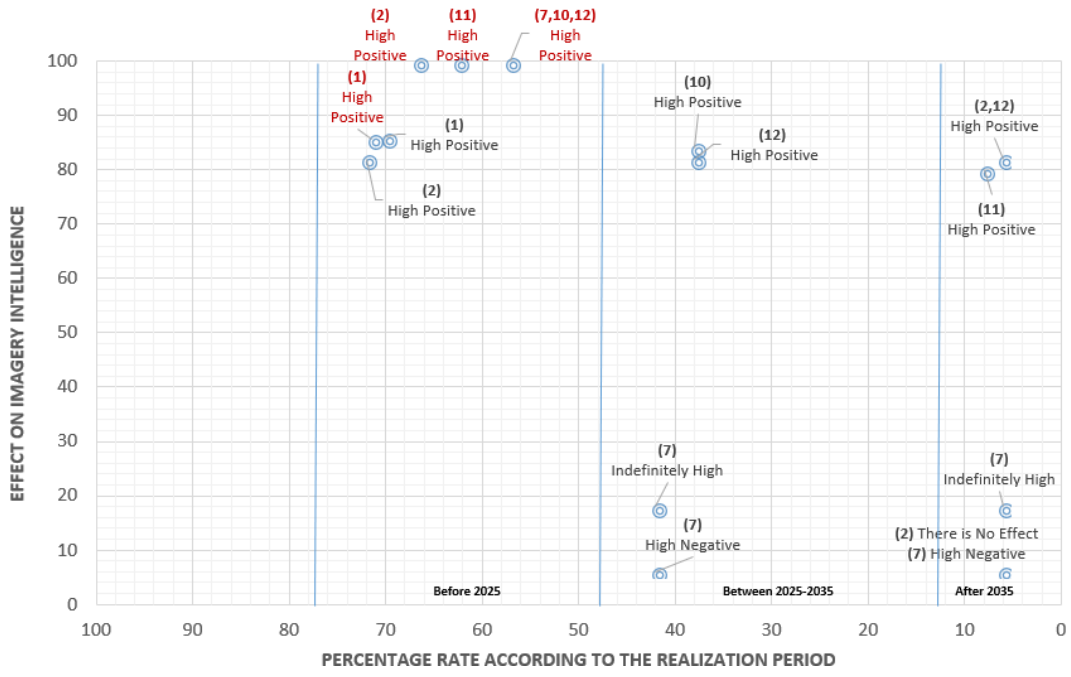


Figure 21 According to their Effect on Imagery Intelligence, Statements That Can Take Place in Short-Term, Medium-Term and Long-Term

Table 100 Realization Period - Effect on Imagery Intelligence Table

Realization Period	2nd Round Expert-Total	Delphi Statement	Effect on Imagery Intelligence
Short Term (Before 2025)	2nd Round Experts	1	High Positive
		2	High Positive
		7	High Positive
		10	High Positive
		11	High Positive
		12	High Positive
	2nd Round Total	1	High Positive
		2	High Positive
Medium Term (Between 2025-2035)	2nd Round Experts	-	-
	2nd Round Total	7	Indefinitely High High Negative
		10	High Positive
		12	High Positive
Long Term (After 2035)	2nd Round Experts	-	-
	2nd Round Total	2	High Positive There is No Effect
		7	Indefinitely High High Negative
		11	High Positive
		12	High Positive

According to experts, statements D1, D2, D7, D10, D11 and D12 can be realized before 2025, and their Effect on Imagery Intelligence is High Positive.

- For the Statement D1;

Experts' Comment: It is the Delphi statement which can be realized before 2025 and its Effect on Imagery Intelligence is High Positive. The experts' opinion and the total opinion are very close.

Total comment: It is the Delphi statement which can be realized before 2025 and its Effect on Visual Intelligence is High Positive.

- For the Statement D2;

Experts' Comments: It is the Delphi statement which can be realized before 2025 and its Effect on Imagery Intelligence is High Positive.

Total Comment: It is the Delphi statement whose realization period before 2025/ after 2035 as well as its Effect on Imagery Intelligence is High Positive. In general, there is an ambiguity about the realization period. Also, the result that states that the Effect on imagery Intelligence of this statement is either High Positive and There is No Effect shows that there is not a consensus on this statement.

- For the Statement D7;

Experts' Comments: It is the Delphi statement, which can realize before 2025 and its Effect on Imagery Intelligence is High Positive. The expert opinion is positive. The experts' comment contradicts the total interpretation.

Total Comment: It is the Delphi statement whose realization possibility between 2025-2035 / after 2035 as well as its Effect on Imagery Intelligence is Indefinitely High, High Negative.

- For the Statement D10;

Experts' Comments: It is the Delphi statement, which can realize before 2025 and its Effect on Imagery Intelligence is High Positive. The expert opinion is more positive.

Total Comment: It is the Delphi statement whose realization period between 2025-2035 as well as its Effect on Imagery Intelligence is High Positive.

- For the Statement D11;

Experts' Comments: It is the Delphi statement, whose realization period before 2025 and its Effect on Imagery Intelligence is High Positive. The expert opinion is more positive.

Total Comment: It is the Delphi statement whose realization period after 2035 as well as its Effect on Imagery Intelligence is High Positive.

- For the Statement D12;

Experts' Comments: It is the Delphi statement, which can realize before 2025 and its Effect on Imagery Intelligence is High Positive. The expert opinion is more positive.

Total Comment: It is the Delphi statement whose realization period between 2025-2035 / after 2035 as well as its Effect on Imagery Intelligence is High Positive.

6.2.3.8 According to Their Effect on Turkey's Defense Industry Competitiveness, Statements Whose Probability of Occurrence / Realization is High, Medium, Low and Never

In the graphic below, the 2nd Round Delphi Expert and the 2nd Round Delphi Total results are shown. The results of the experts are shown in red.

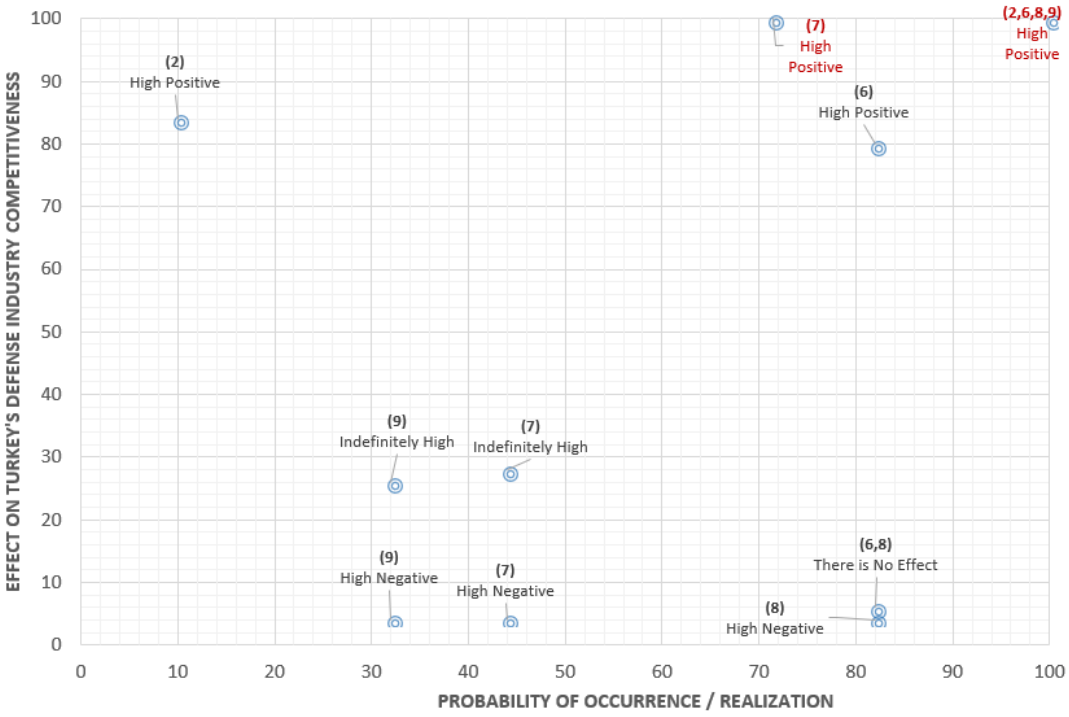


Figure 22 According to Their Effect on Turkey's Defense Industry Competitiveness, Statements Whose Probability of Occurrence / Realization is High, Medium, Low and Never

Table 101 Probability of Occurrence / Realization - Effect on Turkey's Defense Industry Competitiveness Table

Probability of Occurrence / Realization	**2nd Round Expert-Total**	**Delphi Statement**	**Effect on Turkey's Defense Industry Competitiveness**
High	2nd Round Experts	2	High Positive
		6	High Positive
		7	High Positive
		8	High Positive
		9	High Positive
	2nd Round Total	6	High Positive There is No Effect
		8	There is No Effect High Negative
Medium	2nd Round Experts	-	-
	2nd Round Total	7	Indefinitely High High Negative
		9	Indefinitely High High Negative
Low	2nd Round Experts	-	-
	2nd Round Total	2	High Positive
Never	2nd Round Experts	-	-
	2nd Round Total		

According to experts, statements D2, D6, D7, D8 and D9 are statements whose Probability of Occurrence / Realization is High, as well as their Effect on Turkey's Defense Industry Competitiveness is High Positive. According to the expert and the total interpretation, there is no statement that cannot be realized.

- For the Statement D2;

Experts' Comments: It is the Delphi statement whose Probability of Occurrence / Realization is High, as well as whose Effect on Turkey's Defense Industry Competitiveness is High Positive. Contradictory to total comments the expert opinion of Probability of Occurrence / Realization is more positive.

Total Comment: It is the Delphi statement whose Probability of Occurrence / Realization is low; however, whose Effect on Turkey's Defense Industry Competitiveness is High Positive.

- For the Statement D6;

Experts' Comments: It is the Delphi statement whose Probability of Occurrence / Realization is High, as well as whose Effect on Turkey's Defense Industry Competitiveness is High Positive. Contradictory to total comments the expert opinion is more positive.

Total Comment: It is the Delphi statement whose Probability of Occurrence / Realization is High; however, whose Effect on Turkey's Defense Industry Competitiveness is High Positive, There is no effect. For this statement there is an ambiguity on its effect on Turkey's Defense Industry Competitiveness.

- For the Statement D7;

Experts' Comments: It is the Delphi statement whose Probability of Occurrence / Realization is High, as well as whose Effect on Turkey's Defense Industry Competitiveness is High Positive. The experts' comment contradicts the total interpretation.

Total Comment: It is the Delphi statement whose Probability of Occurrence / Realization is medium; however, whose Effect on Turkey's Defense Industry Competitiveness is Indefinitely High and High Negative. In general, the Indefinitely

High idea about Turkey’s Effect on Defense Industry Competitiveness is on the negative side.

- For the Statement D8;

Experts’ Comments: It is the Delphi statement whose Probability of Occurrence / Realization is High, as well as whose Effect on Turkey's Defense Industry Competitiveness is High Positive. The experts’ comment contradicts the total interpretation.

Total Comment: It is the Delphi statement whose Probability of Occurrence / Realization is High; however, whose Effect on Turkey's Defense Industry Competitiveness is There is No Effect and High Negative.

- For the Statement D9;

Experts’ Comments: It is the Delphi statement whose Probability of Occurrence / Realization is high, as well as whose Effect on Turkey's Defense Industry Competitiveness is High Positive. The experts’ comment contradicts the total interpretation.

Total Comment: It is the Delphi statement whose Probability of Occurrence / Realization is Medium; however, whose Effect on Turkey's Defense Industry Competitiveness is Indefinitely High and High Negative. In general, the Indefinitely High idea about Turkey’s Effect on Defense Industry Competitiveness is on negative side

6.2.3.9 According to Their Effect on Increasing of Defense Industry R&D Studies, Statements Whose Probability of Occurrence / Realization is High, Medium, Low and Never

In the graphic below, the 2nd Round Delphi Expert and the 2nd Round Delphi Total results are shown. The results of the experts are shown in red.

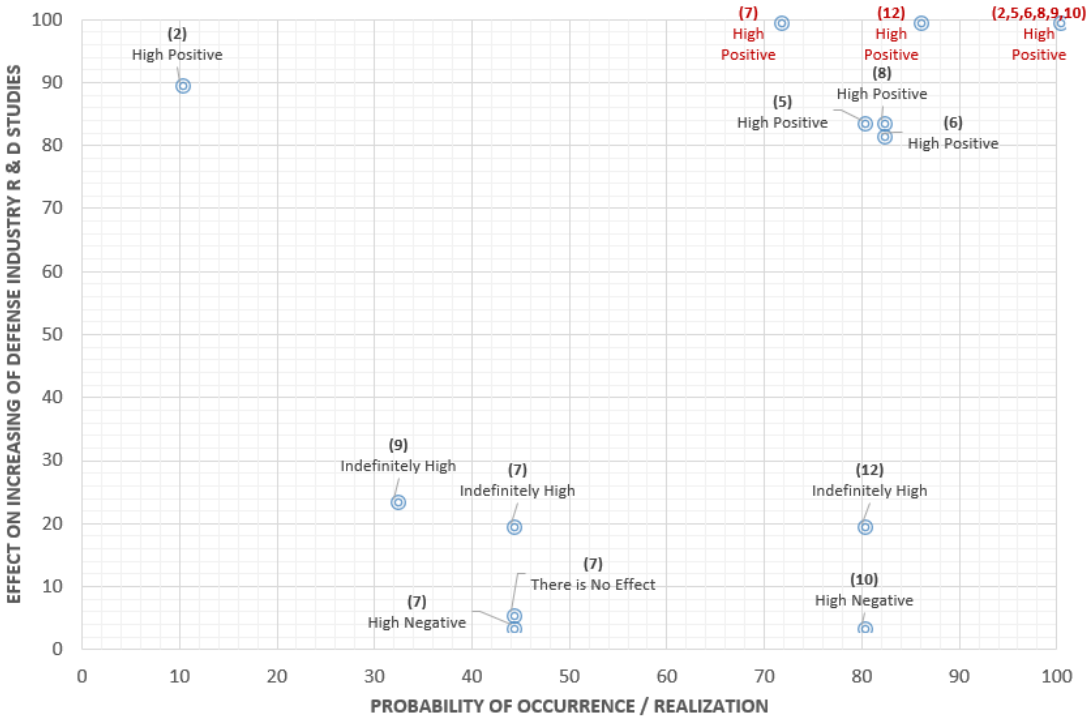


Figure 23 According to Their Effect on Increasing of Defense Industry R&D Studies, Statements Whose Probability of Occurrence / Realization is High, Medium, Low and Never

Table 102 Probability of Occurrence / Realization - Effect on Increasing of Defense Industry R & D Studies Table

Probability of Occurrence / Realization	2nd Round Expert-Total	Delphi Statement	Effect on Increasing of Defense Industry R & D Studies
High	2nd Round Experts	2	High Positive
		5	High Positive
		6	High Positive
		7	High Positive
		8	High Positive
		9	High Positive
		10	High Positive
	2nd Round Total	5	High Positive

Table 102 (continued)

		6	High Positive
		8	High Positive
		10	High Negative
		12	Indefinitely High
Medium	2nd Round Experts	-	-
	2nd Round Total	7	Indefinitely High High Negative There is No Effect
		9	Indefinitely High
Low	2nd Round Experts	-	-
	2nd Round Total	2	High Positive
Never	2nd Round Experts	-	-
	2nd Round Total		

According to experts, statements D2, D5, D6, D7, D8, D9, D10 and D12 are statements whose Probability of Occurrence / Realization is High, as well as their Effect on Increasing of Defense Industry R & D Studies is High Positive. According to the expert and the total interpretation, there is no statement that cannot be realized.

- For the Statement D2;

Experts' Comments: It is the Delphi statement whose Probability of Occurrence / Realization is High, as well as their Effect on Increasing of Defense Industry R & D Studies is High Positive. Contradictory to total comments, according to the expert opinion Probability of Occurrence / Realization is High.

Total Comment: It is the Delphi statement whose Probability of Occurrence / Realization is Low; however, whose Effect on Increasing of Defense Industry R & D Studies is High Positive.

- For the Statement D5;

Experts' Comments: It is the Delphi statement whose Probability of Occurrence / Realization is High and Effect on Increasing of Defense Industry R & D Studies is High Positive. The expert opinion is more positive.

Total Comment: It is the Delphi statement whose Probability of Occurrence / Realization is High and Effect on Increasing of Defense Industry R & D Studies is High Positive.

- For the Statement D6;

Experts' Comments: It is the Delphi statement whose Probability of Occurrence / Realization is High and Effect on Increasing of Defense Industry R & D Studies is High Positive. The expert opinion is more positive.

Total Comment: It is the Delphi statement whose Probability of Occurrence / Realization is High and whose Effect on Increasing of Defense Industry R & D Studies is High Positive.

- For the Statement D7;

Experts' Comments: It is the Delphi statement whose Probability of Occurrence / Realization is High and Effect on Increasing of Defense Industry R & D Studies is High Positive. The experts' comment contradicts the total interpretation.

Total Comment: It is the Delphi statement whose Probability of Occurrence / Realization is Medium and Effect on Increasing of Defense Industry R & D Studies is Indefinitely High, High Negative and There is No Effect. In general, there is an ambiguity about its Effect on Increasing of Defense Industry R & D Studies.

- For the Statement D8;

Experts' Comments: It is the Delphi statement whose Probability of Occurrence / Realization is High and Effect on Increasing of Defense Industry R & D Studies is High Positive. The experts' opinion is more positive.

Total Comment: It is the Delphi statement whose Probability of Occurrence / Realization is High and Effect on Increasing of Defense Industry R & D Studies is High Positive.

- For the Statement D9;

Experts' Comments: It is the Delphi statement whose Probability of Occurrence / Realization is High and Effect on Increasing of Defense Industry R & D Studies is High Positive. The Indefinitely High comment of the total opinion is on the positive side when the experts are taken into consideration.

Total Comment: It is the Delphi statement whose Probability of Occurrence / Realization is Medium and Effect on Increasing of Defense Industry R & D Studies is Indefinitely High.

- For the Statement D10;

Experts' Comments: It is the Delphi statement whose Probability of Occurrence / Realization is High and Effect on Increasing of Defense Industry R & D Studies is High Positive. According to the experts' interpretation Effect on Increasing of Defense Industry R & D Studies is the opposite of the total understanding.

Total Comment: It is the Delphi statement whose Probability of Occurrence / Realization is High and whose Effect on Increasing of Defense Industry R & D Studies is High Negative.

- For the Statement D12;

Experts' Comments: It is the Delphi statement whose Probability of Occurrence / Realization is High and Effect on Increasing of Defense Industry R & D Studies is High Positive. The Indefinitely High comment of the total opinion is on the positive side when the experts are taken into consideration.

Total Comment: It is the Delphi statement whose Probability of Occurrence / Realization is High and Effect on Increasing of Defense Industry R & D Studies is Indefinitely High.

6.2.3.10 According to Their Effect on Imagery Intelligence, Statements Whose Probability of Occurrence / Realization is High, Medium, Low and Never

In the graphic below, the 2nd Round Delphi Expert and the 2nd Round Delphi Total results are shown. The results of the experts are shown in red.

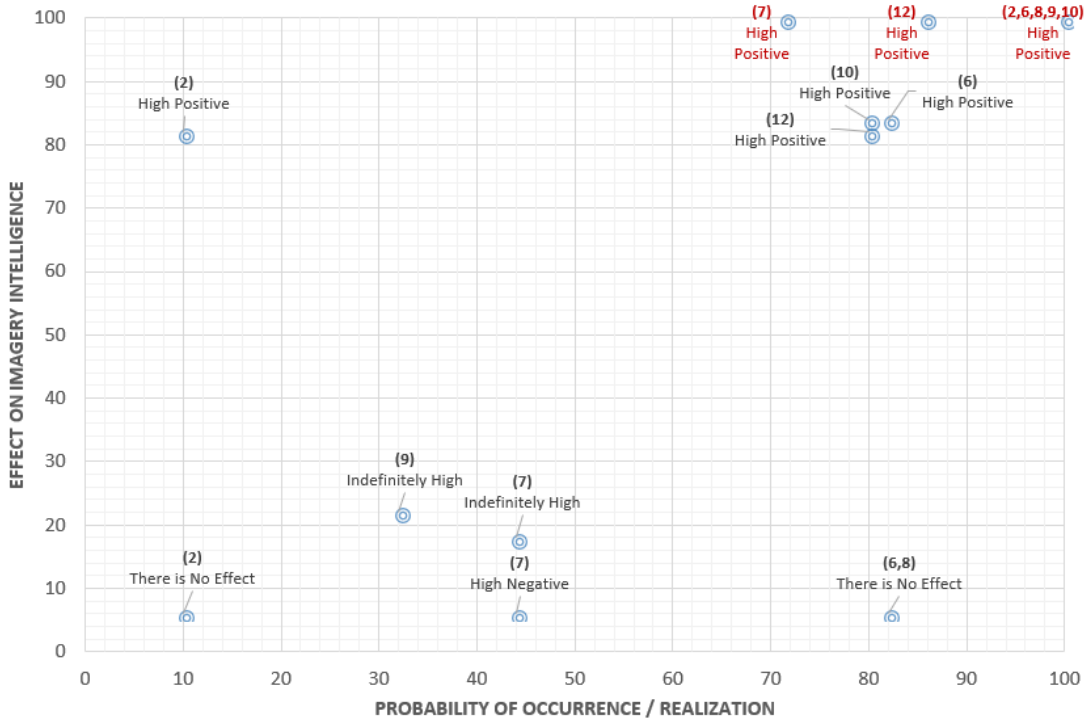


Figure 24 According to Their Effect on Imagery Intelligence, Statements Whose Probability of Occurrence / Realization is High, Medium, Low and Never

Table 103 Probability of Occurrence / Realization - Effect on Imagery Intelligence Table

Probability of Occurrence / Realization	2nd Round Expert-Total	Delphi Statement	Effect on Imagery Intelligence
High	2nd Round Experts	2	High Positive
		6	High Positive
		7	High Positive

Table 103 (continued)

		8	High Positive
		9	High Positive
		10	High Positive
		12	High Positive
	2nd Round Total	6	High Positive There is No Effect
		8	There is No Effect
		10	High Positive
		12	High Positive
Medium	2nd Round Experts	-	-
	2nd Round Total	7	Indefinitely High High Negative
		9	Indefinitely High
Low	2nd Round Experts	-	-
	2nd Round Total	2	High Positive There is No Effect
Never	2nd Round Experts	-	-
	2nd Round Total		

According to experts, statements D2, D6, D7, D8, D9, D10 and D12 are statements whose Probability of Occurrence / Realization is High, as well as their Effect on Imagery Intelligence is High Positive. According to the expert and the total interpretation, there is no statement that cannot be realized.

- For the Statement D2;

Experts' Comments: It is the Delphi statement whose Probability of Occurrence / Realization is High and Effect on Imagery Intelligence is High Positive. Contrary to total opinion, Probability of Occurrence / Realization is High according to the experts.

Total Comment: It is the Delphi statement whose Probability of Occurrence / Realization is Low but and whose Effect on Imagery Intelligence is High Positive and There is No effect. In general, there is an ambiguity on its Effect on Imagery Intelligence.

- For the Statement D6;

Experts' Comments: It is the Delphi statement whose Probability of Occurrence / Realization is High and Effect on Imagery Intelligence is High Positive. The opinion of the experts is more positive.

Total Comment: It is the Delphi statement whose Probability of Occurrence / Realization is High, but whose Effect on Imagery Intelligence is High Positive and There is No effect. In general, there is an ambiguity on its Effect on Imagery Intelligence.

- For the Statement D7;

Experts' Comments: It is the Delphi statement whose Probability of Occurrence / Realization is High and Effect on Imagery Intelligence is High Positive. The experts' comment contradicts the total interpretation.

Total Comment: It is the Delphi statement whose Probability of Occurrence / Realization is Medium, but whose Effect on Imagery Intelligence is Indefinitely High and High Negative. In general, the Indefinitely High idea about its Effect on Imagery Intelligence is on the negative side.

- For the Statement D8;

Experts' Comments: It is the Delphi statement whose Probability of Occurrence / Realization is High and Effect on Imagery Intelligence is High Positive.

Total Comment: It is the Delphi statement whose Probability of Occurrence / Realization is High, but whose Effect on Imagery Intelligence is There is No Effect.

