

Technological Marine Security on the Coast of Turkey Within the Scope of “Blue Homeland”: A Study Based on Literature Screening

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ABSTRACT: This study deals with the current status and strategic importance of technological security practices in ensuring maritime safety within the scope of the "Blue Homeland" doctrine of Turkey. In recent years, Turkey's allegations of rights on maritime jurisdiction, sharing of energy resources and security of marine traffic, especially in the Eastern Mediterranean and Aegean Sea has created intense geopolitical tensions. In this process, the importance of technology -oriented, dynamic and integrated systems has increased by going beyond classical security approaches. In the study; Radar systems, unmanned marine vehicles, electronic warfare elements, artificial intelligence -supported analysis software, cyber security infrastructure, coastal surveillance networks and the contributions of the national defense industry in this field are discussed. The technological investments carried out by Turkey's Coast Guard Command and the Navy Command and the domestic and national projects developed by institutions such as ASELSAN, HAVELSAN and STM are also evaluated within the scope. The findings obtained from the literature are not only the military of technological maritime security; It also reveals that it has a multidimensional structure with economic, environmental and diplomatic effects. In addition, the study shows that by integrating technological systems, deterrence in the seas and early intervention capacity can be increased. It is emphasized that technological security strategies should be further developed in order to protect their national interests within the borders of Turkey.

KEYWORDS: Blue Homeland, Marine Safety, Technological Security, Coasts of Turkey, Cyber Defense, Unmanned Marine Vehicles, Coastal Surveillance, National Defense Industry.

1. INTRODUCTION

The security paradigm of the 21st century has raised the necessity of protecting and controlling not only the land borders of the states, but also the areas of maritime authority. With this transformation, sea safety was redefined as a multidimensional security field that goes beyond military threats. Due to the fact that approximately 90 %of the global trade routes are realized through the seas, energy transportation, the operation of submarine resources and the prevention of illegal activities, the seas have become an indispensable part of national security (Bateman & Bergin, 2020; Buger, 2015).

The concept of “Blue Homeland” has emerged as a original and comprehensive response to Turkey's transformed security approach. Conceptually “Blue Homeland”; It refers to Turkey's sovereignty rights in the seas, economic exclusion regions (MONE), continental shelf and maritime authority arising from international law (Gürdeniz, 2019). “The Blue Homeland” Doctrine offers a guiding framework in the defense of Turkey's Black Sea, Aegean Sea and especially in the Eastern Mediterranean geopolitical interests in terms of military, economic and diplomatic angles. This approach directly affects not only the security of Turkey, but also the energy independence, the security of maritime trade routes and the strategies of access to natural resources (Özkan, 2021).

The strategic importance of the coast of Turkey is one of the basic basis of this doctrine. Turkey is one of the rare countries surrounded by seas with a coastline of approximately 8,333 km long. This large coastal line extending from the Black Sea to the Mediterranean; It constitutes the eastern end of the NATO borders, hosts energy transmission lines and includes critical Straits (Istanbul and Çanakkale) in terms of european-Asia maritime transport (MSB, 2023). Considering the conflicts of maritime jurisdiction in the Eastern Mediterranean, the Islands in the Aegean and the energy competition in the Black Sea, Turkey's coastal safety is not only regional, but also in terms of global power balances.

In this security environment, the conceptual framework of technological security is increasingly prominent in maintaining the dominance in the seas. Technological Marine Security; Radar systems, satellite -supported monitoring networks, unmanned marine vehicles (IDA), electronic warfare systems, cyber defense infrastructure and artificial intelligence -supported decision support mechanisms are defined by the use of advanced technologies (Liss, 2020). These systems make it possible to move beyond the

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classical defense approaches by providing real -time surveillance, early warning, threat detection, data analysis and operational activity in the seas (Bueger & Edmunds, 2021).

In order to increase this technological capacity, Turkey has accelerated defense industry investments in recent years and has developed unique solutions for maritime security through domestic technology producers such as ASELSAN, HAVELSAN, HAVELSAN, ROKETSAN, STM (Ministry of National Defense [MSB], 2023). Thanks to these technologies, Turkey strengthens its regional deterrence and increases its operational independence in the seas.

This study aims to analyze the technological maritime safety approaches developed in parallel with Turkey's “Blue Homeland” policy in the strategic context drawn above. The research conducted by literature screening aims to reveal the current status, effects and development potential of technological systems used on the coast of Turkey; In this respect, it offers evaluations that will contribute to national security strategies.