- For the Statement D9;

Experts' Comments: It is the Delphi statement whose Probability of Occurrence / Realization is High and Effect on Imagery Intelligence is High Positive.

Total Comment: It is the Delphi statement whose Probability of Occurrence / Realization is Medium, but whose Effect on Imagery Intelligence is Indefinitely High.

- For the Statement D10;

Experts' Comments: It is the Delphi statement whose Probability of Occurrence / Realization is High and Effect on Imagery Intelligence is High Positive. The experts' opinion is more positive.

Total Comment: It is the Delphi statement whose Probability of Occurrence / Realization is High, and Effect on Imagery Intelligence is High Positive.

- For the Statement D12;

Experts' Comments: It is the Delphi statement whose Probability of Occurrence / Realization is High and Effect on Imagery Intelligence is High Positive. The experts' opinion is more positive.

Total Comment: It is the Delphi statement whose Probability of Occurrence / Realization is High and Effect on Imagery Intelligence is High Positive.

6.2.3.11 According to Their Effect on Turkey's Defense Industry Competitiveness, Statements That Effect on Increasing of Defense Industry R & D Studies

In the graphic below, the 2nd Round Delphi Expert and the 2nd Round Delphi Total results are shown. The results of the experts are shown in red.

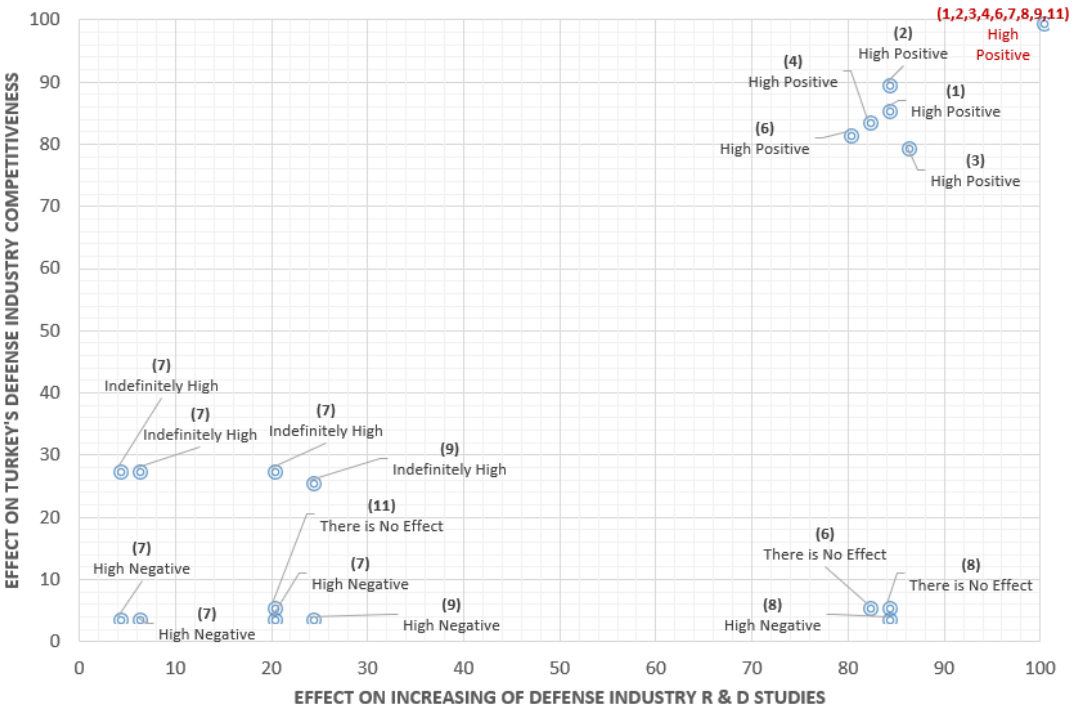


Figure 25 According to Their Effect on Turkey's Defense Industry Competitiveness, Statements That Effect on Increasing of Defense Industry R&D Studies

Table 104 Effect on Turkey's Defense Industry Competitiveness- Effect on Increasing of Defense Industry R & D Studies Table

Effect on Turkey's Defense Industry Competitiveness	2nd Round Expert-Total	Delphi Statement	Effect on Increasing of Defense Industry R & D Studies
High Positive	2nd Round Experts	1	High Positive
		2	High Positive
		3	High Positive
		4	High Positive
		6	High Positive
		7	High Positive
		8	High Positive
		9	High Positive
		11	High Positive

Table 104 (continued)

	2nd Round Total	1	High Positive
		2	High Positive
		3	High Positive
		4	High Positive
		6	High Positive
Indefinitely High	2nd Round Experts	-	-
	2nd Round Total	7	High Negative Indefinitely High
		9	Indefinitely High
There is No Effect	2nd Round Experts	-	-
	2nd Round Total	6	High Positive
		8	High Positive
		11	Indefinitely High
High Negative	2nd Round Experts	-	-
	2nd Round Total	7	High Negative Indefinitely High
		8	High Positive
		9	Indefinitely High

- For the Statement D1;

Experts' Comments: It is the Delphi statement whose Effect on Turkey's Defense Industry Competitiveness is High Positive and Effect on Increasing of Defense Industry R & D Studies is High Positive. The experts' opinion is more positive.

Total Comment: It is the Delphi statement whose Effect on Turkey's Defense Industry

Competitiveness is High Positive and whose Effect on Increasing of Defense Industry R & D Studies is High Positive.

- For the Statement D2;

Experts' Comments: It is the Delphi statement whose Effect on Turkey's Defense Industry Competitiveness is High Positive and Effect on Increasing of Defense Industry R & D Studies is High Positive. The experts' opinion is more positive.

Total Comment: It is the Delphi statement whose Effect on Turkey's Defense Industry Competitiveness is High Positive, and whose Effect on Increasing of Defense Industry R & D Studies is High Positive.

- For the Statement D3;

Experts' Comments: It is the Delphi statement whose Effect on Turkey's Defense Industry Competitiveness is High Positive and Effect on Increasing of Defense Industry R & D Studies is High Positive. The experts' opinion is more positive.

Total Comment: It is the Delphi statement whose Effect on Turkey's Defense Industry Competitiveness is High positive, and whose Effect on Increasing of Defense Industry R & D Studies is High Positive.

- For the Statement D4;

Experts' Comments: It is the Delphi statement whose Effect on Turkey's Defense Industry Competitiveness is High Positive and Effect on Increasing of Defense Industry R & D Studies is High Positive. The experts' opinion is more positive.

Total Comment: It is the Delphi statement whose Effect on Turkey's Defense Industry Competitiveness is High positive, and whose Effect on Increasing of Defense Industry R & D Studies is High Positive.

- For the Statement D6;

Experts' Comments: It is the Delphi statement whose Effect on Turkey's Defense Industry Competitiveness is High Positive and Effect on Increasing of Defense Industry R & D Studies is High Positive. The experts' opinion is more positive.

Total Comment: It is the Delphi statement whose Effect on Turkey's Defense Industry Competitiveness is High Positive/There is No Effect and whose Effect on Increasing

of Defense Industry R & D Studies is High Positive. Generally, there is an ambiguity about Effect on Turkey's Defense Industry Competitiveness.

- For the Statement D7;

Experts' Comments: It is the Delphi statement whose Effect on Turkey's Defense Industry Competitiveness is High Positive and Effect on Increasing of Defense Industry R & D Studies is High Positive. The experts' comment contradicts the total interpretation.

Total Comment: It is the Delphi statement whose Effect on Turkey's Defense Industry Competitiveness is High Negative/ Indefinitely High and whose Effect on Increasing of Defense Industry R & D Studies is High Negative/ Indefinitely High. Generally, the Indefinitely High idea about its Effect on Turkey's Defense Industry Competitiveness and Effect on Increasing of Defense Industry R & D Studies is on the negative side.

- For the Statement D8;

Experts' Comments: It is the Delphi statement whose Effect on Turkey's Defense Industry Competitiveness is High Positive and Effect on Increasing of Defense Industry R & D Studies is High Positive. The experts' comment contradicts the total interpretation.

Total Comment: It is the Delphi statement whose Effect on Turkey's Defense Industry Competitiveness is High Negative/There is No Effect, and whose Effect on Increasing of Defense Industry R & D Studies is High Positive.

- For the Statement D9;

Experts' Comments: It is the Delphi statement whose Effect on Turkey's Defense Industry Competitiveness is High Positive and Effect on Increasing of Defense Industry R & D Studies is High Positive. The experts' comment contradicts the total interpretation.

Total Comment: It is the Delphi statement whose Effect on Turkey's Defense Industry Competitiveness is High Negative/ Indefinitely High, and whose Effect on Increasing of Defense Industry R & D Studies is Indefinitely High. Generally, the Indefinitely High idea about its Effect on Turkey's Defense Industry Competitiveness is on the negative side.

- For the Statement D11;

Experts' Comments: It is the Delphi statement whose Effect on Turkey's Defense Industry Competitiveness is High Positive and Effect on Increasing of Defense Industry R & D Studies is High Positive.

Total Comment: It is the Delphi statement whose Effect on Turkey's Defense Industry Competitiveness is There is No effect, and whose Effect on Increasing of Defense Industry R & D Studies is Indefinitely High.

6.2.3.12 According to Their Effect on Turkey's Defense Industry Competitiveness, Statements That Effect on Imagery Intelligence

In the graphic below, the 2nd Round Delphi Expert and the 2nd Round Delphi Total results are shown. The results of the experts are shown in red.

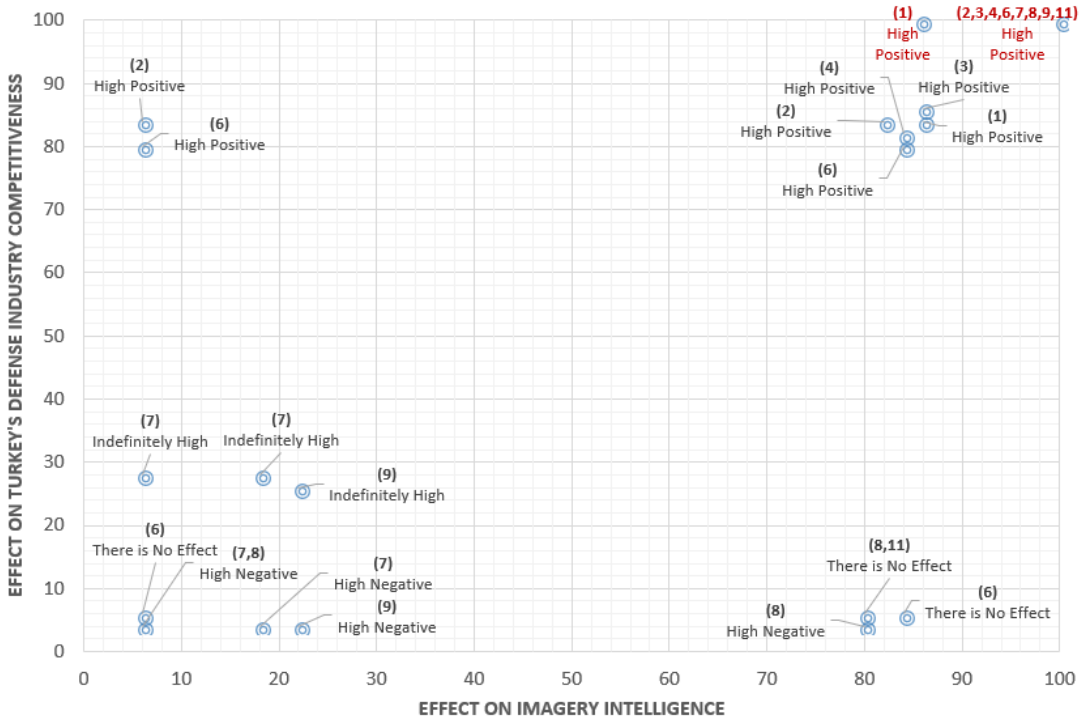


Figure 26 According to Their Effect on Turkey's Defense Industry Competitiveness, Statements That Effect on Imagery Intelligence

Table 105 Effect on Turkey's Defense Industry Competitiveness- Effect on Imagery Intelligence Table

Effect on Turkey's Defense Industry Competitiveness	2nd Round Expert-Total	Delphi Statement	Effect on Imagery Intelligence
High Positive	2nd Round Experts	1	High Positive
		2	High Positive
		3	High Positive
		4	High Positive
		6	High Positive
		7	High Positive
		8	High Positive
		9	High Positive
		11	High Positive
	2nd Round Total	1	High Positive
		2	High Positive There is No Effect
		3	High Positive
		4	High Positive
		6	High Positive There is No Effect
Indefinitely High	2nd Round Experts	-	-
	2nd Round Total	7	High Negative Indefinitely High
		9	Indefinitely High
There is No Effect	2nd Round Experts	-	-
	2nd Round Total	6	High Positive There is No Effect
		8	High Positive There is No Effect

Table 105 (continued)

		11	High Positive
High Negative	2nd Round Experts	-	-
	2nd Round Total	7	High Negative Indefinitely High
		8	High Positive There is No Effect
		9	Indefinitely High

- For the Statement D1;

Experts' Comments: It is the Delphi statement whose Effect on Turkey's Defense Industry Competitiveness is High Positive and Effect on Imagery Intelligence is High Positive.

Total Comment: It is the Delphi statement whose Effect on Turkey's Defense Industry Competitiveness is High Positive and Effect on Imagery Intelligence is High Positive.

- For the Statement D2;

Experts' Comments: It is the Delphi statement whose Effect on Turkey's Defense Industry Competitiveness is High Positive and Effect on Imagery Intelligence is High Positive. The experts' opinion is more positive.

Total Comment: It is the Delphi statement whose Effect on Turkey's Defense Industry Competitiveness is High Positive, and Effect on Imagery Intelligence is High Positive and There is No Effect. Generally, there is an ambiguity its Effect on Imagery Intelligence.

- For the Statement D3;

Experts' Comments: It is the Delphi statement whose Effect on Turkey's Defense Industry Competitiveness is High Positive and Effect on Imagery Intelligence is High Positive. The experts' opinion is more positive.

Total Comment: It is the Delphi statement whose Effect on Turkey's Defense Industry Competitiveness is High positive, and Effect on Imagery Intelligence is High Positive.

- For the Statement D4;

Experts' Comments: It is the Delphi statement whose Effect on Turkey's Defense Industry Competitiveness is High Positive and Effect on Imagery Intelligence is High Positive. The experts' opinion is more positive.

Total Comment: It is the Delphi statement whose Effect on Turkey's Defense Industry Competitiveness is High positive, and Effect on Imagery Intelligence is High Positive.

- For the Statement D6;

Experts' Comments: It is the Delphi statement whose Effect on Turkey's Defense Industry Competitiveness is High Positive and Effect on Imagery Intelligence is High Positive. The experts' opinion is more positive.

Total Comment: It is the Delphi statement whose Effect on Turkey's Defense Industry Competitiveness is High Positive/There is No Effect, and Effect on Imagery Intelligence is High Positive and There is No Effect. There is a general ambiguity on this statement.

- For the Statement D7;

Experts' Comments: It is the Delphi statement whose Effect on Turkey's Defense Industry Competitiveness is High Positive and Effect on Imagery Intelligence is High Positive. The experts' comment contradicts the total interpretation.

Total Comment: It is the Delphi statement whose Effect on Turkey's Defense Industry Competitiveness is Indefinitely High/High Negative, and Effect on Imagery Intelligence is Indefinitely High and High Negative. The Indefinitely High opinion is on the negative side.

- For the Statement D8;

Experts' Comments: It is the Delphi statement whose Effect on Turkey's Defense Industry Competitiveness is High Positive and Effect on Imagery Intelligence is High Positive. The experts' comment contradicts the total interpretation.

Total Comment: It is the Delphi statement whose Effect on Turkey's Defense Industry Competitiveness is High Negative/There is No Effect, and Effect on Imagery Intelligence is High Positive and There is No Effect. There is a general ambiguity on this statement.

- For the Statement D9;

Experts' Comments: It is the Delphi statement whose Effect on Turkey's Defense Industry Competitiveness is High Positive and Effect on Imagery Intelligence is High Positive. The experts' comment contradicts the total interpretation.

Total Comment: It is the Delphi statement whose Effect on Turkey's Defense Industry Competitiveness is Indefinitely High/High Negative, and Effect on Imagery Intelligence is Indefinitely High. The Indefinitely High opinion is on the negative side.

- For the Statement D11;

Experts' Comments: It is the Delphi statement whose Effect on Turkey's Defense Industry Competitiveness is High Positive and Effect on Imagery Intelligence is High Positive. The experts' comment contradicts the total interpretation.

Total Comment: It is the Delphi statement whose Effect on Turkey's Defense Industry Competitiveness is There is No Effect, and Effect on Imagery Intelligence is High Positive.

6.2.3.13 According to Their Effect on Increasing of Defense Industry R & D Studies, Statements That Effect on Imagery Intelligence

In the graphic below, the 2nd Round Delphi Expert and the 2nd Round Delphi Total results are shown. The results of the experts are shown in red.

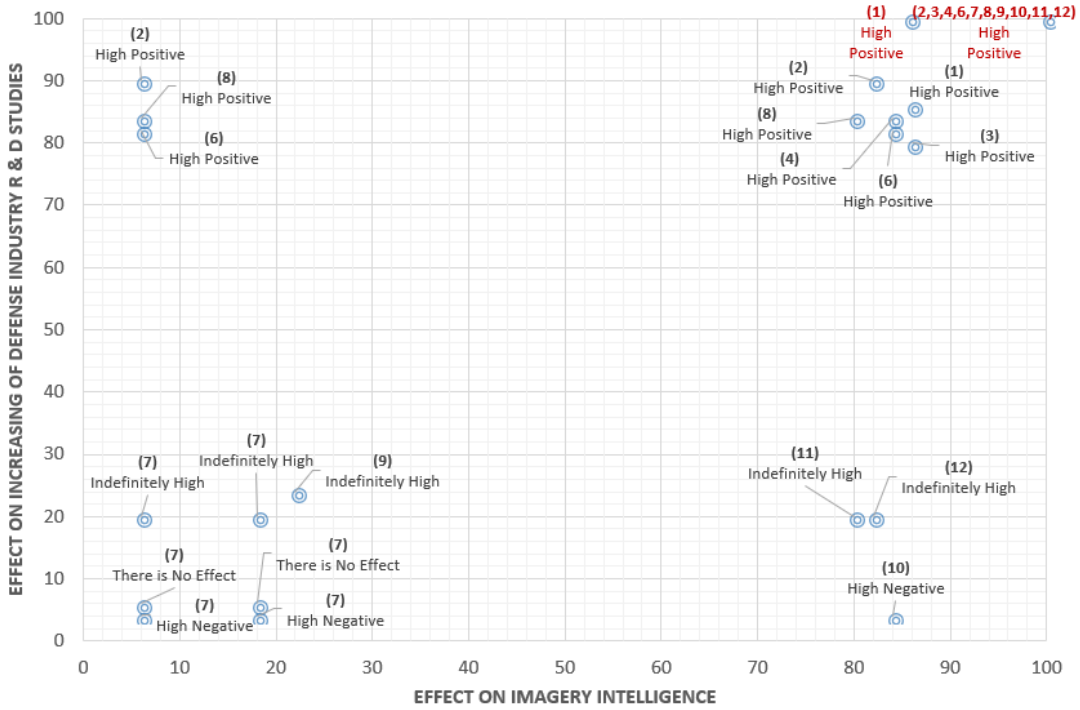


Figure 27 According to Their Effect on Increasing of Defense Industry R & D Studies, Statements That Effect on Imagery Intelligence

Table 106 Effect on Increasing of Defense Industry R & D Studies- Effect on Imagery Intelligence Table

Effect on Increasing of Defense Industry R & D Studies	2nd Round Expert-Total	Delphi Statement	Effect on Imagery Intelligence
High Positive	2nd Round Experts	1	High Positive
		2	High Positive
		3	High Positive
		4	High Positive
		6	High Positive
		7	High Positive
		8	High Positive
		9	High Positive
		10	High Positive
		11	High Positive

Table 106 (continued)

		12	High Positive
	2nd Round Total	1	High Positive
		2	High Positive There is No Effect
		3	High Positive
		4	High Positive
		6	High Positive There is No Effect
		8	High Positive There is No Effect
Indefinitely High	2nd Round Experts	-	-
	2nd Round Total	7	High Negative Indefinitely High
		9	Indefinitely High
		11	High Positive
		12	High Positive
There is No Effect	2nd Round Experts	-	-
	2nd Round Total	7	High Negative Indefinitely High
High Negative	2nd Round Experts	-	-
	2nd Round Total	7	High Negative Indefinitely High
		10	High Positive

- For the Statement D1;

Experts' Comments: It is the Delphi statement whose Effect on Increasing of Defense Industry R & D Studies is High Positive and Effect on Imagery Intelligence is High Positive.

Total Comment: It is the Delphi statement whose Effect on Increasing of Defense Industry R & D Studies is High Positive, and Effect on Imagery Intelligence is High Positive.

- For the Statement D2;

Experts' Comments: It is the Delphi statement whose Effect on Increasing of Defense Industry R & D Studies is High Positive and Effect on Imagery Intelligence is High Positive. Experts' opinion is more positive.

Total Comment: It is the Delphi statement whose Effect on Increasing of Defense Industry R & D Studies is High Positive, and Effect on Imagery Intelligence is High Positive and There is No Effect. Generally, there is an ambiguity its Effect on Imagery Intelligence.

- For the Statement D3;

Experts' Comments: It is the Delphi statement whose Effect on Increasing of Defense Industry R & D Studies is High Positive and Effect on Imagery Intelligence is High Positive. Experts' opinion is more positive.

Total Comment: It is the Delphi statement whose Effect on Increasing of Defense Industry R & D Studies is High Positive, and Effect on Imagery Intelligence is High Positive.

- For the Statement D4;

Experts' Comments: It is the Delphi statement whose Effect on Increasing of Defense Industry R & D Studies is High Positive and Effect on Imagery Intelligence is High Positive. Experts' opinion is more positive.

Total Comment: It is the Delphi statement whose Effect on Increasing of Defense Industry R & D Studies is High Positive, and Effect on Imagery Intelligence is High Positive.

- For the Statement D6;

Experts' Comments: It is the Delphi statement whose Effect on Increasing of Defense Industry R & D Studies is High Positive and Effect on Imagery Intelligence is High Positive. Experts' opinion is more positive.

Total Comment: It is the Delphi statement whose Effect on Increasing of Defense Industry R & D Studies is High Positive, and Effect on Imagery Intelligence is High Positive and There is No Effect. Generally, there is an ambiguity its Effect on Imagery Intelligence.

- For the Statement D7;

Experts' Comments: It is the Delphi statement whose Effect on Increasing of Defense Industry R & D Studies is High Positive and Effect on Imagery Intelligence is High Positive. The experts' comment contradicts the total interpretation.

Total Comment: It is the Delphi statement whose Effect on Increasing of Defense Industry R & D Studies is Indefinitely High/There is No Effect, and Effect on Imagery Intelligence is Indefinitely High and High Negative. Generally, there is an ambiguity its Effect on Imagery Intelligence. Indefinitely High idea about its Effect on Imagery Intelligence is on the negative side.

- For the Statement D8;

Experts' Comments: It is the Delphi statement whose Effect on Increasing of Defense Industry R & D Studies is High Positive and Effect on Imagery Intelligence is High Positive. The experts' idea is more positive.

Total Comment: It is the Delphi statement whose Effect on Increasing of Defense Industry R & D Studies is High Positive, and Effect on Imagery Intelligence is High Positive and There is No Effect. Generally, there is an ambiguity its Effect on Imagery Intelligence.

- For the Statement D9;

Experts' Comments: It is the Delphi statement whose Effect on Increasing of Defense Industry R & D Studies is High Positive and Effect on Imagery Intelligence is High Positive.

Total Comment: It is the Delphi statement whose Effect on Increasing of Defense Industry R & D Studies is Indefinitely High, and Effect on Imagery Intelligence is Indefinitely High.

- For the Statement D10;

Experts' Comments: It is the Delphi statement whose Effect on Increasing of Defense Industry R & D Studies is High Positive and Effect on Imagery Intelligence is High Positive. The expert opinion about Effect on Increasing of Defense Industry R & D Studies contradicts the total interpretation. Experts' opinion is more positive.

Total Comment: It is the Delphi statement whose Effect on Increasing of Defense Industry R & D Studies is High Negative, and Effect on Imagery Intelligence is High Positive.

- For the Statement D11;

Experts' Comments: It is the Delphi statement whose Effect on Increasing of Defense Industry R & D Studies is High Positive and Effect on Imagery Intelligence is High Positive.

Total Comment: It is the Delphi statement whose Effect on Increasing of Defense Industry R & D Studies is Indefinitely High, and Effect on Imagery Intelligence is High Positive. The Indefinitely High comment of the total opinion is on the positive side when the experts are taken into consideration.

- For the Statement D12;

Experts' Comments: It is the Delphi statement whose Effect on Increasing of Defense Industry R & D Studies is High Positive and Effect on Imagery Intelligence is High Positive.

Total Comment: It is the Delphi statement whose Effect on Increasing of Defense Industry R & D Studies is Indefinitely High, and Effect on Imagery Intelligence is High Positive. The Indefinitely High comment of the total opinion is on the positive side when the experts are taken into consideration.

CHAPTER 7

RAODMAP AND POLICY RECOMMENDATIONS

Using Delphi method; strategic decisions, strategic targets, road maps and policy recommendations are summarized below.

7.1 Strategic Decision Recommendations

The Strategic decision recommendations that have High and High Positive effect in short-term, medium-term and long-term on Probability of Occurrence / Realization, on Turkey's Defense Industry Competitiveness, on Increasing of Defense Industry R & D studies, on Imagery Intelligence are listed below.

7.1.1. Short-Term Strategy (Before 2025) Recommendations

7.1.1.1 The Strategic Decision Recommendations Whose Probability of Occurrence / Realization is High

- According to Experts

Statement D2: In the Defense Industry, the imagery intelligence mobile applications should be developed with domestic and national solutions in the direction of R & D and innovation studies.

Statement D7: In the Defense Industry, the imagery intelligence mobile applications should contribute significantly to interdisciplinary studies in ensuring national security.

Statement D10: In the Defense Industry, the imagery intelligence mobile applications should facilitate the course of action of deep zone operations.

Statement D12: In the Defense Industry, the imagery intelligence mobile applications should enable to pursue a safe operation by providing instant intelligence support to the maneuvering elements.

- According to Total Comment

There is no such statement.

7.1.1.2 The Strategic Decision Recommendations Whose Effect on Turkey's Defense Industry Competitiveness is High Positive

- According to Experts

Statement D1: In the Defense Industry, the imagery intelligence mobile applications should be developed to be used by both civilian and military purposes (dual usage).

Statement D2: In the Defense Industry, the imagery intelligence mobile applications should be developed with domestic and national solutions in the direction of R & D and innovation studies.

Statement D7: In the Defense Industry, the imagery intelligence mobile applications should contribute significantly to interdisciplinary studies in ensuring national security.

Statement D11: In the Defense Industry, the imagery intelligence mobile applications should be used intensively to assess the effectiveness of fire support elements in the target area.

- According to Total Comment

Statement D1: In the Defense Industry, the imagery intelligence mobile applications should be developed to be used by both civilian and military purposes (dual usage).

Statement D2: In the Defense Industry, the imagery intelligence mobile applications should be developed with domestic and national solutions in the direction of R & D and innovation studies.

7.1.1.3 The Strategic Decision Recommendations Whose Effect on Increasing of Defense Industry R&D Studies is High Positive

- According to Experts

Statement D1: In the Defense Industry, the imagery intelligence mobile applications should be developed to be used by both civilian and military purposes (dual usage).

Statement D2: In the Defense Industry, the imagery intelligence mobile applications should be developed with domestic and national solutions in the direction of R & D and innovation studies.

Statement D7: In the Defense Industry, the imagery intelligence mobile applications should contribute significantly to interdisciplinary studies in ensuring national security.

Statement D10: In the Defense Industry, the imagery intelligence mobile applications should facilitate the course of action of deep zone operations.

Statement D11: In the Defense Industry, the imagery intelligence mobile applications should be used intensively to assess the effectiveness of fire support elements in the target area.

Statement D12: In the Defense Industry, the imagery intelligence mobile applications should enable to pursue a safe operation by providing instant intelligence support to the maneuvering elements.

- According to Total Comment

Statement D1: In the Defense Industry, the imagery intelligence mobile applications should be developed to be used by both civilian and military purposes (dual usage).

Statement D2: In the Defense Industry, the imagery intelligence mobile applications should be developed with domestic and national solutions in the direction of R & D and innovation studies.

7.1.1.4 The Strategic Decision Recommendations Whose Effect on Imagery Intelligence is High Positive

- According to Experts

Statement D1: In the Defense Industry, the imagery intelligence mobile applications should be developed to be used by both civilian and military purposes (dual usage).

Statement D2: In the Defense Industry, the imagery intelligence mobile applications should be developed with domestic and national solutions in the direction of R & D and innovation studies.

Statement D7: In the Defense Industry, the imagery intelligence mobile applications should contribute significantly to interdisciplinary studies in ensuring national security.

Statement D10: In the Defense Industry, the imagery intelligence mobile applications should facilitate the course of action of deep zone operations.

Statement D11: In the Defense Industry, the imagery intelligence mobile applications should be used intensively to assess the effectiveness of fire support elements in the target area.

Statement D12: In the Defense Industry, the imagery intelligence mobile applications should enable to pursue a safe operation by providing instant intelligence support to the maneuvering elements.

- According to Total Comment

Statement D1: In the Defense Industry, the imagery intelligence mobile applications should be developed to be used by both civilian and military purposes (dual usage).

Statement D2: In the Defense Industry, the imagery intelligence mobile applications should be developed with domestic and national solutions in the direction of R & D and innovation studies.

7.1.2 Medium Term Strategy (Between 2025-2035) Recommendations

7.1.2.1 The Strategic Decision Recommendations Whose Probability of Occurrence / Realization is High

- According to Experts

There is no such statement.

- According to Total Comment

Statement D10: In the Defense Industry, the imagery intelligence mobile applications should facilitate the course of action of deep zone operations.

Statement D12: In the Defense Industry, the imagery intelligence mobile applications should enable to pursue a safe operation by providing instant intelligence support to the maneuvering elements.

7.1.2.2 The Strategic Decision Recommendations Whose Effect on Increasing of Defense Industry R & D Studies is Indefinitely High

- According to Experts

There is no such statement.

- According to Total Comment

Statement D12: In the Defense Industry, the imagery intelligence mobile applications should enable to pursue a safe operation by providing instant intelligence support to the maneuvering elements.

7.1.2.3 The Strategic Decision Recommendations Whose Effect on Imagery Intelligence is High Positive

- According to Experts

There is no such statement.

- According to Total Comment

Statement D10: In the Defense Industry, the imagery intelligence mobile applications should facilitate the course of action of deep zone operations.

Statement D12: In the Defense Industry, the imagery intelligence mobile applications should enable to pursue a safe operation by providing instant intelligence support to the maneuvering elements.

7.1.3 Long Term Strategy (After 2035) Recommendations

7.1.3.1 The Strategic Decision Recommendations Whose Probability of Occurrence / Realization is High

- According to Experts

There is no such statement.

- According to Total Comment

Statement D12: In the Defense Industry, the imagery intelligence mobile applications should enable to pursue a safe operation by providing instant intelligence support to the maneuvering elements.

7.1.3.2 The Strategic Decision Recommendations Whose Effect on Turkey's Defense Industry Competitiveness is High Positive

- According to Experts

There is no such statement.

- According to Total Comment

Statement D2: In the Defense Industry, the imagery intelligence mobile applications should be developed with domestic and national solutions in the direction of R & D and innovation studies.

7.1.3.3 The Strategic Decision Recommendations Whose Effect on Increasing of Defense Industry R & D Studies is High Positive

- According to Experts

There is no such statement.

- According to Total Comment

Statement D2: In the Defense Industry, the imagery intelligence mobile applications should be developed with domestic and national solutions in the direction of R & D and innovation studies.

7.1.3.4 The Strategic Decision Recommendations Whose Effect on Increasing of Defense Industry R & D Studies is Indefinitely High

- According to Experts

There is no such statement.

- According to Total Comment

Statement D12: In the Defense Industry, the imagery intelligence mobile applications should enable to pursue a safe operation by providing instant intelligence support to the maneuvering elements.

7.1.3.5 The Strategic Decision Recommendations Whose Effect on Imagery Intelligence is High Positive

- According to Experts

There is no such statement.

- According to Total Comment

Statement D2: In the Defense Industry, the imagery intelligence mobile applications should be developed with domestic and national solutions in the direction of R & D and innovation studies.

Statement D11: In the Defense Industry, the imagery intelligence mobile applications should be used intensively to assess the effectiveness of fire support elements in the target area.

Statement D12: In the Defense Industry, the imagery intelligence mobile applications should enable to pursue a safe operation by providing instant intelligence support to the maneuvering elements.

7.2 Strategic Target Recommendations

The six strategic targets that are recommended according to experts and total comments are listed below.

Strategic Target 1: In the Defense Industry, the imagery intelligence mobile applications should be developed to be used by both civilian and military purposes (dual usage).

Strategic Target 2: In the Defense Industry, the imagery intelligence mobile applications should be developed with domestic and national solutions in the direction of R & D and innovation studies.

Strategic Target 3: In the Defense Industry, the imagery intelligence mobile applications should contribute significantly to interdisciplinary studies in ensuring national security.

Strategic Target 4: In the Defense Industry, the imagery intelligence mobile applications should facilitate the course of action of deep zone operations.

Strategic Target 5: In the Defense Industry, the imagery intelligence mobile applications should be used intensively to assess the effectiveness of fire support elements in the target area.

Strategic Target 6: In the Defense Industry, the imagery intelligence mobile applications should enable to pursue a safe operation by providing instant intelligence support to the maneuvering elements.

7.3 Roadmap and Policy Recommendations

The Scientific and Technological Research Council of Turkey (TÜBİTAK), intended to science and technology in Turkey and established under the First Five-Year Development Plan in the years 1963-1967, is provided as a turning point. Another important step is the establishment of the TÜBİTAK Marmara Research Center (MAM) in 1972. In 1983, The Supreme Council of Science and Technology (BTYK) was established in order to identify, implement and coordinate long-term science and technology policies. Similarly, the formation of "Turkish Science Policy 1983-2003" and "Turkish Science and Technology Policy 1993-2003" contributed to technology policy studies. As a result of the Sixth Five-Year development plan covering the years 1990-1994, Turkish Patent Institute (TPE), The Turkish Technology Development Foundation (TTGV) and the National Metrology Institute (UME) was founded (TÜBİTAK, 2018). BTYK, at the December 2000 assembly decided to prepare Turkey's Science and Technology Strategy Document between the years 2003-2023;

and in 2004 confirmed Vision 2023: Science and Technology Strategy Document. Vision 2023 is Turkey's most extensive R & D and innovation strategy (Çakır, 2016). In this study, among the determined strategic targets, “Strategic Target 2” was selected as an example and a short-term (before-2025) roadmap recommendation was presented. The selection of this strategic target also contributes to the Vision-2023 Delphi statement H18 (Military conventional electronic warfare and cyberspace warfare implementations with complete national solutions).

7.3.1 Sub-Strategies and Roadmaps for Strategic Target-2

Selected Strategic Target: In the Defense Industry, the imagery intelligence mobile applications should be developed with domestic and national solutions in the direction of R & D and innovation studies.

The responsible and related institutions related to this strategic target, and what and when to do to achieve this strategic target are explained below by creating sub-strategies.

Responsible Organization of The Strategy: Presidency of Defense Industries (SSB)

Related Institutions: Ministry of Defense (MSB), Ministry of National Education (MEB), Ministry of Finance, Ministry of Science, Industry and Technology (BSTB), TÜBİTAK, TÜBİTAK- Scientific Human Resources Support Department (BİDEB), Turkish Patent Institute (TPE), Small and Medium Enterprises Development Organization (KOSGEB), universities, industry chambers, private sector doing business for defense industry.

Actions To be Taken:

- In the SSB organization, the implementation plan of the strategy will be prepared and updated with the stakeholders.
- The implementation plan will be monitored and evaluated in the SSB organization.

Time to commit: Short Term (Before 2025)

Source: Public

7.3.1.1 Planning and Analysis Studies

- SSB and the private sector should evaluate the supply and demand aspects of technology.
- SSB and TÜBİTAK should evaluate and prioritize the technological investments that will strengthen the economy.
- SSB should conduct disruptive technology determination analysis.
- SSB should create patent and utility model portfolio of the world.
- SSB should evaluate the economic, social and environmental impacts of the investments to be made.
- SSB should make contracts for main system procurement directly with domestic and national companies.
- SSB should do Impact Assessment of investments.
- SSB must determine import-export balance targets in advance.

7.3.1.2 National R&D Culture

- SSB should establish national research platform. The domestic and national capability of design will provide a competitive advantage. The idea of “how can I do better than others” is an important step in getting started.
- As a part of the national innovation system, SSB should promote research activities as well as creative thinking as a permanent goal of increasing and developing unlimited creative ideas.
- MEB should start the dissemination of R & D culture at the primary school level. The period of the technology courses in the curriculum should be increased. Inspirational programs to support young people's ideas should be prepared.

- Coordination among SSB, research centers, universities and industry should be established.
- TÜBİTAK should focus on basic and applied research studies. The produced knowledge should be developed and applied in laboratories.
- Industry chambers should organize technology information events.
- TPE should create mechanisms to ensure rapid follow-up of international developments in the field of IPRs.
- BSTB should organize various competitions according to priority issues in the country's development plans. Competitions should be supported by rewards and incentives.

7.3.1.3 Infrastructure

- TÜBİTAK should increase awareness and investment incentives in this regard by increasing the resources that the technology transfer offices receive from the government.
- SSB should provide cooperation between companies before contention in innovation studies.
- The Ministry of Finance should increase tax incentives for companies that are engaged in R&D studies.

7.3.1.4 Domestic and National Production

- BSTB should provide three-phase public support for conceptual design (Product Idea, Production Idea), technology development (Product Design, Prototype Product, Production System Design, and Pilot Production) and production and marketing (Production Facility, Management, Support).
- BSTB should support reverse engineering. Acquiring and learning directly purchased technologies will facilitate domestic production.
- SSB, TÜBİTAK and KOSGEB should accelerate project processes to keep up with the pace of developing technology.

- BSTB should encourage the establishment of qualified small organizations. It should prioritize the support to SMEs that are growing.
- KOSGEB should create programs and mechanisms to support the joint work of SMEs.
- BSTB should support entrepreneurship in this regard.
- BSTB should adapt existing systems to update in this regard.
- SSB and MSB should support technologies to be used for military and civil purposes.

7.3.1.5 Development of Intellectual Property Rights

- TPE, should shorten the patent process in this regard.
- TPE, should increase the patent incentives of the public in this regard.
- BSTB should provide production and sales support after patent acquisition.
- TPE, should develop mechanisms to increase the use of patents received. Industry and patent holders should be brought together on a common platform.
- The reviewed patent protection period is 20 years. In order to increase the R & D activities, TPE should extend the patent protection period (for example 40 years) of the company that has done a certain number of R & D studies within a year (for example 10 studies) as a reward.

7.3.1.6 Cultivation of Qualified Work Force

- TÜBİTAK-BİDEB should encourage employees in the private sector get master’s degree and doctor's degree in this regard.
- Universities should open training programs in this regard.
- The Ministry of Finance and the private sector should keep the salaries high to encourage researchers.
- The researchers' experiences should be turned into practice. SSB should prepare platforms to keep industrialists and information producers in contact.

Once the findings of the researchers are utilized by industry both sides will benefit.

- TÜBİTAK should provide state sponsorship of participation of researchers in international conferences for the development of talents and experiences.
- TÜBİTAK should support national and international meetings to be held abroad.
- TÜBİTAK should ensure that the social security premiums of the students who do a doctorate and master in the private sector are covered by the government.
- MEB and TÜBİTAK should increase scholarship quotas for both abroad Master and Doctorate.

CHAPTER 8

SUGGESTED IMPACT ANALYSIS MECHANISM

To see how much of the road maps are achieved, their impact on the effectiveness of the Defense Industry must be measured. A recommendation was made with the prepared impact analysis model. The institution that will work on this issue is foreseen as SSB. The suggested impact analysis scheme is shown in Figure 28. Impact analysis results can also be used to prepare strategic decisions to be revised later.

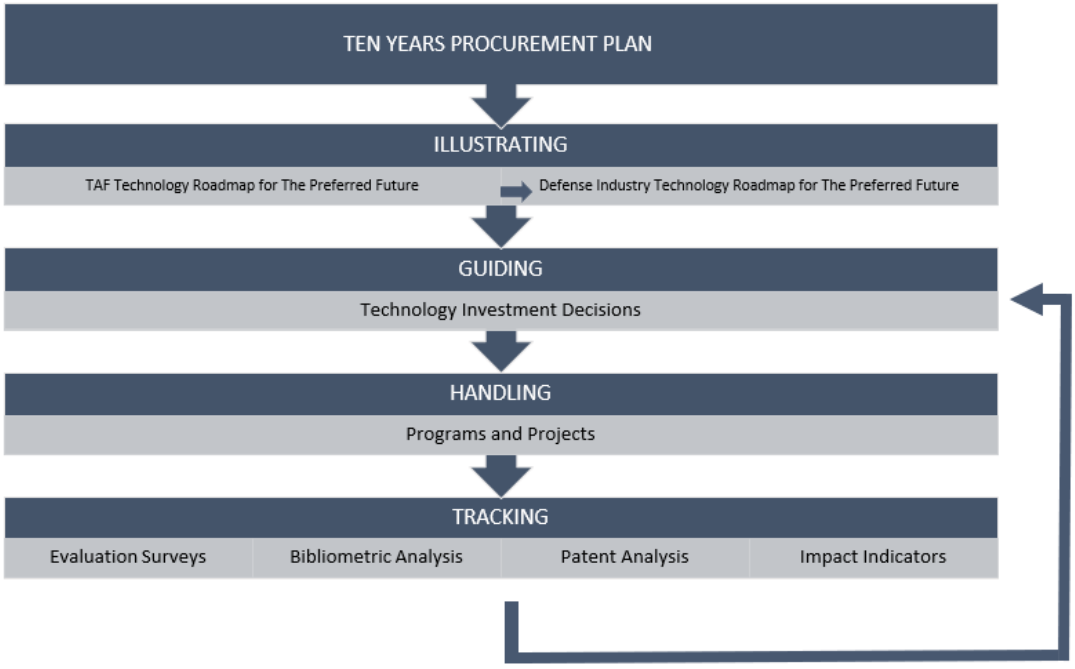


Figure 28 Undersecretariat for Defense Industries Impact Analysis Scheme Suggestion

According to the Impact Analysis model, after the OYTEP (Ten Year Procurement Program) has been accepted, the roadmap preferred by the TAF should be determined and related technology investment decisions should be taken. Once the relevant

programs and projects are supported, the monitoring process should be started. The monitoring process can be divided into two stages: evaluation analysis and impact analysis. Evaluation Analysis includes evaluation surveys, bibliometric analysis, patent analysis and impact indicators. Impact Analysis, on the other hand, includes evaluation surveys, bibliometric analysis, patent analysis and impact indicators conducted at least five years after the investment or project support.

CHAPTER 9

RESULTS AND DISCUSSIONS

With the development of technologies that support the military decision-making process, today's long-time and high-risk reconnaissance and surveillance operations are carried out much more quickly and safely. In order to identify the effects and threats in the theater of operations easier, it is imperative to focus on defense technology studies. Factors that are included in the infrastructure elements of a company, such as production processes, hardware facilities, communication skills, product introductions and policies improve corporate culture and performance, are as important as R & D studies.

In the study, imagery intelligence technology foresight of mobile applications in the defense industry has been examined with Delphi technique. The survey results presented for short-term, medium-term and long terms; and strategic decision recommendations classified as High and High Positive for Probability of Occurrence / Realization, Effect on Turkey's Defense Industry Competitiveness, Effect on Increasing of Defense Industry R & D Studies, Effect on Imagery Intelligence were presented. As a result of these decisions, six strategic target recommendations were listed below.

Strategic Target 1: In the Defense Industry, the imagery intelligence mobile applications should be developed to be used by both civilian and military purposes (dual usage).

Strategic Target 2: In the Defense Industry, the imagery intelligence mobile applications should be developed with domestic and national solutions in the direction of R & D and innovation studies.

Strategic Target 3: In the Defense Industry, the imagery intelligence mobile applications should contribute significantly to interdisciplinary studies in ensuring national security.

Strategic Target 4: In the Defense Industry, the imagery intelligence mobile applications should facilitate the course of action of deep zone operations.

Strategic Target 5: In the Defense Industry, the imagery intelligence mobile applications should be used intensively to assess the effectiveness of fire support elements in the target area.

Strategic Target 6: In the Defense Industry, the imagery intelligence mobile applications should enable to pursue a safe operation by providing instant intelligence support to the maneuvering elements.

Among the determined strategic targets, "Strategic Target 2" was selected as an example and a short-term (before 2025) roadmap recommendation was presented. The selection of this strategic target also contributes to the Vision-2023 Delphi statement H18 (Military conventional electronic warfare and cyberspace warfare implementations with complete national solutions).

The results of the 1st and 2nd round Delphi survey of "Strategic Target 2" were summarized in Table 107. In addition, 1st and 2nd round Delphi expert reviews are in Appendix D and Appendix E.

Table 107 Strategic Target 2 Summarized Graphs

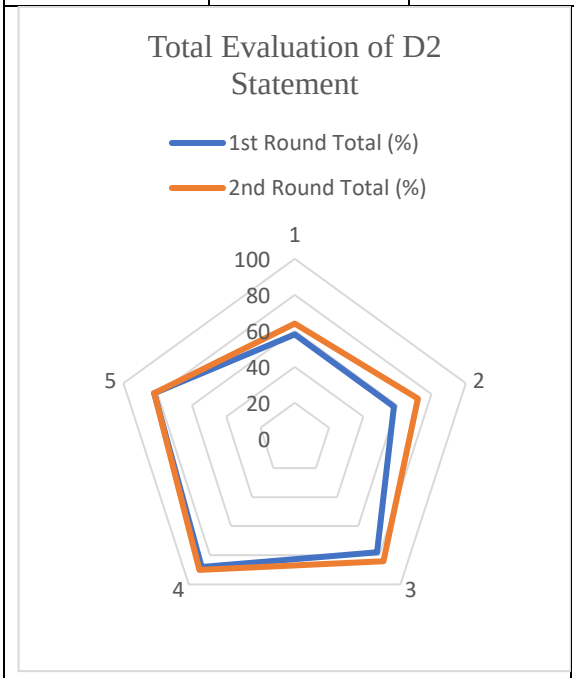
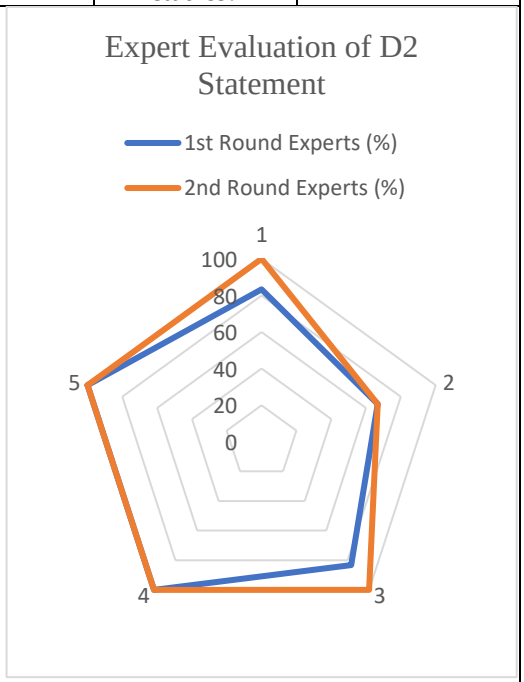
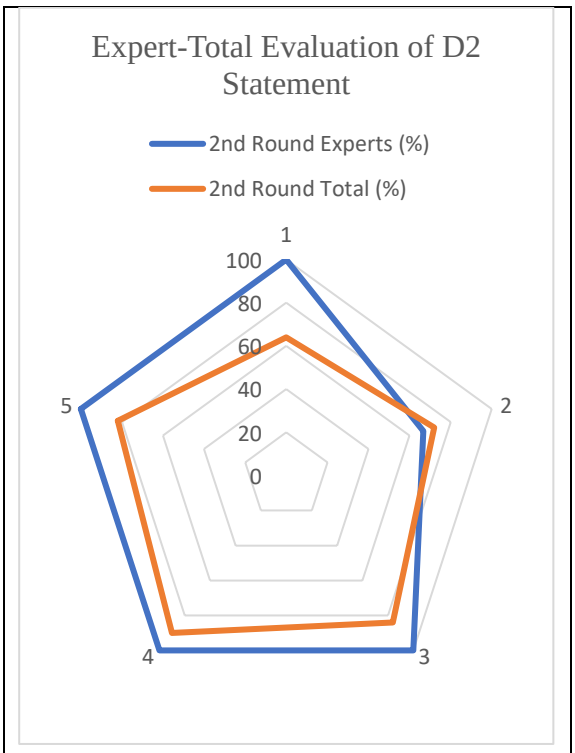
Questions				
1	**2**	**3**	**4**	**5**
What is the probability of occurrence / realization of this statement?	How long is the realization period of this statement?	How does this statement affect the competitiveness of the Defense Industry in Turkey?	Will this statement be effective in increasing the Defense Industry R&D studies?	What is the effect of this statement on the imagery intelligence?
				
The answers to question 4 are close to each other in the 1st and 2nd round of the total evaluation, the answers to question 5 are exactly the same in the 1st and 2nd round of the total evaluation. There is a consensus on this issue.			The answers to question 2, 4 and 5 are exactly the same in the 1st and 2nd round expert evaluation. There is a consensus on this issue.	

Table 107 (continued)



The answers to question 2 are close to each other in the 2nd round expert-total evaluation. There is a consensus on this issue. In Question 1, there is a divergence between the expert and the total.

The institutes that are responsible from sub-strategies regarding for the selected strategic target and what will be done were determined, and policy recommendations were presented. Under the heading of sub-strategies were Planning and Analysis Studies, National R & D Culture, Infrastructure, Domestic and National Production, Development of Intellectual Property Rights and Cultivation of Qualified Work Force took place.

Developed countries in the defense industry, perceive the defense industry as the most important element for the national sovereignty. In this respect, external dependency is not considered as an option, and the defense systems needed are supplied from domestic and national industrial organizations supported by the state. The defense policies in the United States and the European Union are based on the confidentiality of defense systems and the infrastructure of national technology. The formation of

science and technology policies in Turkey, according to domestic and national needs, will change the course of the competition that is mainly centered on technology today.

In order to be able to see how much of the roadmaps have been realized the effectiveness of them in the defense industry must be measured. In the proposal of the impact analysis model presented, the institution that will work in this regard is foreseen as SSB.

The panoramic mobile application, which was developed as a model, provides an alternative to reconnaissance and surveillance systems by providing wide-angle field imaging. In successive photographs, up to 180 degrees of panoramic photographs were obtained with a 30% overlapping of the previous photograph of each photograph taken. Sending panoramic photos automatically to the desired email address is a contribution to imagery intelligence.

Confidentiality, security and reliability are required features in defense systems. Establishment of national crypto programs in imagery intelligence and determination of sharing area will strengthen the technical part of the work. Similarly, the scope of the study can be expanded by preparing roadmap and policy recommendations for all of the strategic targets mentioned above. It is clear that study performed in the light of the statistical data provided here can be sustained and improved, even if there are research limitations such as difficulty in accessing expertise, information sharing constraints, and security reasons. There is no doubt that the scope of this study will be one of the prioritized research areas of the Turkish Armed Forces in the future and will be beneficial to for the studies on this matter.

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APPENDICES

A. 1st ROUND DELPHI "I HAVE AN IDEA" AND 2nd ROUND DELPHI "I HAVE AN IDEA" EVALUATION

D1 Statement: In the Defense Industry, the imagery intelligence mobile applications will be developed to be used by both civilian and military purposes (dual usage).

Table A1 1st and 2nd Round "I Have an Idea" Statistics of the D1 Statement

	1	2	3	4	5
	What is the probability of occurrence/ realization of this statement?	How long is the realization period of this statement?	How does this statement affect the competitiveness of the Defense Industry in Turkey?	Will this statement be effective in increasing the Defense Industry R&D studies?	What is the effect of this statement on the imagery intelligence?
1st Round I Have an Idea (%)	64,5	71	67,7	77,4	80,6
2nd Round I Have an Idea (%)	77,4	77,4	77,4	83,9	90,3
Answers	High	Before 2025	High Positive	High Positive	High Positive

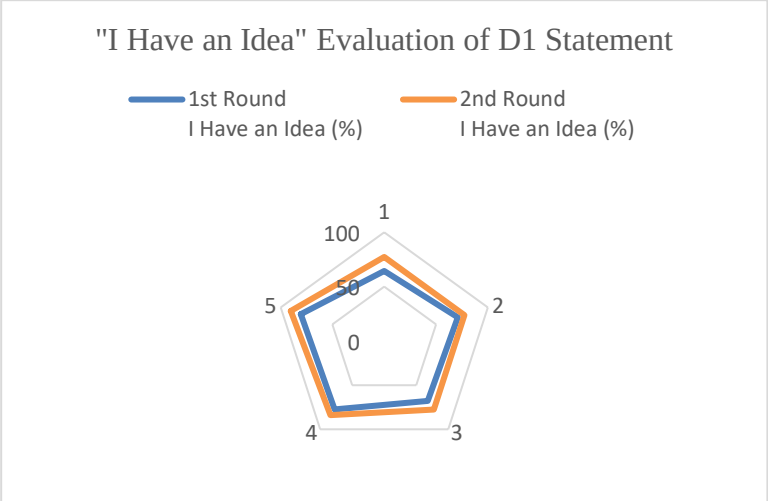

Figure A1 1st and 2nd Round "I Have an Idea" Evaluation of the D1 Statement

D2 Statement: In the Defense Industry, the imagery intelligence mobile applications will be developed with domestic and national solutions in the direction of R & D and innovation studies.

Table A2 1st and 2nd Round "I Have an Idea" Statistics of the D2 Statement

	1	2	3	4	5
	What is the probability of occurrence/ realization of this statement?	How long is the realization period of this statement?	How does this statement affect the competitiveness of the Defense Industry in Turkey?	Will this statement be effective in increasing the Defense Industry R&D studies?	What is the effect of this statement on the imagery intelligence?
1st Round I Have an Idea (%)	59,4	62,5	81,3	87,5	78,1
2nd Round I Have an Idea (%)	53,1	71,9	84,4	90,6	81,3
Answers	High	Before 2025	High Positive	High Positive	High Positive

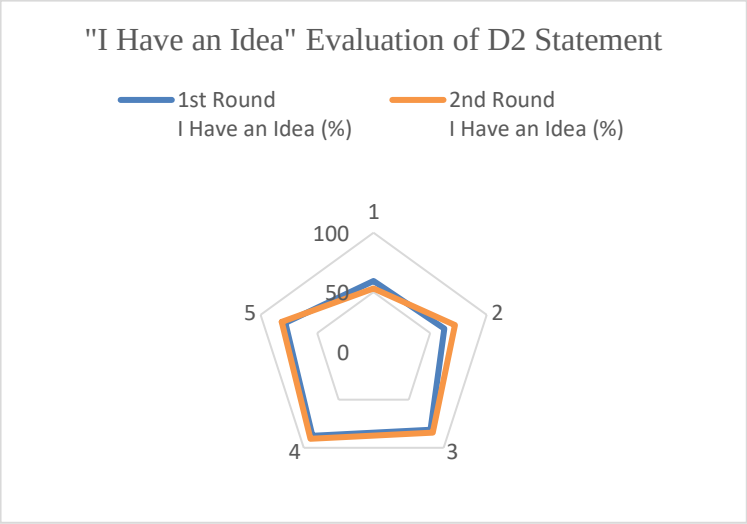

Figure A2 1st and 2nd Round "I Have an Idea" Evaluation of the D2 Statement

D3 Statement: In the Defense Industry, the imagery intelligence mobile applications will play a leading role in increasing the current image intelligence quality.

Table A3 1st and 2nd Round "I Have an Idea" Statistics of the D3 Statement

	1	2	3	4	5
	What is the probability of occurrence/ realization of this statement?	How long is the realization period of this statement?	How does this statement affect the competitiveness of the Defense Industry in Turkey?	Will this statement be effective in increasing the Defense Industry R&D studies?	What is the effect of this statement on the imagery intelligence?
1st Round I Have an Idea (%)	55,2	65,5	72,4	72,4	79,3
2nd Round I Have an Idea (%)	72,4	58,6	86,2	75,9	86,2
Answers	High	Before 2025	High Positive	High Positive	High Positive

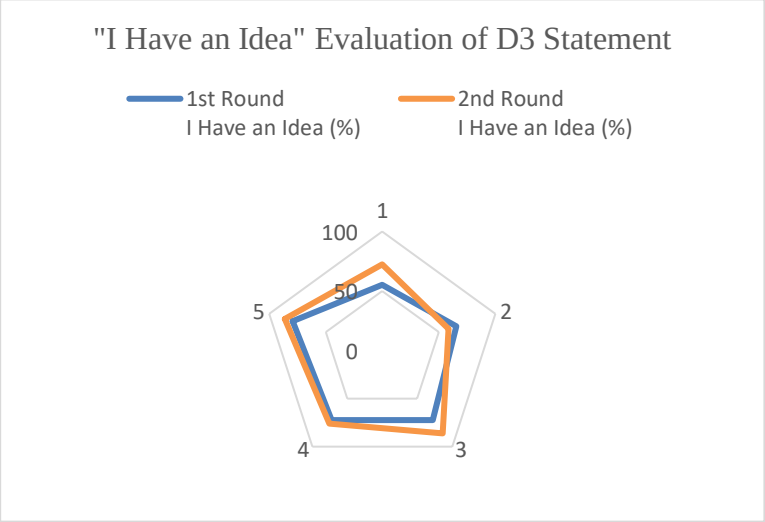

Figure A3 1st and 2nd Round "I Have an Idea" Evaluation of the D3 Statement

D4 Statement: In the Defense Industry, the imagery intelligence mobile applications will play an important role to augment the pace of the operation.

Table A4 1st and 2nd Round "I Have an Idea" Statistics of the D4 Statement

	1	2	3	4	5
	What is the probability of occurrence/ realization of this statement?	How long is the realization period of this statement?	How does this statement affect the competitiveness of the Defense Industry in Turkey?	Will this statement be effective in increasing the Defense Industry R&D studies?	What is the effect of this statement on the imagery intelligence?
1st Round I Have an Idea (%)	59,3	63	85,2	85,2	85,2
2nd Round I Have an Idea (%)	74,1	66,7	85,2	85,2	88,9
Answers	High	Before 2025	High Positive	High Positive	High Positive

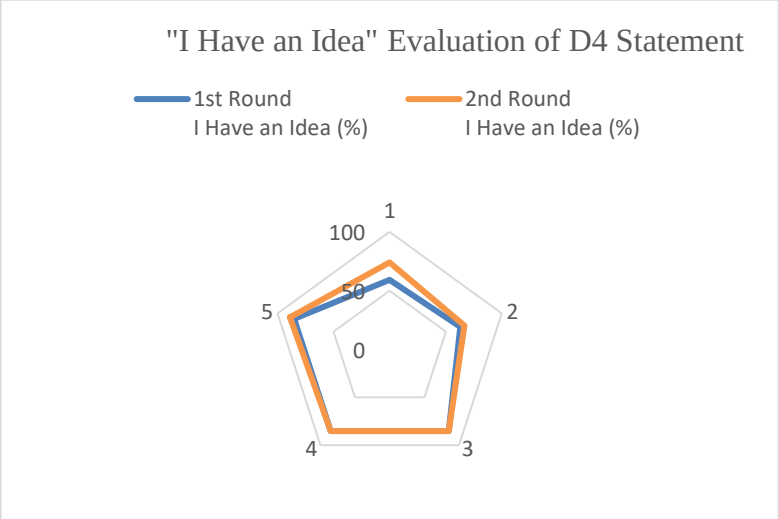

Figure A4 1st and 2nd Round "I Have an Idea" Evaluation of the D4 Statement

D5 Statement: In the Defense Industry, imagery intelligence mobile applications will minimize the possible attritions in the theater of operations.

Table A5 1st and 2nd Round "I Have an Idea" Statistics of the D5 Statement

	1	2	3	4	5
	What is the probability of occurrence/ realization of this statement?	How long is the realization period of this statement?	How does this statement affect the competitiveness of the Defense Industry in Turkey?	Will this statement be effective in increasing the Defense Industry R&D studies?	What is the effect of this statement on the imagery intelligence?
1st Round I Have an Idea (%)	55,6	59,3	77,8	85,2	88,9
2nd Round I Have an Idea (%)	81,5	63	77,8	88,9	81,5
Answers	High	Before 2025	High Positive	High Positive	High Positive

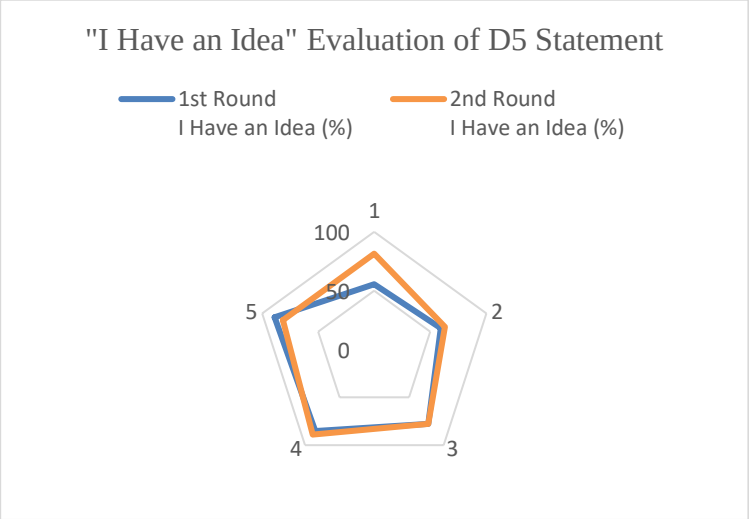

Figure A5 1st and 2nd Round "I Have an Idea" Evaluation of the D5 Statement

D6 Statement: In the Defense Industry, the imagery intelligence mobile applications will accelerate the decision-making process of decision makers.

Table A6 1st and 2nd Round "I Have an Idea" Statistics of the D6 Statement

	1	2	3	4	5
	What is the probability of occurrence/ realization of this statement?	How long is the realization period of this statement?	How does this statement affect the competitiveness of the Defense Industry in Turkey?	Will this statement be effective in increasing the Defense Industry R&D studies?	What is the effect of this statement on the imagery intelligence?
1st Round I Have an Idea (%)	69,2	69,2	80,8	84,6	76,9
2nd Round I Have an Idea (%)	80,8	65,4	76,9	80,8	84,6
Answers	High	Before 2025	High Positive	High Positive	High Positive

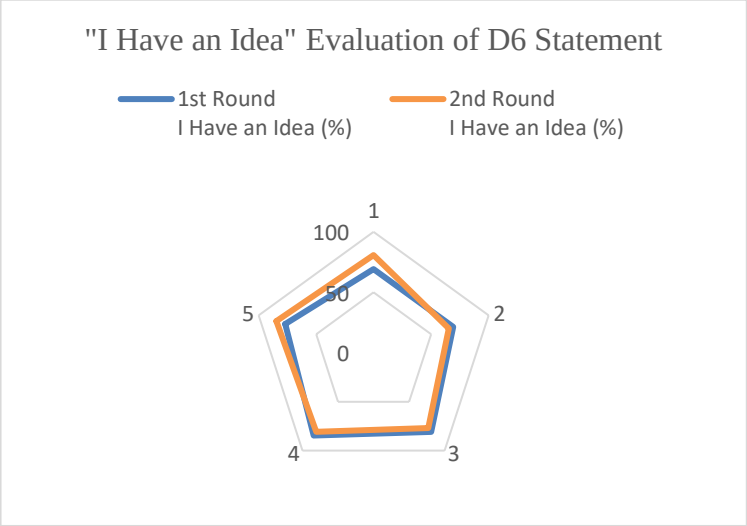

Figure A6 1st and 2nd Round "I Have an Idea" Evaluation of the D6 Statement

D7 Statement: In the Defense Industry, the imagery intelligence mobile applications will contribute significantly to interdisciplinary studies in ensuring national security.

Table A7 1st and 2nd Round "I Have an Idea" Statistics of the D7 Statement

	1	2	3	4	5
	What is the probability of occurrence/ realization of this statement?	How long is the realization period of this statement?	How does this statement affect the competitiveness of the Defense Industry in Turkey?	Will this statement be effective in increasing the Defense Industry R&D studies?	What is the effect of this statement on the imagery intelligence?
1st Round I Have an Idea (%)	51,9	66,7	63	63	59,3
2nd Round I Have an Idea (%)	55,6	59,3	63	70,4	74,1
Answers	High	Before 2025	High Positive	High Positive	High Positive

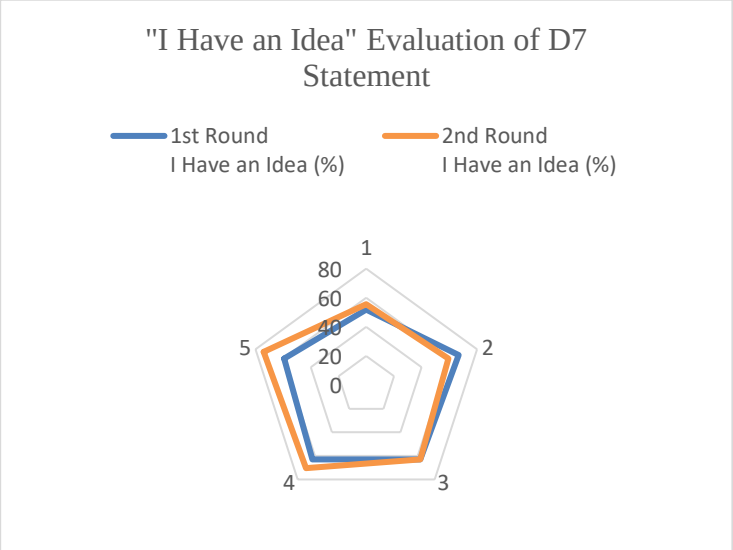

Figure A7 1st and 2nd Round "I Have an Idea" Evaluation of the D7 Statement

D8 Statement: In the Defense Industry, the imagery intelligence mobile applications will contribute significantly to the identification of define high-priority targets.

Table A8 1st and 2nd Round "I Have an Idea" Statistics of the D8 Statement

	1	2	3	4	5
	What is the probability of occurrence/ realization of this statement?	How long is the realization period of this statement?	How does this statement affect the competitiveness of the Defense Industry in Turkey?	Will this statement be effective in increasing the Defense Industry R&D studies?	What is the effect of this statement on the imagery intelligence?
1st Round I Have an Idea (%)	60,7	64,3	75	82,1	78,6
2nd Round I Have an Idea (%)	85,7	67,9	71,4	89,3	78,6
Answers	High	Before 2025	High Positive	High Positive	High Positive

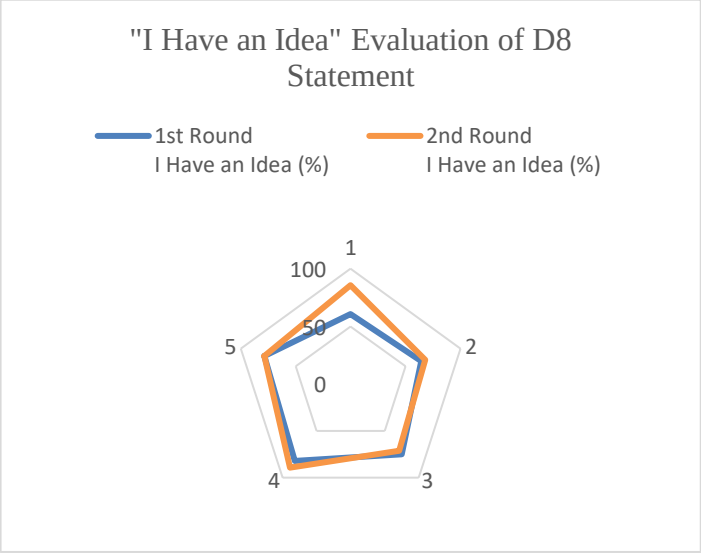

Figure A8 1st and 2nd Round "I Have an Idea" Evaluation of the D8 Statement

D9 Statement: In the Defense Industry, the imagery intelligence mobile applications will significantly facilitate intelligence sharing in joint and combined operations.

Table A9 1st and 2nd Round "I Have an Idea" Statistics of the D9 Statement

	1	2	3	4	5
	What is the probability of occurrence/ realization of this statement?	How long is the realization period of this statement?	How does this statement affect the competitiveness of the Defense Industry in Turkey?	Will this statement be effective in increasing the Defense Industry R&D studies?	What is the effect of this statement on the imagery intelligence?
1st Round I Have an Idea (%)	60	68	72	80	80
2nd Round I Have an Idea (%)	68	64	68	76	80
Answers	High	Before 2025	High Positive	High Positive	High Positive

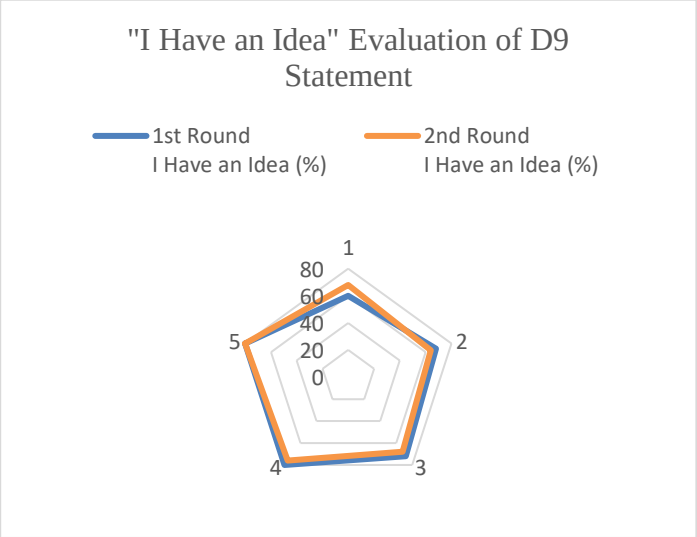

Figure A9 1st and 2nd Round "I Have an Idea" Evaluation of the D9 Statement

D10 Statement: In the Defense Industry, the imagery intelligence mobile applications will facilitate the course of action of deep zone operations.

Table A10 1st and 2nd Round "I Have an Idea" Statistics of the D10 Statement

	1	2	3	4	5
	What is the probability of occurrence/ realization of this statement?	How long is the realization period of this statement?	How does this statement affect the competitiveness of the Defense Industry in Turkey?	Will this statement be effective in increasing the Defense Industry R&D studies?	What is the effect of this statement on the imagery intelligence?
1st Round I Have an Idea (%)	61,5	69,2	80,8	84,6	92,2
2nd Round I Have an Idea (%)	76,9	57,7	76,9	73,1	84,6
Answers	High	Before 2025	High Positive	High Positive	High Positive

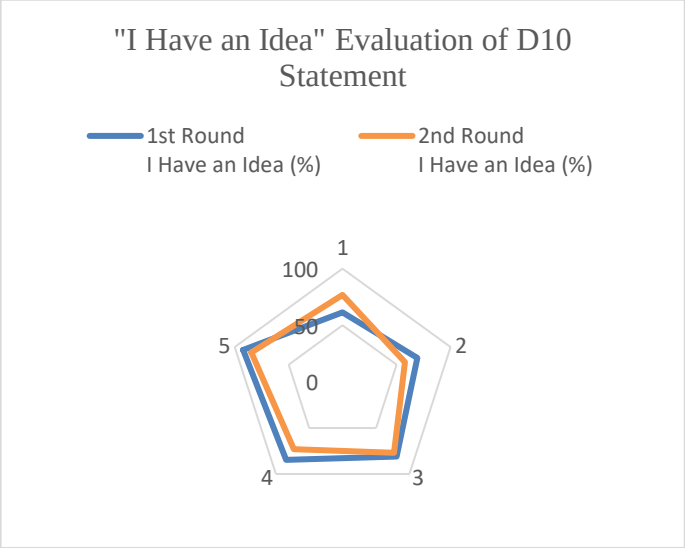

Figure A10 1st and 2nd Round "I Have an Idea" Evaluation of the D10 Statement

D11 Statement: In the Defense Industry, the imagery intelligence mobile applications will be used intensively to assess the effectiveness of fire support elements in the target area.

Table A11 1st and 2nd Round "I Have an Idea" Statistics of the D11 Statement

	1	2	3	4	5
	What is the probability of occurrence/ realization of this statement?	How long is the realization period of this statement?	How does this statement affect the competitiveness of the Defense Industry in Turkey?	Will this statement be effective in increasing the Defense Industry R&D studies?	What is the effect of this statement on the imagery intelligence?
1st Round I Have an Idea (%)	59,3	63	70,4	85,2	81,5
2nd Round I Have an Idea (%)	70,4	66,7	66,7	74,1	74,1
Answers	High	Before 2025	High Positive	High Positive	High Positive

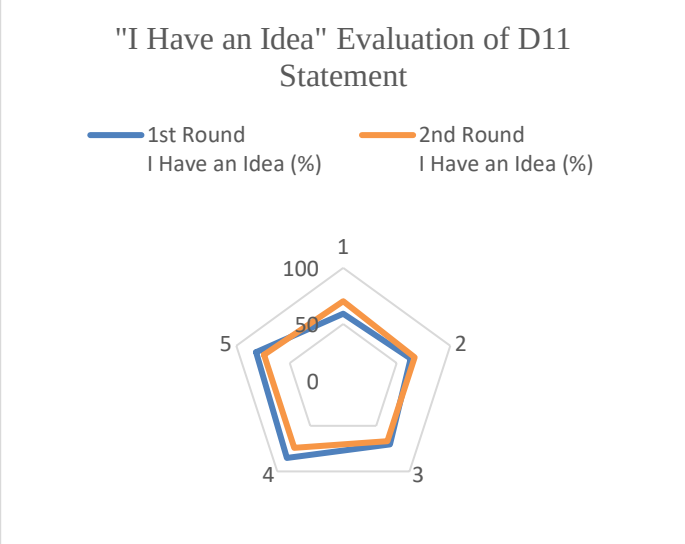

Figure A11 1st and 2nd Round "I Have an Idea" Evaluation of the D11 Statement

D12 Statement: In the Defense Industry, the imagery intelligence mobile applications will enable to pursue a safe operation by providing instant intelligence support to the maneuvering elements.

Table A12 1st and 2nd Round "I Have an Idea" Statistics of the D12 Statement

	1	2	3	4	5
	What is the probability of occurrence/ realization of this statement?	How long is the realization period of this statement?	How does this statement affect the competitiveness of the Defense Industry in Turkey?	Will this statement be effective in increasing the Defense Industry R&D studies?	What is the effect of this statement on the imagery intelligence?
1st Round I Have an Idea (%)	63	66,7	77,8	85,2	88,9
2nd Round I Have an Idea (%)	74,1	59,3	77,8	81,5	85,2
Answers	High	Before 2025	High Positive	High Positive	High Positive

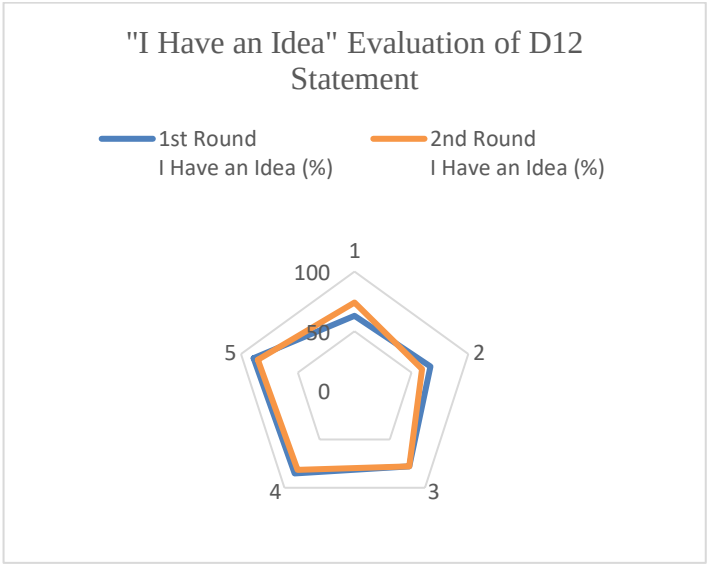

Figure A12 1st and 2nd Round "I Have an Idea" Evaluation of the D12 Statement

B. 2nd ROUND DELPHI "I HAVE AN IDEA" AND 2nd ROUND DELPHI TOTAL EVALUATION

D1 Statement: In the Defense Industry, the imagery intelligence mobile applications will be developed to be used by both civilian and military purposes (dual usage).

Table B1 2nd Round "I Have an Idea-Total" Statistics of the D1 Statement

	1	2	3	4	5
	What is the probability of occurrence/ realization of this statement?	How long is the realization period of this statement?	How does this statement affect the competitiveness of the Defense Industry in Turkey?	Will this statement be effective in increasing the Defense Industry R&D studies?	What is the effect of this statement on the imagery intelligence?
2nd Round I Have an Idea (%)	77,4	77,4	77,4	83,9	90,3
2nd Round Total (%)	74	70	84	86	86
Answers	High	Before 2025	High Positive	High Positive	High Positive

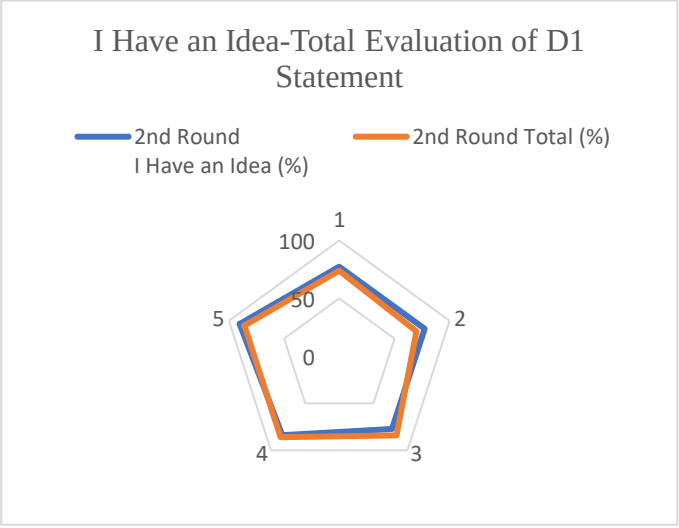

Figure B2 2nd Round "I Have an Idea-Total" Evaluation of the D1 Statement

D2 Statement: In the Defense Industry, the imagery intelligence mobile applications will be developed with domestic and national solutions in the direction of R & D and innovation studies.

Table B2 2nd Round "I Have an Idea-Total" Statistics of the D2 Statement

	1	2	3	4	5
	What is the probability of occurrence/ realization of this statement?	How long is the realization period of this statement?	How does this statement affect the competitiveness of the Defense Industry in Turkey?	Will this statement be effective in increasing the Defense Industry R&D studies?	What is the effect of this statement on the imagery intelligence?
2nd Round I Have an Idea (%)	53,1	71,9	84,4	90,6	81,3
2nd Round Total (%)	64	72	84	90	82
Answers	High	Before 2025	High Positive	High Positive	High Positive

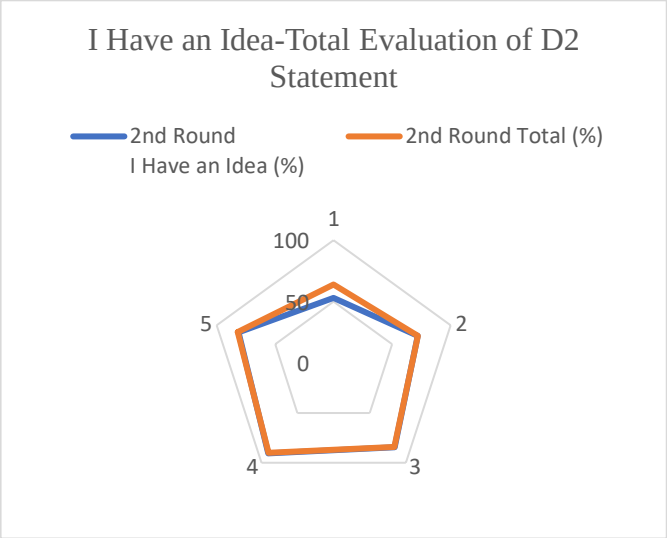

Figure B2 2nd Round "I Have an Idea-Total" Evaluation of the D2 Statement

D3 Statement: In the Defense Industry, the imagery intelligence mobile applications will play a leading role in increasing the current image intelligence quality.

Table B3 2nd Round "I Have an Idea-Total" Statistics of the D3 Statement

	1	2	3	4	5
	What is the probability of occurrence/ realization of this statement?	How long is the realization period of this statement?	How does this statement affect the competitiveness of the Defense Industry in Turkey?	Will this statement be effective in increasing the Defense Industry R&D studies?	What is the effect of this statement on the imagery intelligence?
2nd Round I Have an Idea (%)	72,4	58,6	86,2	75,9	86,2
2nd Round Total (%)	74	66	86	80	86
Answers	High	Before 2025	High Positive	High Positive	High Positive

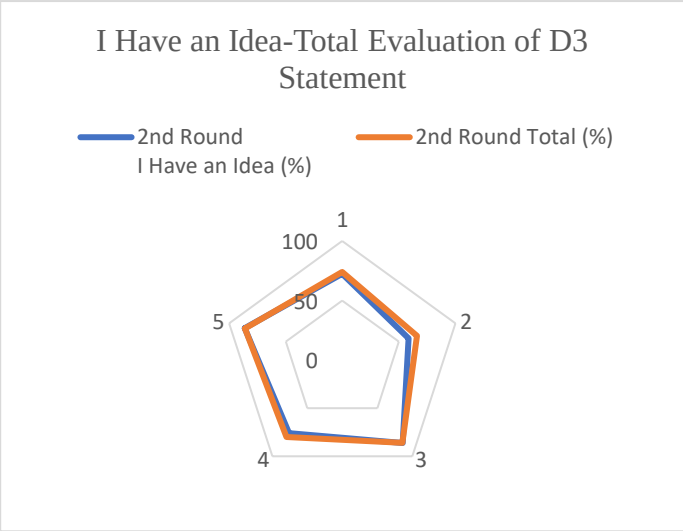

Figure B3 2nd Round "I Have an Idea-Total" Evaluation of the D3 Statement

D4 Statement: In the Defense Industry, the imagery intelligence mobile applications will play an important role to augment the pace of the operation.

Table B4 2nd Round "I Have an Idea-Total" Statistics of the D4 Statement

	1	2	3	4	5
	What is the probability of occurrence/ realization of this statement?	How long is the realization period of this statement?	How does this statement affect the competitiveness of the Defense Industry in Turkey?	Will this statement be effective in increasing the Defense Industry R&D studies?	What is the effect of this statement on the imagery intelligence?
2nd Round I Have an Idea (%)	74,1	66,7	85,2	85,2	88,9
2nd Round Total (%)	76	62	82	84	84
Answers	High	Before 2025	High Positive	High Positive	High Positive

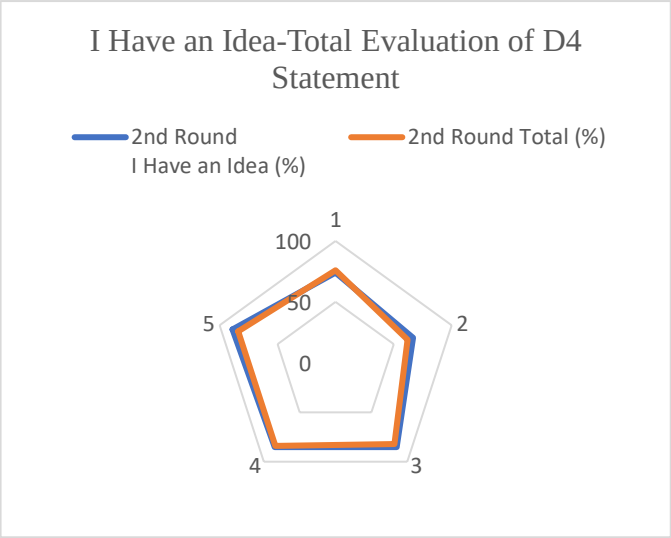

Figure B4 2nd Round "I Have an Idea-Total" Evaluation of the D4 Statement

D5 Statement: In the Defense Industry, imagery intelligence mobile applications will minimize the possible attritions in the theater of operations.

Table B5 2nd Round "I Have an Idea-Total" Statistics of the D5 Statement

	1	2	3	4	5
	What is the probability of occurrence/ realization of this statement?	How long is the realization period of this statement?	How does this statement affect the competitiveness of the Defense Industry in Turkey?	Will this statement be effective in increasing the Defense Industry R&D studies?	What is the effect of this statement on the imagery intelligence?
2nd Round I Have an Idea (%)	81,5	63	77,8	88,9	81,5
2nd Round Total (%)	80	64	74	84	78
Answers	High	Before 2025	High Positive	High Positive	High Positive

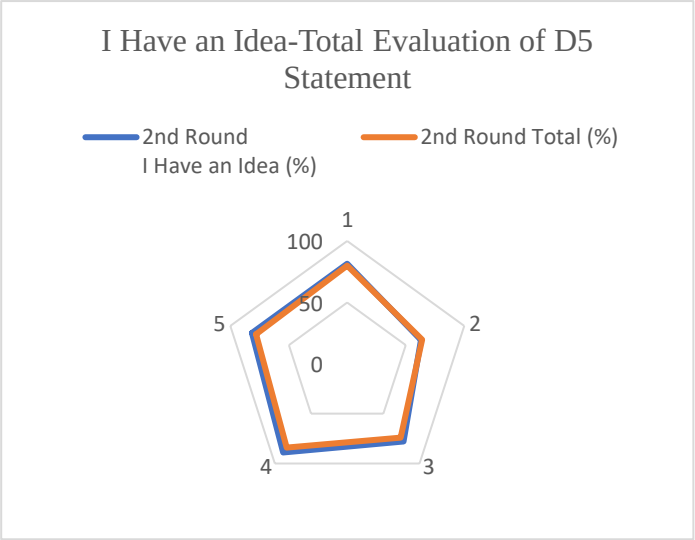

Figure B5 2nd Round "I Have an Idea-Total" Evaluation of the D5 Statement

D6 Statement: In the Defense Industry, the imagery intelligence mobile applications will accelerate the decision-making process of decision makers.

Table B6 2nd Round "I Have an Idea-Total" Statistics of the D6 Statement

	1	2	3	4	5
	What is the probability of occurrence/ realization of this statement?	How long is the realization period of this statement?	How does this statement affect the competitiveness of the Defense Industry in Turkey?	Will this statement be effective in increasing the Defense Industry R&D studies?	What is the effect of this statement on the imagery intelligence?
2nd Round I Have an Idea (%)	80,8	65,4	76,9	80,8	84,6
2nd Round Total (%)	82	66	80	82	84
Answers	High	Before 2025	High Positive	High Positive	High Positive

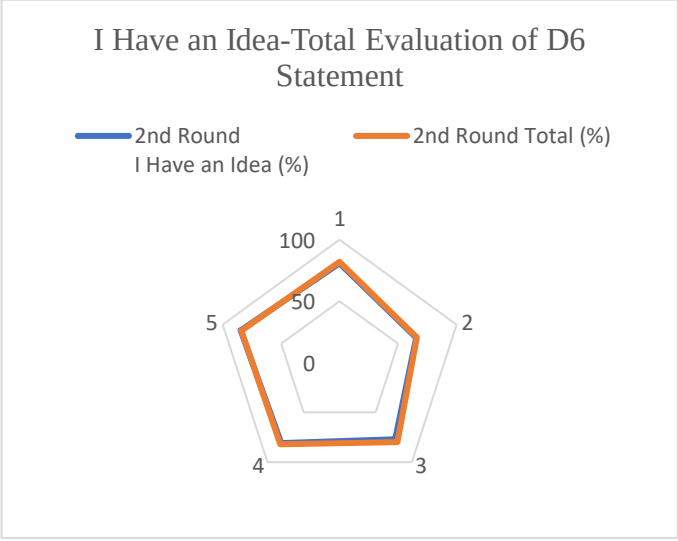

Figure B6 2nd Round "I Have an Idea-Total" Evaluation of the D6 Statement

D7 Statement: In the Defense Industry, the imagery intelligence mobile applications will contribute significantly to interdisciplinary studies in ensuring national security.

TABLE B7 2nd Round "I Have an Idea-Total" Statistics of the D7 Statement

	1	2	3	4	5
	What is the probability of occurrence/ realization of this statement?	How long is the realization period of this statement?	How does this statement affect the competitiveness of the Defense Industry in Turkey?	Will this statement be effective in increasing the Defense Industry R&D studies?	What is the effect of this statement on the imagery intelligence?
2nd Round I Have an Idea (%)	55,6	59,3	63	70,4	74,1
2nd Round Total (%)	56	52	64	70	72
Answers	High	Before 2025	High Positive	High Positive	High Positive

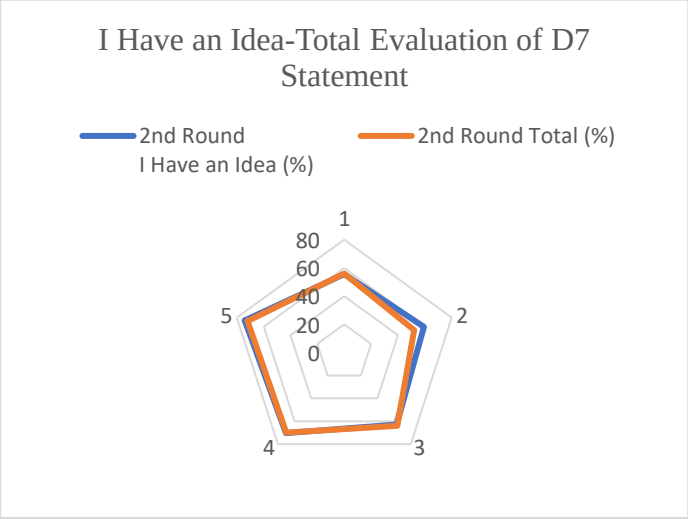

Figure B7 2nd Round "I Have an Idea-Total" Evaluation of the D7 Statement

D8 Statement: In the Defense Industry, the imagery intelligence mobile applications will contribute significantly to the identification of define high-priority targets.

TABLE B8 2nd Round "I Have an Idea-Total" Statistics of the D8 Statement

	1	2	3	4	5
	What is the probability of occurrence/ realization of this statement?	How long is the realization period of this statement?	How does this statement affect the competitiveness of the Defense Industry in Turkey?	Will this statement be effective in increasing the Defense Industry R&D studies?	What is the effect of this statement on the imagery intelligence?
2nd Round I Have an Idea (%)	85,7	67,9	71,4	89,3	78,6
2nd Round Total (%)	82	64	74	84	80
Answers	High	Before 2025	High Positive	High Positive	High Positive

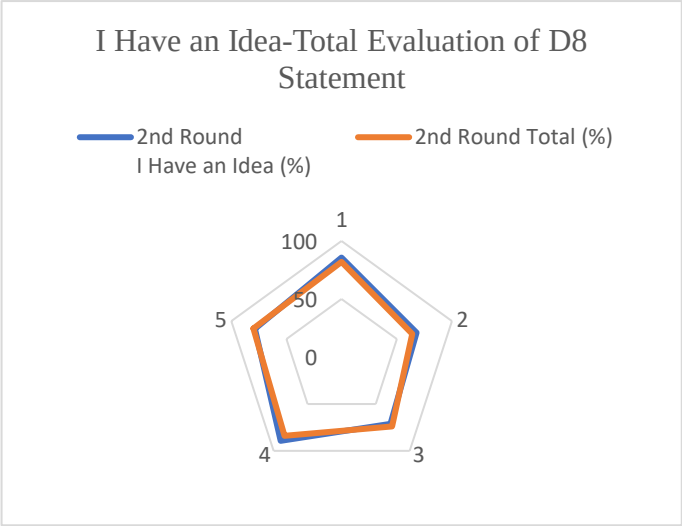

Figure B8 2nd Round "I Have an Idea-Total" Evaluation of the D8 Statement

D9 Statement: In the Defense Industry, the imagery intelligence mobile applications will significantly facilitate intelligence sharing in joint and combined operations.

Table B9 2nd Round "I Have an Idea-Total" Statistics of the D9 Statement

	1	2	3	4	5
	What is the probability of occurrence/ realization of this statement?	How long is the realization period of this statement?	How does this statement affect the competitiveness of the Defense Industry in Turkey?	Will this statement be effective in increasing the Defense Industry R&D studies?	What is the effect of this statement on the imagery intelligence?
2nd Round I Have an Idea (%)	68	64	68	76	80
2nd Round Total (%)	66	62	68	74	74
Answers	High	Before 2025	High Positive	High Positive	High Positive

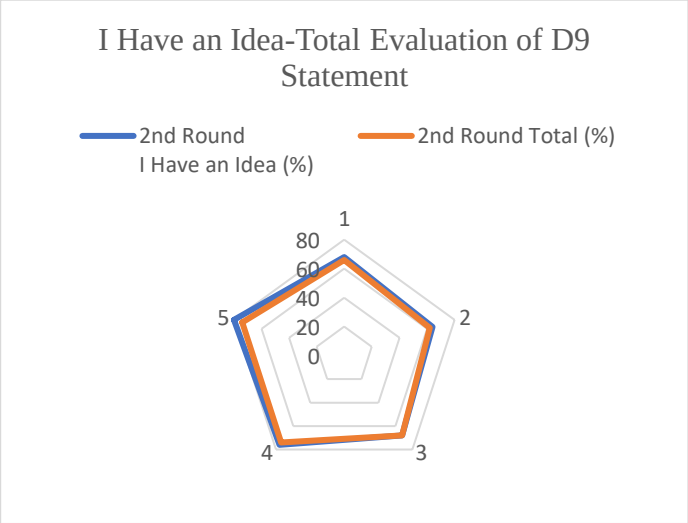

Figure B9 2nd Round "I Have an Idea-Total" Evaluation of the D9 Statement

D10 Statement: In the Defense Industry, the imagery intelligence mobile applications will facilitate the course of action of deep zone operations.

Table B10 2nd Round "I Have an Idea-Total" Statistics of the D10 Statement

	1	2	3	4	5
	What is the probability of occurrence/ realization of this statement?	How long is the realization period of this statement?	How does this statement affect the competitiveness of the Defense Industry in Turkey?	Will this statement be effective in increasing the Defense Industry R&D studies?	What is the effect of this statement on the imagery intelligence?
2nd Round I Have an Idea (%)	76,9	57,7	76,9	73,1	84,6
2nd Round Total (%)	80	60	76	78	84
Answers	High	Before 2025	High Positive	High Positive	High Positive

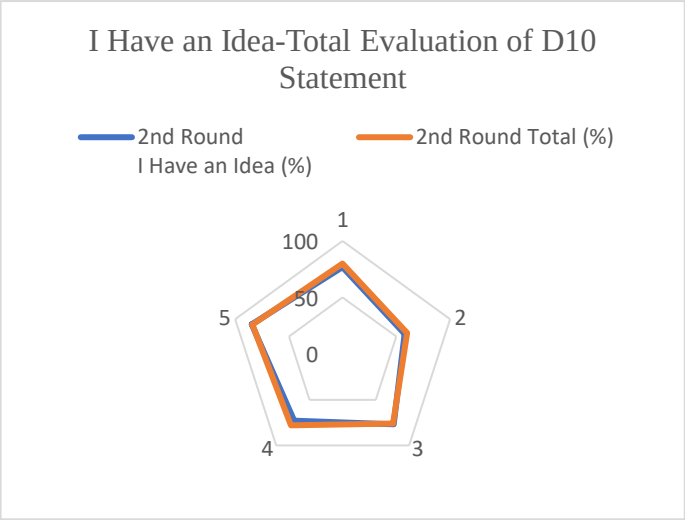

Figure B10 2nd Round "I Have an Idea-Total" Evaluation of the D10 Statement

D11 Statement: In the Defense Industry, the imagery intelligence mobile applications will be used intensively to assess the effectiveness of fire support elements in the target area.

Table B11 2nd Round "I Have an Idea-Total" Statistics of the D11 Statement

	1	2	3	4	5
	What is the probability of occurrence/ realization of this statement?	How long is the realization period of this statement?	How does this statement affect the competitiveness of the Defense Industry in Turkey?	Will this statement be effective in increasing the Defense Industry R&D studies?	What is the effect of this statement on the imagery intelligence?
2nd Round I Have an Idea (%)	70,4	66,7	66,7	74,1	74,1
2nd Round Total (%)	72	60	72	78	80
Answers	High	Before 2025	High Positive	High Positive	High Positive

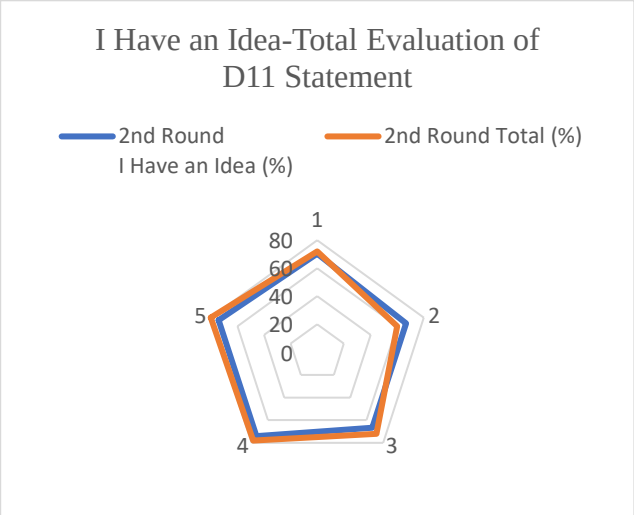

Figure B11 2nd Round "I Have an Idea-Total" Evaluation of the D11 Statement

D12 Statement: In the Defense Industry, the imagery intelligence mobile applications will enable to pursue a safe operation by providing instant intelligence support to the maneuvering elements.

Table B12 2nd Round "I Have an Idea-Total" Statistics of the D12 Statement

	1	2	3	4	5
	What is the probability of occurrence/ realization of this statement?	How long is the realization period of this statement?	How does this statement affect the competitiveness of the Defense Industry in Turkey?	Will this statement be effective in increasing the Defense Industry R&D studies?	What is the effect of this statement on the imagery intelligence?
2nd Round I Have an Idea (%)	74,1	59,3	77,8	81,5	85,2
2nd Round Total (%)	80	56	76	78	82
Answers	High	Before 2025	High Positive	High Positive	High Positive

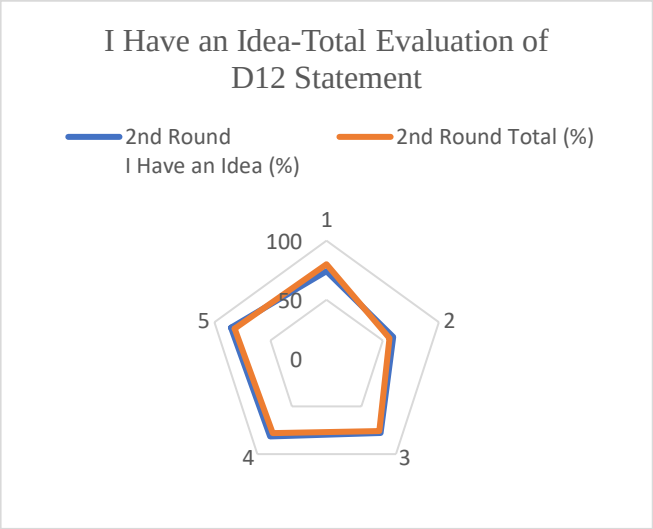

Figure B12 2nd Round "I Have an Idea-Total" Evaluation of the D12 Statement

C. 1st ROUND DELPHI EXPERT AND 1st ROUND DELPHI TOTAL EVALUATION

D1 Statement: In the Defense Industry, the imagery intelligence mobile applications will be developed to be used by both civilian and military purposes (dual usage).

Table C1 1st Round Expert-Total Statistics of the D1 Statement

	1	2	3	4	5
	What is the probability of occurrence/ realization of this statement?	How long is the realization period of this statement?	How does this statement affect the competitiveness of the Defense Industry in Turkey?	Will this statement be effective in increasing the Defense Industry R&D studies?	What is the effect of this statement on the imagery intelligence?
1st Round Experts (%)	71,4	42,9	85,7	100	85,7
1st Round Total (%)	64	64	70	84	82
Answers	High	Before 2025	High Positive	High Positive	High Positive

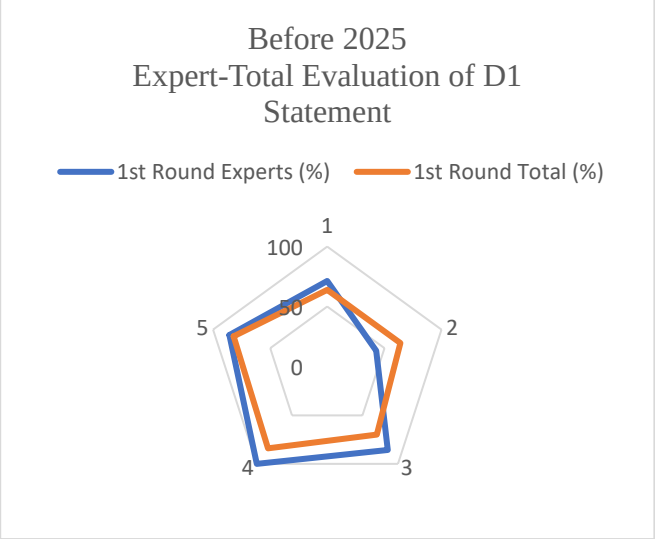

Figure C1 1st Round Expert-Total Evaluation of the D1 Statement

Table C2 Between 2025-2035, 1st Round Expert-Total Statistics of the D1 Statement

	1	2	3	4	5
	What is the probability of occurrence/ realization of this statement?	How long is the realization period of this statement?	How does this statement affect the competitiveness of the Defense Industry in Turkey?	Will this statement be effective in increasing the Defense Industry R&D studies?	What is the effect of this statement on the imagery intelligence?
1st Round Experts (%)	71,4	57,1	85,7	100	85,7
1st Round Total (%)	64	64	70	84	82
Answers	High	Between 2025-2035	High Positive	High Positive	High Positive

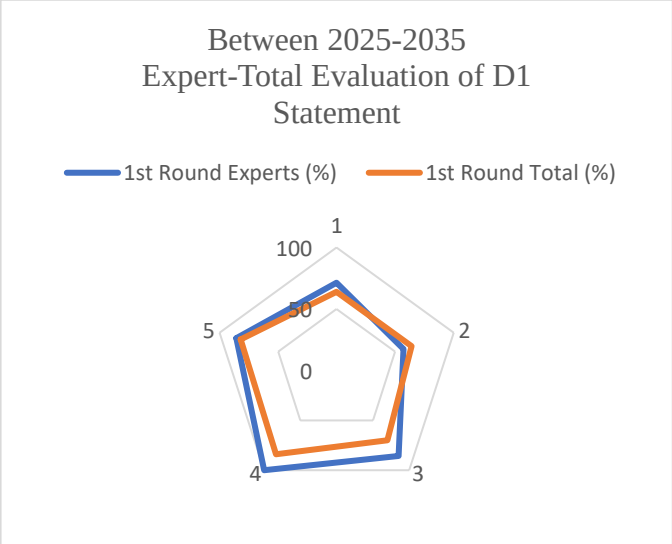

Figure C2 Between 2025-2035, 1st Round Expert-Total Evaluation of the D1 Statement

D2 Statement: In the Defense Industry, the imagery intelligence mobile applications will be developed with domestic and national solutions in the direction of R & D and innovation studies.

Table C3 1st Round Expert-Total Statistics of the D2 Statement

	1	2	3	4	5
	What is the probability of occurrence/ realization of this statement?	How long is the realization period of this statement?	How does this statement affect the competitiveness of the Defense Industry in Turkey?	Will this statement be effective in increasing the Defense Industry R&D studies?	What is the effect of this statement on the imagery intelligence?
1st Round Experts (%)	83,3	66,7	83,3	100	100
1st Round Total (%)	58	58	78	88	82
Answers	High	Before 2025	High Positive	High Positive	High Positive

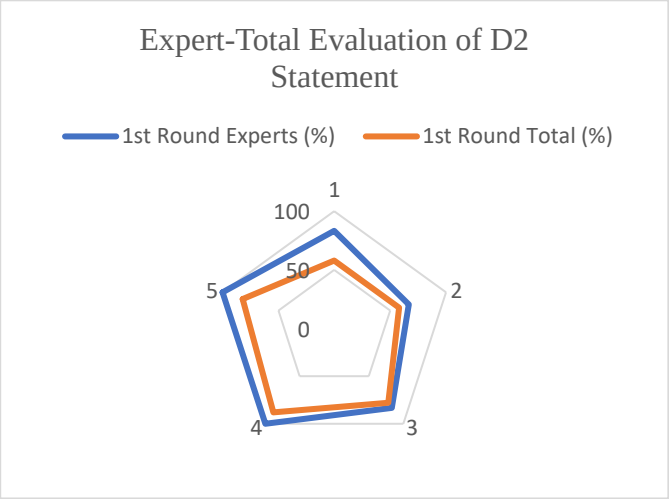

Figure C3 1st Round Expert-Total Evaluation of the D2 Statement

D3 Statement: In the Defense Industry, the imagery intelligence mobile applications will play a leading role in increasing the current image intelligence quality.

Table C4 1st Round Expert-Total Statistics of the D3 Statement

	1	2	3	4	5
	What is the probability of occurrence/ realization of this statement?	How long is the realization period of this statement?	How does this statement affect the competitiveness of the Defense Industry in Turkey?	Will this statement be effective in increasing the Defense Industry R&D studies?	What is the effect of this statement on the imagery intelligence?
1st Round Experts (%)	100	83,3	100	100	100
1st Round Total (%)	62	62	70	72	74
Answers	High	Before 2025	High Positive	High Positive	High Positive

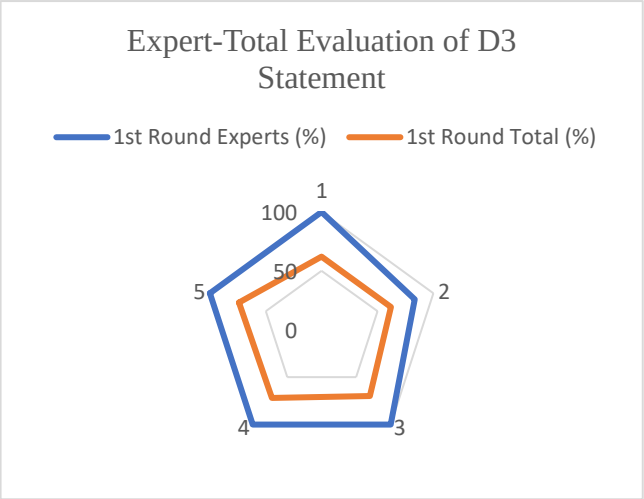

Figure C4 1st Round Expert-Total Evaluation of the D3 Statement

D4 Statement: In the Defense Industry, the imagery intelligence mobile applications will play an important role to augment the pace of the operation.

Table C5 1st Round Expert-Total Statistics of the D4 Statement

	1	2	3	4	5
	What is the probability of occurrence/ realization of this statement?	How long is the realization period of this statement?	How does this statement affect the competitiveness of the Defense Industry in Turkey?	Will this statement be effective in increasing the Defense Industry R&D studies?	What is the effect of this statement on the imagery intelligence?
1st Round Experts (%)	100	85,7	100	100	100
1st Round Total (%)	64	58	78	86	82
Answers	High	Before 2025	High Positive	High Positive	High Positive

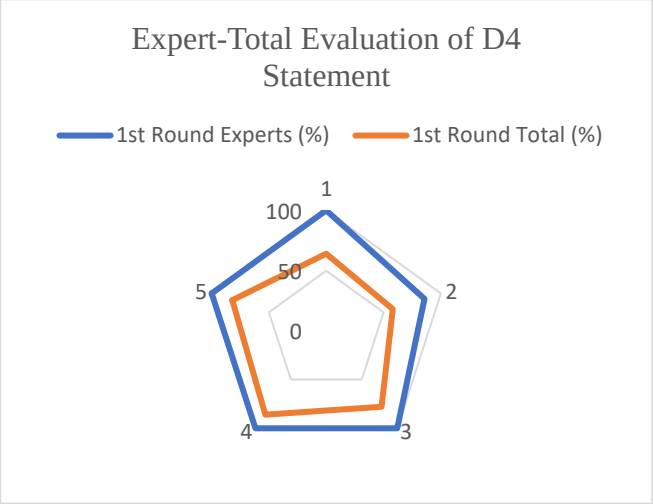

Figure C5 1st Round Expert-Total Evaluation of the D4 Statement

D5 Statement: In the Defense Industry, imagery intelligence mobile applications will minimize the possible attritions in the theater of operations.

Table C6 1st Round Expert-Total Statistics of the D5 Statement

	1	2	3	4	5
	What is the probability of occurrence/ realization of this statement?	How long is the realization period of this statement?	How does this statement affect the competitiveness of the Defense Industry in Turkey?	Will this statement be effective in increasing the Defense Industry R&D studies?	What is the effect of this statement on the imagery intelligence?
1st Round Experts (%)	100	62,5	100	100	100
1st Round Total (%)	66	54	76	86	84
Answers	High	Before 2025	High Positive	High Positive	High Positive

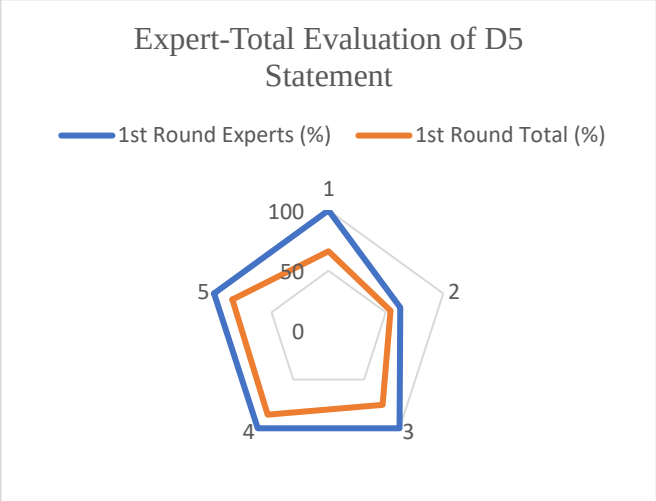

Figure C6 1st Round Expert-Total Evaluation of the D5 Statement

D6 Statement: In the Defense Industry, the imagery intelligence mobile applications will accelerate the decision-making process of decision makers.

Table C7 1st Round Expert-Total Statistics of the D6 Statement

	1	2	3	4	5
	What is the probability of occurrence/ realization of this statement?	How long is the realization period of this statement?	How does this statement affect the competitiveness of the Defense Industry in Turkey?	Will this statement be effective in increasing the Defense Industry R&D studies?	What is the effect of this statement on the imagery intelligence?
1st Round Experts (%)	100	62,5	100	100	100
1st Round Total (%)	72	60	76	82	82
Answers	High	Before 2025	High Positive	High Positive	High Positive

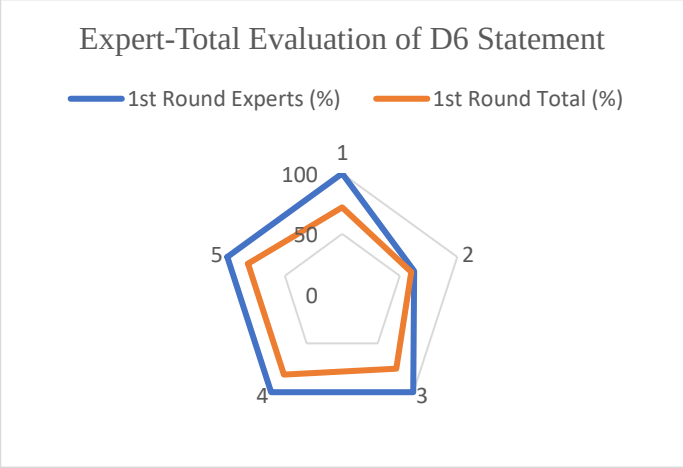

Figure C7 1st Round Expert-Total Evaluation of the D6 Statement

D7 Statement: In the Defense Industry, the imagery intelligence mobile applications will contribute significantly to interdisciplinary studies in ensuring national security.

Table C8 1st Round Expert-Total Statistics of the D7 Statement

	1	2	3	4	5
	What is the probability of occurrence/ realization of this statement?	How long is the realization period of this statement?	How does this statement affect the competitiveness of the Defense Industry in Turkey?	Will this statement be effective in increasing the Defense Industry R&D studies?	What is the effect of this statement on the imagery intelligence?
1st Round Experts (%)	85,7	42,9	100	100	100
1st Round Total (%)	54	50	64	64	64
Answers	High	Before 2025	High Positive	High Positive	High Positive

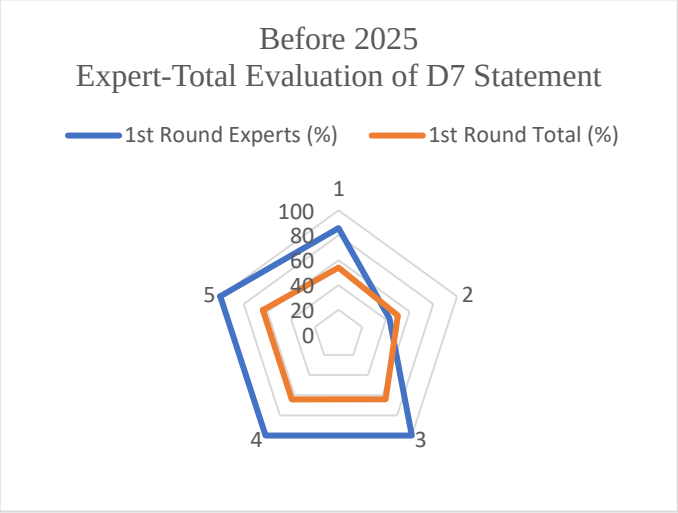

Figure C8 1st Round Expert-Total Evaluation of the D7 Statement

Table C9 Between 2025-2035, 1st Round Expert-Total Statistics of the D7 Statement

	1	2	3	4	5
	What is the probability of occurrence/ realization of this statement?	How long is the realization period of this statement?	How does this statement affect the competitiveness of the Defense Industry in Turkey?	Will this statement be effective in increasing the Defense Industry R&D studies?	What is the effect of this statement on the imagery intelligence?
1st Round Experts (%)	85,7	42,9	100	100	100
1st Round Total (%)	54	50	64	64	64
Answers	High	Between 2025-2035	High Positive	High Positive	High Positive

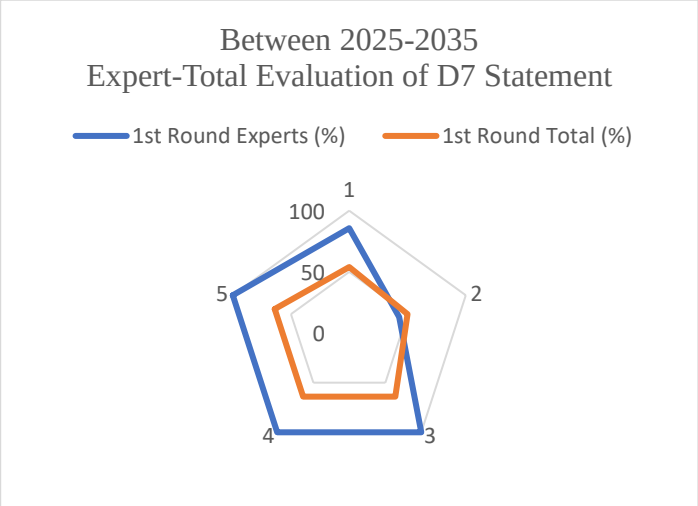

Figure C9 Between 2025-2035, 1st Round Expert-Total Evaluation of the D7 Statement

D8 Statement: In the Defense Industry, the imagery intelligence mobile applications will contribute significantly to the identification of define high-priority targets.

Table C10 1st Round Expert-Total Statistics of the D8 Statement

	1	2	3	4	5
	What is the probability of occurrence/ realization of this statement?	How long is the realization period of this statement?	How does this statement affect the competitiveness of the Defense Industry in Turkey?	Will this statement be effective in increasing the Defense Industry R&D studies?	What is the effect of this statement on the imagery intelligence?
1st Round Experts (%)	100	62,5	100	100	100
1st Round Total (%)	68	58	80	80	80
Answers	High	Before 2025	High Positive	High Positive	High Positive

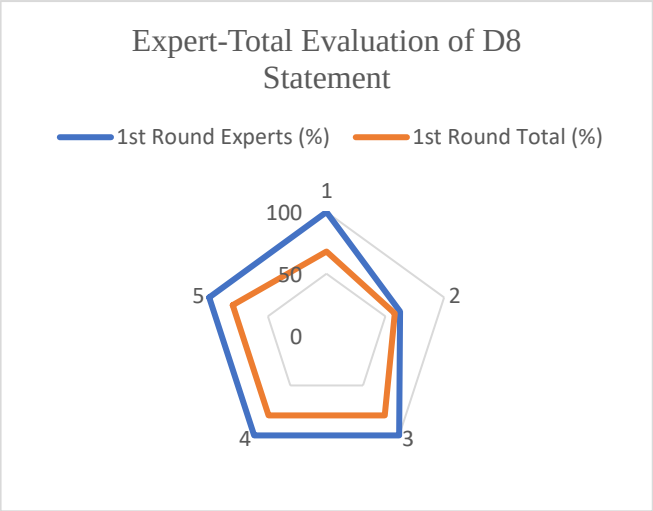

Figure C10 1st Round Expert-Total Evaluation of the D8 Statement

D9 Statement: In the Defense Industry, the imagery intelligence mobile applications will significantly facilitate intelligence sharing in joint and combined operations.

Table C11 1st Round Expert-Total Statistics of the D9 Statement

	1	2	3	4	5
	What is the probability of occurrence/ realization of this statement?	How long is the realization period of this statement?	How does this statement affect the competitiveness of the Defense Industry in Turkey?	Will this statement be effective in increasing the Defense Industry R&D studies?	What is the effect of this statement on the imagery intelligence?
1st Round Experts (%)	100	71,4	100	100	100
1st Round Total (%)	62	56	76	84	82
Answers	High	Before 2025	High Positive	High Positive	High Positive

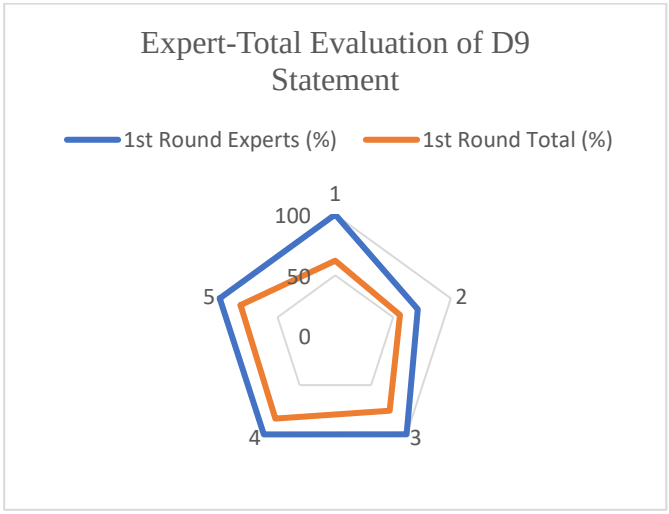

Figure C11 1st Round Expert-Total Evaluation of the D9 Statement

D10 Statement: In the Defense Industry, the imagery intelligence mobile applications will facilitate the course of action of deep zone operations.

Table C12 1st Round Expert-Total Statistics of the D10 Statement

	1	2	3	4	5
	What is the probability of occurrence/ realization of this statement?	How long is the realization period of this statement?	How does this statement affect the competitiveness of the Defense Industry in Turkey?	Will this statement be effective in increasing the Defense Industry R&D studies?	What is the effect of this statement on the imagery intelligence?
1st Round Experts (%)	100	42,9	100	100	100
1st Round Total (%)	66	52	78	82	88
Answers	High	Before 2025	High Positive	High Positive	High Positive

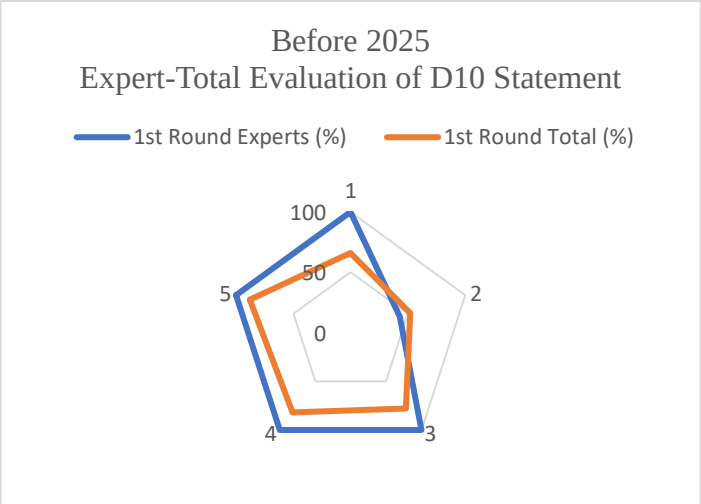

Figure C12 1st Round Expert-Total Evaluation of the D10 Statement

Table C13 Between 2025-2035, 1st Round Expert-Total Statistics of the D10 Statement

	1	2	3	4	5
	What is the probability of occurrence/ realization of this statement?	How long is the realization period of this statement?	How does this statement affect the competitiveness of the Defense Industry in Turkey?	Will this statement be effective in increasing the Defense Industry R&D studies?	What is the effect of this statement on the imagery intelligence?
1st Round Experts (%)	100	42,9	100	100	100
1st Round Total (%)	66	52	78	82	88
Answers	High	Between 2025-2035	High Positive	High Positive	High Positive

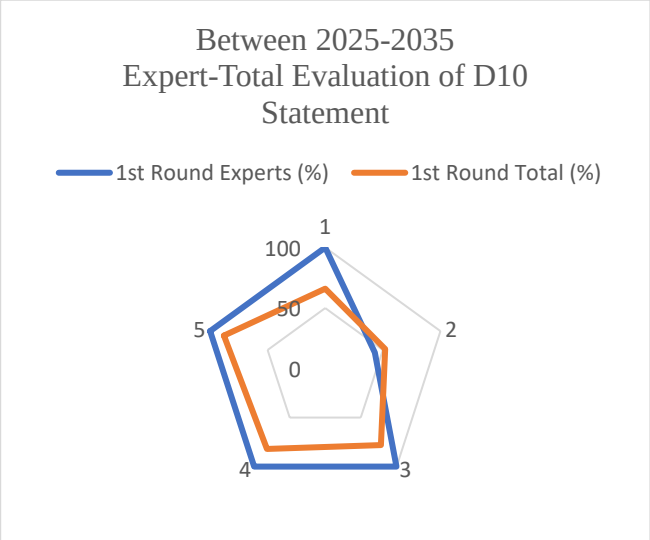

Figure C13 Between 2025-2035, 1st Round Expert-Total Evaluation of the D10 Statement

D11 Statement: In the Defense Industry, the imagery intelligence mobile applications will be used intensively to assess the effectiveness of fire support elements in the target area.

Table C14 1st Round Expert-Total Statistics of the D11 Statement

	1	2	3	4	5
	What is the probability of occurrence/ realization of this statement?	How long is the realization period of this statement?	How does this statement affect the competitiveness of the Defense Industry in Turkey?	Will this statement be effective in increasing the Defense Industry R&D studies?	What is the effect of this statement on the imagery intelligence?
1st Round Experts (%)	100	50	100	100	100
1st Round Total (%)	70	54	78	86	84
Answers	High	Before 2025	High Positive	High Positive	High Positive

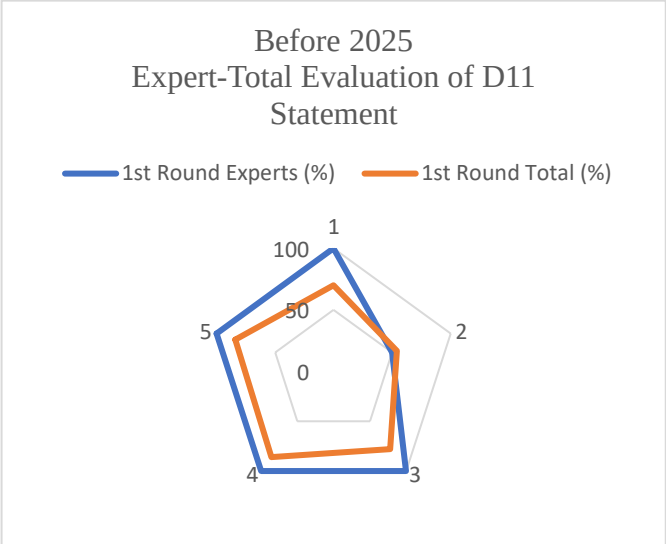

Figure C14 1st Round Expert-Total Evaluation of the D11 Statement

Table C15 Between 2025-2035, 1st Round Expert-Total Statistics of the D11 Statement

	1	2	3	4	5
	What is the probability of occurrence/ realization of this statement?	How long is the realization period of this statement?	How does this statement affect the competitiveness of the Defense Industry in Turkey?	Will this statement be effective in increasing the Defense Industry R&D studies?	What is the effect of this statement on the imagery intelligence?
1st Round Experts (%)	100	50	100	100	100
1st Round Total (%)	70	54	78	86	84
Answers	High	Between 2025-2035	High Positive	High Positive	High Positive

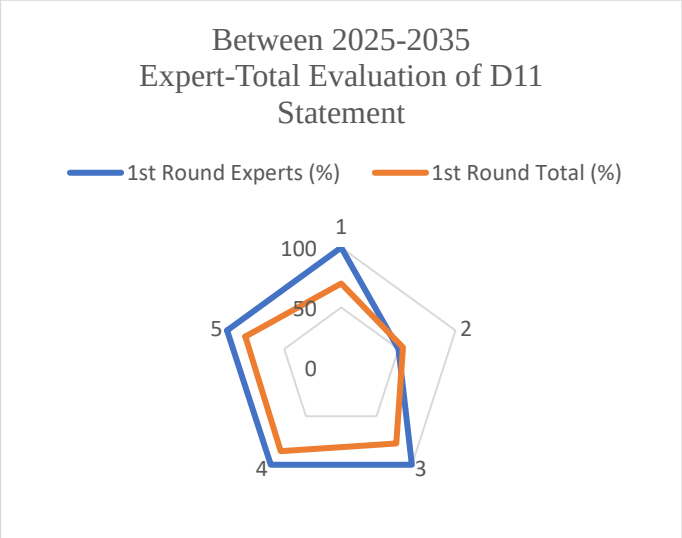

Figure C15 Between 2025-2035, 1st Round Expert-Total Evaluation of the D11 Statement

D12 Statement: In the Defense Industry, the imagery intelligence mobile applications will enable to pursue a safe operation by providing instant intelligence support to the maneuvering elements.

Table C16 1st Round Expert-Total Statistics of the D12 Statement

	1	2	3	4	5
	What is the probability of occurrence/ realization of this statement?	How long is the realization period of this statement?	How does this statement affect the competitiveness of the Defense Industry in Turkey?	Will this statement be effective in increasing the Defense Industry R&D studies?	What is the effect of this statement on the imagery intelligence?
1st Round Experts (%)	85,7	42,9	100	100	100
1st Round Total (%)	64	54	76	80	88
Answers	High	Before 2025	High Positive	High Positive	High Positive

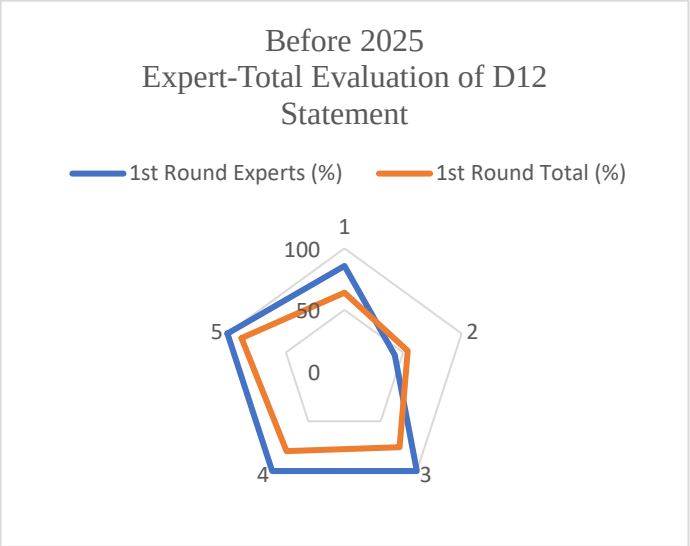

Figure C16 1st Round Expert-Total Evaluation of the D12 Statement

Table C17 Between 2025-2035, 1st Round Expert-Total Statistics of the D12 Statement

	1	2	3	4	5
	What is the probability of occurrence/ realization of this statement?	How long is the realization period of this statement?	How does this statement affect the competitiveness of the Defense Industry in Turkey?	Will this statement be effective in increasing the Defense Industry R&D studies?	What is the effect of this statement on the imagery intelligence?
1st Round Experts (%)	85,7	57,1	100	100	100
1st Round Total (%)	64	54	76	80	88
Answers	High	Between 2025-2035	High Positive	High Positive	High Positive

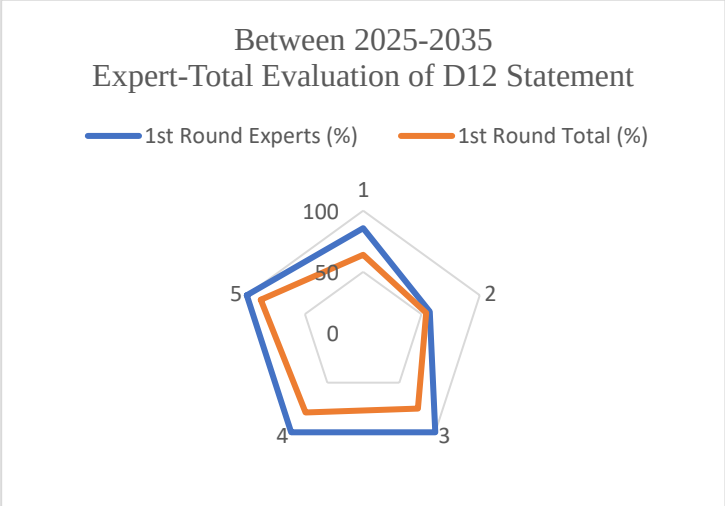

Figure C17 Between 2025-2035, 1st Round Expert-Total Evaluation of the D12 Statement

D. 1st ROUND DELPHI EXPERT REVIEWS

- I congratulate you on your work. I wish that it would make important contributions to the development of our nation.
- Even though the acceleration of technological developments enhances intelligence methods, the difficulty of reaching to the correct data and the difficulty of making accurate analyzes make the of control the process tough. Such issues need to be examined by SWOT analysis as well.
- The answers assume that the coverage of the mobile communication networks is likely to include the possible theater of operation and its surroundings. In the same way, the survey was answered according to the assumption that security measures are at the top level in intelligence and information sharing and that issues related to the training of personnel using the application are solved already. Any negative parameters of these matters will affect the benefit of the study negatively. Another important issue is to solve the other infrastructure issues, such as information systems, elimination of geographical and climate negativities, supporting units of the system and establishment of the healthy power source.
- The most important problem in the battlefield is ambiguity. Especially informatics-based studies aimed at eliminating these uncertainties will be very useful.
- The operation of imagery intelligence mobile applications should be based on national cryptography. Measures against comparator or suppressor threats should be considered in support of the national action. Given the support of joint and combined operations, two more areas will need to work further. A) Coordination between different forces (Land, Sea and Air Forces). B) Determination of the boundaries of the national crypto methods in the allied campaign and its sharing area/principles and method.
- Comprehensibleness of Delphi statements can be a problem. It may be useful to add a comment field. While I was working in the military even, I think I had some difficulty understanding the statements. Good luck. Best regards.

- I think, imagery intelligence mobile applications will make a significant contribution, especially in the theater of operations. This study will provide serious advantages in such matters as intelligence evaluation, plan of action, and support. It will also provide support for the development of the defense industry R&D studies and ensure that new ideas are derived. Thus, the quality of defense industry R&D studies will also increase. However, I do not agree with sharing the results with external units even if they are allied because I think that there may be security risks in sharing intelligence in joint and combined operations.
- The characteristic of today's theater of operations is it's being dynamic. Therefore, instant intelligence gains more and more importance. Following the achievement of the target area image, such software is seriously needed in order to be able to reach the intelligence to the end user quickly. Such an advanced software will be a tremendous force multiplier. It will enable the commander's decision to be quick and accurate, facilitate the more efficient use of fire support tools, and aid the planning of subsequent operations, contributing to the rapid appreciation of the damage in the target area.

E. 2nd ROUND DELPHI EXPERT REVIEWS

- Imagery intelligence mobile applications in the defense industry is indispensable today in the theater of operations. It is not possible to think of an alternative, especially if it is domestic and national. I think this research is very useful.
- The answers given to the questions of the project are given taking into consideration the fact that of all of the counter-intelligence measures for "civil and military field use" status are taken. If these measures are not taken, any measure that is not taken will affect the favorable responses negatively. The evaluation of responses within this scope will positively influence the study.
- I congratulate you on your work. I am a little nervous about having a joint action with allies expressed only in statement 9. I think some of the values (such as software codes and maps) just need to stay in the country.
- Especially in our country, intelligence is a very valuable asset and imagery intelligence mobile applications should be supported with a great budget.
- The development of such products is costly in the private sector and the process will be accelerated when supported by the government.

F. TURKISH SUMMARY / TÜRKÇE ÖZET

GİRİŞ

Çalışmanın amacı; kısa, orta ve uzun vadeli stratejik kararlar ve stratejik hedefler belirlemek, belirlenen stratejik hedefe göre yol haritası oluşturmak ve politika önerileri sunmak, etki analizi modeli önerisi sunmak ve keşif gözetleme istihbarat faaliyetlerine katkıda bulunmaktır. Ek olarak, bir model olarak geliştirilen panoramik mobil uygulama, geniş açılı alan görüntüleme imkânı sağlayarak keşif gözetleme sistemlerine alternatif sunmaktadır.

Araştırma sorusu: "Savunma Sanayinde mobil uygulamaların görüntü istihbarat teknoloji öngörüsünü nedir?"

Taktik resmin düzgün değerlendirilmesinde ve süreçlerin düzgün koordine edilmesinde istihbarat faaliyetlerinin etkisi büyüktür. Düşman erişim yollarının, dost ve düşman ateş yelpazesinin belirlenmesi ve gizlenme alanlarının tespit edilmesi için arazi analizlerinin yapılması şarttır (Glinton et al., 2004). Yapılan çalışmanın, Vizyon 2023 projesinin kritik teknoloji ağacında Bilgi Harbi Teknolojileri içinde yer alan bilgi istihbaratına katkı sağlayacağı düşünülmektedir.

Teknoloji Yönetimi için Genel Bilgiler

Teknoloji geliştirme aşamaları; fikir yaratımı, ön inceleme, fizibilite çalışmaları, geliştirme faaliyetleri, süreçlerin test edilmesi ve süreç iyileştirme çalışmalarını kapsamaktadır (Harrison ve Samson, 2002). Bu çalışmaları kurum kültürüne ve ihtiyaçlarına göre tasarlayıp, yöneticilere kapsayıcı bir çerçeve sunan teknoloji yönetimi modeline ait süreçler, aşağıdaki başlıklarda özetlenmiştir (Foden ve Berends, 2010).

Teknoloji Edinimi

Kurum içi Ar-Ge ve kurum dışı iş birliği çalışmaları, teknoloji ediniminde kullanılan aşamalardır (Harrison ve Samson, 2002). Kurumsal girişim sermayesi ve kurumsal kuluçka süreçleri ile bilgi alışverişi ve uygulama yeteneklerinin gelişmesi hedeflenmektedir. Kurumsal girişim sermayesi sürecinde, büyük firmalar öncelikle startup girişimlere sponsor olarak yatırım yapmaktadır. Sonraki süreçte, gelişen firmalar satın alınarak gelişme hedeflenmektedir. Google'ın ev otomasyonu cihazları üreten Nest firmasını 3.2 milyar dolara satın alması bu yapıya örnek gösterilebilir. Kurumsal kuluçka yapısında ise, kurum iş modeline uyumsuz yeni fikirler değerlendirilerek yeni şirket oluşumuna gidilmektedir. Bosh Ar-ge kampusu startup platform oluşturarak kendini dış yatırımcılara kapatmıştır. Bu platformda üretilen yeni ürünler, mevcut iş birimine entegre edilebildiği gibi yenilik çalışmalarının sürekliliğini de sağlamaktadır.

Teknoloji Kullanımı

Teknoloji kullanımında; ürün, hizmet ve süreçlerin firmaların yenilik performansını arttırması beklenmektedir. Pazarlama ve yeni teknoloji transferlerinin yapılması bu süreci desteklemektedir (Harrison ve Samson, 2002). Örneğin SAP (Systems Analysis and Program Development), performans arttırma amacıyla yüksek hızda veri işleyen "HANA" veri tabanını 2010 yılında geliştirmiştir. 2012 yılında "Startup Focus" platformunu oluşturarak startup firmalara; ürünlerini tanıtmak için tanıtım desteği, ürün gerçekleştirme için eğitim desteği, pazarı etkinleştirmek için HANA platformuyla birlikte pazarlama desteği vermiştir. SAP bu yaklaşımla farklı pazar alanlarına yayılmayı amaçlamıştır.

Teknoloji Tanımlama

Teknoloji tanımlamada; teknoloji ve pazara ilişkin veri toplama, iç ve dış çevrede kıyaslama ve olgunluk değerlendirmesi yapılmaktadır (Foden ve Berends, 2010). Belirsizliklerin giderilmesi için; organizasyon analizi, ticarileştirme analizi, tüketici/pazar analizi ve teknoloji analizleri yapılmaktadır. (Spitsberg vd., 2015). Organizasyon analizleri; telif hakları stratejisi, iç ve dış risklerin belirlenmesi ve kaynak gereksinimlerine ait verilerin toplanmasıdır. Ticarileştirme analizi, pazar stratejisi ve tedarik zinciri analizlerini içermektedir. Tüketici/pazar analizi; müşteri ihtiyaçlarını, rakip ve pazar büyüklüğünü gösteren pazar değerlendirmesini içermektedir. Teknoloji analizi ise model/prototip oluşturma ve test etme, fonksiyonel değerlendirme ve ortaklık stratejisi analizlerini içermektedir (Spitsberg vd., 2015).

Teknoloji Öğrenme

Öğrenme, bilgi yönetimiyle ilişkili bir kavramdır. Teknolojik yetkinliğin (know-how + yetenek) etkili bir şekilde kullanılmasını hedefleyen bir olgudur (Harrison ve Samson, 2002). Firmalar, kurum içi ve kurum dışı bilgi akışına yer vererek öğrenen örgüt yapısının oluşmasını sağlayabilir. Temel araştırma, uygulamalı araştırma ve deneysel geliştirme çalışmaları, Ar-Ge ve yenilik faaliyetlerinin temelini oluşturmaktadır. Öğrenmenin bir süreç haline gelmesi, kurumsal değişimi beraberinde getirmektedir.

Teknoloji Koruma

Teknoloji Koruma; teknolojik varlıkların ve fikri mülkiyet haklarının korunmasıdır. Entelektüel sermayenin kopyalanması ve taklit edilmesinin önüne geçilerek bilgi birikiminin yasal olarak başka şirketlere geçmesi engellenmektedir (Harrison ve Samson, 2002). Maddi olmayan değerlerin firma sermayesindeki oranı giderek artmaktadır. Dolayısıyla korunması gerekmektedir (Çakır, 2018). Ulusal ve rekabet üstünlüğünün sürekli kılınması, çekirdek yetkinliklerin korunmasına bağlıdır.

Teknoloji Seçme

Teknoloji seçme; organizasyonlardaki iş modellerinin, yapma, satın alma ve iş birliği gibi kurumsal kararların verilmesini sağlamaktadır. Firmalar, stratejik planlamaların ardından yatırım kararları vererek uygulama aşamasına geçmektedir. Verilen yanlış bir karar, tüm teknoloji yönetimi sürecini etkilemektedir (Harrison ve Samson, 2002).

Çalışma kapsamında ikinci bölümde, istihbarat konusu dünyadan örnekler verilerek anlatılmış ve dünya askeri harcamaları özetlenmiştir.

Üçüncü bölümde, çeşitli haberleşme ve Türkiye'de kullanılan keşif gözetleme teknolojilerinden örnekler verilmiştir. Ayrıca mobil uygulama altyapı teknolojisi anlatılmıştır.

Dördüncü bölümde; örnek çalışma kapsamında geliştirilen panoramik mobil uygulama anlatılacaktır. Keşif gözetleme istihbarat faaliyetlerine alternatif sunan yazılıma ait hazırlık sürecinden ve uygulama prototipinden bahsedilmiştir.

Beşinci bölümde, savunma sanayinde mobil uygulamaların görüntü istihbarat teknoloji öngörüsü için kullanılan Delphi yöntemi anlatılacak, çalışmaya ait örneklem büyüklüğünün nasıl belirlendiği ve örneklem seçim tekniklerinden bahsedilmiştir.

Altıncı bölümde, SWOT Analiz ve Delphi Analizi anlatılacaktır. Hazırlanan Delphi ifadeleri, Delphi ifadelerine ait uzmanlık yüzdeleri ve Delphi sonuçları değerlendirilmiştir.

Yedinci bölümde, Delphi tekniği sonucu kısa, orta ve uzun vadeli stratejik karar önerilerinden, savunma sanayi ihtiyaçları göz önüne alınarak belirlenmiş stratejik hedef önerilerinden ve stratejik hedeflerden örnek seçilerek hazırlanmış yol haritası ve politika önerilerinden bahsedilmiştir.

Sekizinci bölümde, planlanan yol haritasının ne kadarının gerçekleştiğini görebilmek için önerilen etki analiz modelinden bahsedilmiştir. Dokuzuncu bölümde, çalışmaya ait sonuç ve değerlendirmelere yer verilmiştir.

İSTİHBARAT

Operasyon alanına ait her türlü verinin toplanması, değerlendirilmesi ve yorumlanması istihbarat faaliyetleri içerisinde yer almaktadır. İstihbarat, bilgi ve analiz kavramlarının bileşkesidir ve elde edilen kaynağa göre sınıflandırılabilir.

- Kişi kaynaklı istihbarat
- Resimli istihbarat
- Sinyal istihbarat
- Açık kaynaklı istihbarat

MDMP

MDMP, komutanlar için hazırlanan kapsamlı bir ön plandır. NATO kaynaklarına göre, MDMP aşamaları aşağıdaki maddelerle özetlenmektedir.

1. Görev tanımını anlama: Teknik uzmanlar bir araya gelerek iş adımlarını belirlemektedir.
2. Görev analizini yapma: Tehdit ve risk analizine göre operasyonun ne zaman, nasıl ve nerede gerçekleşeceği belirlenmektedir.
3. Alternatif eylem planları belirleme: Çeşitli eylem planlamalarıyla sorunlara alternatif çözümler üretilmektedir.
4. Eylem planı analizini yapma: Belirlenen alternatif planlar, hedef ve kaynaklar göz önüne alınarak ayrı ayrı incelenmektedir.
5. Eylem planlarını karşılaştırma: Her planın altyapısı, pozitif ve negatif yönleriyle karşılaştırılmaktadır.
6. Eylem onayı alma: Uygun bulunan eylem planı seçilerek planlama yapılmaktadır.
7. Önlem alma: Operasyon alanı için destek kuvvet birimleri belirlenmektedir.

8. Tatbikat-Prova: Operasyon alanında karşılaşılabilecek tüm durum senaryoları test edilmekte ve pratik yapılmaktadır.
9. Değerlendirme: Tatbikat süreci tüm yönleriyle değerlendirilerek başarı ve başarısızlık alanları gözden geçirilmektedir.
10. Harekete geçme: Tüm süreç değerlendirmeleri sonucunda, operasyon alanına ait kararlar alınmakta ve uygulamaya geçilmektedir. MDMP planı içinde IPB döngüsü yer almaktadır (Knapp, 2016).

IPB

Askeri karar sürecini desteklemek ve durumsal farkındalık yaratmak için IPB analitik modeli kullanılmaktadır. Bu modelde arazi, düşman, hava durumu gibi unsurların operasyonlara etkileri incelenmektedir (Carter, 2016). IPB dört aşamada değerlendirilebilir.

Aşama-1: Savaş alanının tanımlanması: Savaş alanındaki dost ve tehdit unsurlar belirlenmektedir.

Aşama-2: Savaş etkilerinin tanımlanması: Savaş alanında, dost ve tehdit kuvvetler üzerindeki etkiler, teker teker incelenmektedir.

Aşama-3: Tehdit değerlendirmesi: Tehdittin savaşa etkileri değerlendirilmektedir.

Aşama-4: Eylem planlarının tasarlanması: Eylem planları, savaş ortamının fırsat ve kısıtlarını belirleyerek düşman askerinin olası hareketlerinin belirlenmesini sağlamaktadır (U.S. Government Priming Office, 1994).

Complex IPB

Complex IPB, operasyonel planların gelişmesi için IPB döngüsünü destekleyen kapsamlı bir yapıdır. Toplumun yapısını ve düşüncelerini altı aşamada analiz etmektedir. Olası harekât bölgesindeki kişiler; meslek, ekonomik ihtiyaçlar, eğitim ve aile yapısına göre gruplandırılmakta ve herhangi bir tehdit oluşturup oluşturmayacağı değerlendirilmektedir Özetle Complex IPB operasyon alanında, jeopolitik ve

demografik yapıyı birlikte değerlendirerek kapsamlı bir analiz sağlamaktadır (Morris, 2017).

Dünya Askeri Harcamaları

Gelişmekte olan ülkelerin, Ar-Ge ve üretim maliyetlerine bütçe ayırmak yerine yabancı kaynaklara bağımlı olması ülke ekonomisine olumsuz etki yaratmaktadır. Gerekli araştırmaların yapılmaması, savunma teknolojileri geliştirmek için yerli yeteneklerin yetişmemesine neden olmaktadır. Savunma teknolojisi yeteneğinin geliştirilmesi için Ar-Ge harcamalarının yanı sıra, bağımsız teknolojik kabiliyet edinimi de gerekmektedir (Jan, 2005). ABD, dünyada savunma alanındaki liderliğini korumak için askeri teknolojilere en fazla yatırım yapan ülke olarak karşımıza çıkmaktadır. Dünyada kişi başına düşen askeri harcamalara bakıldığında ise ABD üçüncü sırada yer alırken İsrail liderliğini korumaktadır.

HABERLEŞME TEKNOLOJİLERİ

Dijital haberleşme sistemlerinin gelişmesiyle veri iletim hızı artmış, analog iletişim sistemlerine bağımlılık azalmış ve güvenli bir sayısal iletişim platformu sağlanmıştır. 1950'lerde başlayan çalışmalar, günümüzde de devam ederek gelişmektedir.

Türkiye'de Kullanılan Keşif Gözetleme Teknolojileri 'ne Örnekler

A100: Tek Okülerli Gece Görüş Gözlüğü: Tek-okülerli (monoküler) yapı her iki gözün birbirinden bağımsız kullanılması ilkesine dayanmaktadır. Bir göz gece görüş gözlüğü ile donatılırken diğer göz serbest kalmaktadır.

A230: Gece Görüş El Dürbünü: Kısa mesafe gözetleme uygulamalarında 1X objektif değişimli gözlük olarak kullanılabilmektedir. Orta mesafeli gece gözetlemelerinde oldukça etkilidir.

PİTON, BOA Termal Silah Dürbünü: PİTON; görüş performansını arttıran, elde taşımaya uygun, uzun ömürlü bataryaya sahip termal silah dürbünüdür. BOA Termal Silah Dürbünü, üstün görüş ve yüksek büyütme yeteneği ile keskin nişancı silahları ve ağır makineli tüfeklerde kullanılarak tehditlerin uzaktan tespit edilmesini sağlamaktadır.

CATS: Elektro-optik keşif, gözetleme ve hedefleme sistemidir. Küçük ve hafif, üstün menzil ve kamera performansı, lazer hedef işaretleme ve yüksek irtifalarda çok düşük sıcaklıklarda çalışabilmektedir (Aselsan A.Ş., 2017a).

GÖKTÜRK Uydusu: Göktürk-1 ve Göktürk-2; Türkiye'nin yüksek çözünürlüklü keşif ve gözlem uydularıdır. TSK ve kamu kurum ve kuruluşlarının coğrafi kısıtlama olmaksızın dünyanın herhangi bir yerine ait görüntü ihtiyacını karşılamak amacıyla geliştirilmiştir. Türkiye'nin savunma (sınır kontrolü, hasar tespiti vb.) çevre, şehircilik, tarım ve ormancılık alanlarında önemli ihtiyaçlarına cevap vermektedir (Tübitak Uzay Teknolojileri Araştırma Enstitüsü ,2018).

Android İşletim Sistemi

Android mobil işletim sistemi ilk olarak Android Inc. firması tarafından geliştirilmiş ve 2005 yılında Google tarafından satın alınmıştır (Shalini vd., 2015). The Open Handset Alliance (OHA), seksen dört teknoloji ve mobil şirketten oluşan açık kaynak gelişimi benimsemiş mobil platformdur (Narmatha ve KrishnaKumar, 2016). OHA, Google önderliğinde Linux2.6 kernel'i, sürücü ve kütüphaneler ekleyerek geliştirmiş ve mobil cihazlarda kullanmak üzere Android işletim sistemini geliştirmiştir. Bu işletim sistemi günümüzde popülerliğini korumaktadır (Shalini vd., 2015).

ÖRNEK ÇALIŞMA- MOBİL UYGULAMA

Çalışma kapsamında geliştirilen panoramik mobil uygulama, geniş açılı alan görüntüleme imkânı sağlayarak keşif gözetleme sistemlerine alternatif sunmaktadır. Elde edilen görüntülerin mail yoluyla otomatik olarak istenilen yere ulaşması bilgi istihbaratına katkı niteliğindedir.

Panoramik Fotoğraf

Panoramik fotoğraf, yatay veya dikey kadrajlı tek kare halinde çekilen fotoğrafların birbirine eklenmesiyle oluşan geniş açılı fotoğraflardır (Soeborg, 2012).

Yazılım Geliştirme Modeli

Yazılım geliştirme; planlama, analiz, tasarım, kodlama ve test etme süreçlerinden oluşan faaliyetleri kapsamaktadır (Sabale ve Dani, 2012). Çalışmada prototip yazılım geliştirme modeli kullanılmıştır. Bu modele göre birinci aşamada, kullanıcı ihtiyaçları ve gereksinimleri belirlenmektedir. İkinci aşamada ihtiyaçlara uygun prototip oluşturulmaktadır. Her defasında kullanıcı geri beslemesiyle gelişen ve test edilen prototip, kullanıcı ihtiyaçlarını karşıladığı zaman son ürün haline gelmektedir (Isaias ve Issa, 2015).

Uygulama

Uygulama, Eclipse IDE geliştirme ortamında, Android SDK kullanılarak Java programla dilinde hazır kütüphaneler kullanılarak gerçekleştirilmiştir. Art arda çekilen fotoğraflarda, çekilen her fotoğrafın bir önceki fotoğrafı %30 kapsamasıyla en fazla 180 derecelik panoramik fotoğraf elde edilmektedir. Fotoğrafların birleştirilmesi sırasında siyah kenar problemi oluşmaktadır. Fotoğrafın kırpılmasıyla görüntü

düzeltilmektedir. Düzeltilen fotoğraf galeriye kaydedilmekte ve otomatik olarak daha önceden belirlenmiş adrese mail olarak gönderilmektedir.

ARAŞTIRMA YÖNTEMİ

Çalışma sürecinde, araştırma konusunun ne olacağı, neden ve nasıl yapılacağı planlanmıştır.

Ne yapılacak?	• Savunma Sanayinde mobil uygulamaların görüntü istihbarat teknoloji öngörüsünü oluşturmak
Neden yapılacak?	• Kısa, orta ve uzun vadeli stratejik kararlar belirlemek • Stratejik hedefler belirlemek • Belirlenen stratejik hedefe göre yol haritası oluşturmak ve politika önerileri sunmak • Etki analizi modeli önerisi sunmak • Keşif gözetleme istihbarat faaliyetlerine katkı sağlamak
Nasıl yapılacak?	• **Araştırma Teorisi:** Inductive Reasoning – The Empiricist's Approach • **Bilimsel Yöntem:** Pozitivizm Yaklaşımı, SWOT Analiz • **Örnekleme:** Kartopu Örnekleme, Amaçlı veya Yargısal Örnekleme • **Analiz:** Data Analizi • **Öngörü Yöntemi:** Delphi Tekniği

Delphi Tekniği

Delphi tekniği, 1950 yıllarında ABD Hava Kuvvetleri tarafından desteklenen RAND Corporation tarafından geliştirilmiştir. Karmaşık problemlerin çözümünde, konusunda uzman kişilerin görüşleri alınarak geleceğe yönelik tahminde kullanılmaktadır. Uzmanlara ardışık anket soruları yöneltilerek farklı görüşlerin birleştirilmesi hedeflenmektedir. Katılım anonimliği, geri besleme ve istatistiksel analiz Delphi tekniğinin üç temel özelliğidir. Uzmanlar görüşlerini bildirirken, kişi bilgileri gizli tutularak katılım sağlamaktadır. Sosyal baskı, önyargı, çekinme, aldatma, anlaşmazlıklar gibi negatif etkilerin anonim katılım ile önüne geçilmektedir. Anketler en az iki tur yapılarak veriler elde edilmektedir. Her anket sonrası çıkan ara veriler katılımcılara iletilmekte ve katılımcıların yaptıkları değerlendirmeyi ara veriler göz önüne alarak tekrar yapmaları istenmektedir. Delphi anket turları, uzmanlar fikir birliği sağlayıncaya kadar devam etmektedir (Rowe ve Wright, 1999).

Örneklem Büyüklüğünün Belirlenmesi

Görüntü istihbaratı alanında uzman kişilere ulaşma zorluğu, bilgi paylaşım sıkıntısı ve güvenlik sebebiyle çalışma evreni büyüklüğü, tahmini verilere dayanmaktadır. N sayısı, Türkiye'deki departmanlar göz önüne alınarak belirlenmiştir.

%95 güven aralığında $\propto$ = 0,05 ve z = 1,96 değerini alınmıştır. Delphi anketinde; katılımcılara her Delphi ifadesi için uzmanlık seviyesi (uzmanım, bilgim var, bilgim yok) sorulacağı için p=0.5, q=0.5 (heterojen) olasılık değerleri kabul edilmiştir. Sorgulama gereği, konu hakkında uzman kişilere sorular sorulacağı için örnekleme hatası d= 0.10 alınmıştır. Yapılan hesaplama sonucunda *n* sayısının en az 49 olduğu görülmüştür. Sonuca göre çalışmada *n*=50 kişiye anket yapılmıştır.

Örneklem Seçim Teknikleri

Olasılıksız örnekleme tekniğinde bireyler, rastlantısal olmayan belli bir amaç doğrultusunda seçilmektedir. Bu örnekleme içinde yer alan Kartopu Örnekleme, Amaçlı veya Yargısal Örnekleme teknikleri ile Delphi araştırma sorularını yanıtlama yeteneğine sahip uzman kişiler seçilmiştir.

Çalışmada, dört farklı sektörden yazılım mühendisi, uzman yazılım mühendisi, sistem mühendisi, yazılım teknik ekip lideri, proje yöneticisi ve akademisyen unvanlarına sahip elli uzman kişiye ulaşılmıştır. Anonim katılım sebebiyle uzmanların adlarına yer verilmemiş, çalıştıkları kurumlar aşağıda listelenmiştir.

- Millî Savunma Bakanlığı
- Türkiye Noterler Birliği
- Ziraat Teknoloji
- Havelsan A.Ş
- Aselsan A.Ş
- TAI A.Ş
- Innova
- SoftTech
- Simsoft
- Netaş
- Bites Savunma Sanayi

VERİ ANALİZİ

SWOT Analizi

Teknolojik kırılımlar sayesinde modüllerin oluşması ve alt iş adımların belirlenmesi, analiz çalışmalarını kolaylaştırmaktadır. SWOT analiz ile bir teknolojinin güçlü ve

zayıf yanlarının belirlenmesinin yanı sıra oluşabilecek fırsat ve tehditlerin öngörülmesi hedeflenmektedir.

Delphi Analizi

Hazırlanan Delphi İfadeleri

1. Savunma sanayinde, görüntü istihbarat mobil uygulamaları, sivil ve askeri alanlarda (çift kullanım) kullanılmak üzere üretilecek ve geliştirilecektir.

2. Savunma sanayinde, görüntü istihbarat mobil uygulamaları, Ar-Ge ve yenilik çalışmaları doğrultusunda milli çözümlerle geliştirilecektir.

3. Savunma sanayinde, görüntü istihbarat mobil uygulamaları, mevcut görüntü istihbarat kalitesinin arttırılmasında öncü rol oynayacaktır.

4. Savunma sanayinde, görüntü istihbarat mobil uygulamaları, harekatın hızını arttırmada önemli derecede rol oynayacaktır.

5. Savunma sanayinde, görüntü istihbarat mobil uygulamaları, harekât bölgesinde olası zayiatın en az düzeyde olmasını temin edecektir.

6. Savunma sanayinde, görüntü istihbarat mobil uygulamaları, karar vericilerin karar verme sürecini hızlandıracaktır.

7. Savunma sanayinde, görüntü istihbarat mobil uygulamaları, milli güvenliğin sağlanmasında disiplinler arası çalışmalara önemli derecede katkı sağlayacaktır.

8. Savunma sanayinde, görüntü istihbarat mobil uygulamaları, yüksek öncelikli hedeflerin tespit edilmesine önemli derecede katkı sağlayacaktır.

9. Savunma sanayinde, görüntü istihbarat mobil uygulamaları, müşterek ve birleşik harekatta istihbarat paylaşımını önemli derecede kolaylaştıracaktır.

10. Savunma sanayinde, görüntü istihbarat mobil uygulamaları, derin bölge harekatının sevk ve idaresini kolaylaştıracaktır.

11. Savunma sanayinde, görüntü istihbarat mobil uygulamaları, harekât alanında ateş destek unsurlarının hedef bölgesindeki etkilerini kıymetlendirmede ve değerlendirmede yoğun olarak kullanılacaktır.

12. Savunma sanayinde, görüntü istihbarat mobil uygulamaları, harekât alanında manevra unsurlarına anlık istihbarat desteği sağlayarak muharebenin emniyetle sürdürülmesini temin edecektir.

Delphi Analizi Sonuçları

Aşağıdaki madde başlıkları altında Delphi analizi sonuçları açıklanmıştır.

- 1. Tur Delphi Toplam ile 2. Tur Delphi Toplam Değerlendirme
- 1. Tur Delphi Uzman ile 2. Tur Delphi Uzman Değerlendirme
- 1. Tur Delphi Uzman ile 2. Tur Delphi Toplam Değerlendirme
- Olma/Gerçekleşme İhtimaline Göre, Kısa Vade (2025 Öncesi), Orta Vade (2025-2035 yılları arası) ve Uzun Vadede (2035 sonrası) Gerçekleşebilecek İfadeler
- Türkiye'nin Savunma Sanayinde Rekabet Gücünü Etkilemesine Göre, Kısa Vade (2025 öncesi), Orta Vade (2025-2035 yılları arası) ve Uzun Vadede (2035 sonrası) Gerçekleşebilecek İfadeler
- Savunma Sanayi Ar-Ge Çalışmalarının Artmasına Etkisine Göre, Kısa Vade (2025 öncesi), Orta Vade (2025-2035 yılları arası) ve Uzun Vadede (2035 sonrası) Gerçekleşebilecek İfadeler
- Görüntü İstihbaratına Etkisine Göre, Kısa Vade (2025 öncesi), Orta Vade (2025-2035 yılları arası) ve Uzun Vadede (2035 sonrası) Gerçekleşebilecek İfadeler
- Türkiye'nin Savunma Sanayinde Rekabet Gücünü Etkilemesine Göre, Olma/Gerçekleşme İhtimali Yüksek, Orta, Düşük ve Asla Görülen İfadeler
- Savunma Sanayi Ar-Ge Çalışmalarının Artmasına Etkisine Göre, Olma/Gerçekleşme İhtimali Yüksek, Orta, Düşük ve Asla Görülen İfadeler

- Görüntü İstihbaratına Etkisine Göre, Olma/Gerçekleşme İhtimali Yüksek, Orta, Düşük ve Asla Görülen İfadeler
- Türkiye'nin Savunma Sanayi'nde Rekabet Gücünü Etkilemesine Göre, Savunma Sanayi Ar-Ge Çalışmalarının Artmasına Etkisi Olan İfadeler
- Türkiye'nin Savunma Sanayi'nde Rekabet Gücünü Etkilemesine Göre, Görüntü İstihbaratına Etkisi Olan İfadeler
- Savunma Sanayi Ar-Ge Çalışmalarının Artmasına Etkisine Göre, Görüntü İstihbaratına Etkisi Olan İfadeler

YOL HARİTASI VE POLİTİKA ÖNERİLERİ

Stratejik Karar Önerileri

Kısa, orta ve uzun vadede; Olma-Gerçekleşme ihtimali, Türkiye'nin Savunma Sanayinde Rekabet Gücünü Etkilemesi, Savunma Sanayi Ar-Ge Çalışmalarının Artmasına Etkisi ve Görüntü İstihbaratına Etkisine göre "Yüksek" ve "Yüksek Pozitif" görülen stratejik karar önerileri sunulmuştur.

Stratejik Hedef Önerileri

Uzman ve toplam yoruma göre, savunma sanayi ihtiyaçları göz önüne alınarak belirlenmiş altı adet stratejik hedef önerisi aşağıda yer almaktadır.

Stratejik Hedef 1: Savunma sanayinde, görüntü istihbarat mobil uygulamaları, sivil ve askeri alanlarda (çift kullanım) kullanılmak üzere üretilmeli ve geliştirilmelidir.

Stratejik Hedef 2: Savunma sanayinde, görüntü istihbarat mobil uygulamaları, Ar-Ge ve yenilik çalışmaları doğrultusunda yerli ve milli çözümlerle geliştirilmelidir.

Stratejik Hedef 3: Savunma sanayinde, görüntü istihbarat mobil uygulamaları, milli güvenliğin sağlanmasında disiplinler arası çalışmalara önemli derecede katkı sağlamalıdır.

Stratejik Hedef 4: Savunma sanayinde, görüntü istihbarat mobil uygulamaları, derin bölge harekatının sevk ve idaresini kolaylaştırmalıdır.

Stratejik Hedef 5: Savunma sanayinde, görüntü istihbarat mobil uygulamaları, harekât alanında ateş destek unsurlarının hedef bölgesindeki etkilerini kıymetlendirmede ve değerlendirmede yoğun olarak kullanılmalıdır.

Stratejik Hedef 6: Savunma sanayinde, görüntü istihbarat mobil uygulamaları, harekât alanında manevra unsurlarına anlık istihbarat desteği sağlayarak muharebenin emniyetle sürdürülmesini temin etmelidir.

Yol Haritası ve Politika Önerileri

Türkiye'de bilim ve teknolojiye yönelik 1963-1967 yıllarında Birinci Beş Yıllık Kalkınma Planı kapsamında kurulan, Türkiye Bilimsel ve Teknolojik Araştırma Kurumu (TÜBİTAK) bir dönüm noktası niteliğindedir. Bir diğer önemli adım ise 1972 yılında TÜBİTAK Marmara Araştırma Merkezi'nin (MAM) kurulmasıdır. 1983 yılında, uzun vadeli bilim ve teknoloji politikalarının saptanması, yürütülmesi ve koordinasyonunun sağlanması amacıyla, Bilim ve Teknoloji Yüksek Kurulu (BTYK) kurulmuştur. Benzer şekilde Türk Bilim Politikası 1983-2003 ve Türk Bilim ve Teknoloji Politikası 1993-2003' ün oluşturulması, teknoloji politikaları çalışmalarına katkı sağlamıştır.

Seçilen Stratejik Hedef: Savunma sanayinde, görüntü istihbarat mobil uygulamaları, Ar-Ge ve yenilik çalışmaları doğrultusunda yerli ve milli çözümlerle geliştirilmelidir.

Bu stratejik hedefe ait sorumlu kuruluş, ilgili kuruluşlar, neler yapılacağı ve ne zaman yapılacağı, alt stratejiler oluşturularak açıklanmıştır.

Stratejinin Sorumlu kuruluşu: SSB (Savunma Sanayi Başkanlığı)

İlgili kuruluşları: Millî Savunma Bakanlığı (MSB), Millî Eğitim Bakanlığı (MEB), Maliye Bakanlığı, Bilim Sanayi Teknoloji Bakanlığı (BSTB), TÜBİTAK, TÜBİTAK-Bilim İnsanı Destekleme Daire Başkanlığı (BİDEB), Türk Patent Enstitüsü (TPE), KOSGEB (Küçük ve Orta Ölçekli İşletmeleri Geliştirme ve Destekleme İdaresi Başkanlığı), üniversiteler, sanayi odaları, savunma sanayine iş yapan özel sektör

Yapılma zamanı: Kısa vadede (2025 öncesi)

Kaynak: Kamu kaynağı

Planlama ve analiz çalışmaları, ulusal Ar-Ge kültürü, altyapı, yerli üretim, fikri mülkiyet haklarının geliştirilmesi ve nitelikli insan gücü yetiştirilmesi konularına ait sorumlu kuruluşlar maddeler halinde listelenmiştir.

ETKİ ANALİZİ MEKANİZMASI

Belirlenen yol haritalarının ne kadarının gerçekleştiğini görmek için savunma sanayinde etkisinin ölçülmesi gerekmektedir. Hazırlanan etki analiz modeli ile bir öneri sunulmuştur. Bu konuda çalışma yapacak kurum SSB olarak öngörülmüştür.

SONUÇLAR VE TARTIŞMALAR

Çalışmada, savunma sanayinde mobil uygulamaların görüntü istihbarat teknoloji öngörüsü Delphi tekniği ile incelenmiştir. Anket sonucu kısa, orta ve uzun vadede; olma-gerçekleşme ihtimali, Türkiye'nin savunma Sanayinde rekabet gücünü etkilemesi, savunma sanayi Ar-Ge çalışmalarının artmasına etkisi ve görüntü istihbaratına etkisi "Yüksek ve Yüksek Pozitif" görülen stratejik karar önerileri sunulmuştur. Bu kararlar sonucunda, altı adet stratejik hedef önerisi listelenmiştir.

Çalışmada, belirlenen stratejik hedeflerden örnek olarak “Stratejik Hedef 2” seçilerek kısa vadeli (2025 öncesi) yol haritası oluşturulmuştur. Seçilen stratejik hedefe ait sorumlu kuruluşların kimler olacağı ve neler yapılacağıyla ilgili alt stratejiler belirlenmiş ve politika önerileri sunulmuştur. Alt stratejiler başlığı altında; planlama ve analiz çalışmaları, ulusal Ar-Ge kültürü, altyapı, yerli üretim, fikri mülkiyet Haklarının geliştirilmesi ve nitelikli insan gücü yetiştirilmesi konuları yer almaktadır.

Savunma sanayii alanında gelişmiş ülkeler, savunma sanayiini milli egemenliğin bekası için en önemli unsur olarak görmektedir. Türkiye’de bilim ve teknoloji politikalarının yerli ve milli ihtiyaçlara göre oluşturulması, günümüz teknoloji ağırlıklı rekabetin seyrini değiştirecektir.

Belirlenen yol haritalarının ne kadarının gerçekleştiğini görebilmek için savunma sanayinde etkisinin ölçülmesi gerekmektedir. Sunulan etki analiz model önerisinde, bu konuda çalışma yapacak kurum SSB olarak öngörülmüştür.

Bir model olarak geliştirilen panoramik mobil uygulama ise, geniş açılı alan görüntüleme imkânı sağlayarak, keşif gözetleme sistemlerine alternatif oluşturmaktadır. Art arda çekilen fotoğraflarda, çekilen her fotoğrafın bir önceki fotoğrafı %30 kapsamasıyla en fazla 180 derecelik panoramik fotoğraf elde edilmiştir. Elde edilen görüntülerin mail yoluyla otomatik olarak istenilen yere ulaşması bilgi istihbaratına katkı niteliğindedir.

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