2. AIM

The main purpose of this study is to demonstrate the role and effect of technological security practices in providing maritime security within the framework of Turkey's “Blue Homeland” policy. Especially on the shores of Turkey in recent years, increasing geopolitical tensions, disagreements on energy sources, illegal migration and smuggling, such as irregular mobility, has brought the importance of technological capacity in the field of maritime safety. In this context, the purpose of the study; In the light of the existing literature, Turkey's technological infrastructure, the systems used, developed domestic projects and strategic practices are to examine from a holistic perspective.

In the study, the function of technological tools such as unmanned marine vehicles (IDA), radar and surveillance systems, cyber safety measures, artificial intelligence -supported analysis technologies, electronic warfare elements and coastal safety systems in protecting Turkey's jurisdiction; The contribution of these systems to the “Blue Homeland” policy is analyzed. In addition, how Turkey adapts to the technological transformation process in coastal security, which institutions and organizations pioneered this process and suggestions for the development of existing potential in this field are presented.

For this purpose, national and international academic studies, strategy documents, defense industry reports and relevant corporate publications in the literature are scanned and a current, comparative and analytical evaluation is aimed to make an up -to -date, comparative and analytical evaluation. Thus, it is aimed to contribute to the maritime safety literature and to shed light on policies and practices to increase Turkey's technological deterrence in seas.

3. METHOD

This study was structured based on qualitative research pattern and was carried out using the literature screening method. Literature screening is a systematic examination method that is preferred to compile, analyze and interpret the existing knowledge on a particular subject within a scientific framework. In this context, academic resources, official reports, strategy documents and defense industry publications published on maritime safety, technological defense systems and “Blue Homeland” policy at both national and international level were examined.

The following criteria are based on the determination of the resources used in the research process:

1. Scientificity: Only articles, academic books, thesis studies and reliable corporate publications published in refereed journals were included.
2. Current: Particularly after 2010, priority is given to the studies that reflect current developments and technological innovations.
3. Relationship: Resources focusing on sea safety, technological security systems, “Blue Homeland” policy and defense industry were preferred directly related to the subject of the study.
4. Diversity: In addition to academic publications, T.C. The reports of relevant institutions and organizations such as the Ministry of National Defense, Coast Guard Command, Navy Command, ASELSAN, STM, HAVELSAN, and the publications of international actors such as NATO, IMO (International Maritime Organization) and EU Navfor were also evaluated.
5. Language: Turkish and English sources have been used, thus both local and global approaches are handled comparatively.

The collected data were evaluated by descriptive analysis method and the information obtained was classified under the thematic headings. In this process, a comprehensive assessment was made about the current situation for tendencies, gaps and technological maritime safety practices in Turkey.

4. SEA SECURITY THREATS ON THE COAST OF TURKEY

The fact that the three sides of Turkey are surrounded by the seas brings multidimensional security risks as well as the strategic advantage of its geographical position. Coastal regions located in seas with different geopolitical features such as Black Sea, Aegean and Mediterranean; It is of great importance in terms of international maritime trade routes, energy transport lines, natural resources and continental shelf. International disputes, illegal activities, migration mobility and new types of threats that emerge in parallel with technological developments necessitates continuously updating maritime security strategies (Bueger & Edmunds, 2021). Threat elements in terms of coastal security are not only traditional military threats. Today, sea security; Asymmetric threats, irregular migration and smuggling activities, sea authority violations, competition for energy resources, environmental security problems and cyber attacks bringing the digital age are defined by complex and multi-layered structures (Till, 2009; Kraska, 2013). In order to detect and prevent these threats, not only the classical patrol and deterrence methods, but also the introduction of advanced technological systems have become inevitable. In this context, Turkey turns to technology-supported systems in terms of both military and civilian sea security; Coastal surveillance radars, unmanned marine vehicles, artificial intelligence-supported analysis systems and cyber defense infrastructure placed at the center of security policies (Liss, 2020). In this part of the study, the main types of threats targeting the coasts of Turkey will systematically examine how these threats can be managed by technological security perspective.

Today, threats to maritime security are not limited to traditional war methods. Asymmetric threats include non-governmental forms of attack, which is performed by non-state actors or irregular structures that do not directly respond directly to the classical military power (Till, 2009). These threats are usually characterized by actions with low cost but high impact potential. Especially in countries with long coastal strips such as Turkey, asymmetric threats have the potential to damage national security. Among the asymmetric threats are the most common situations; illegal migration, human trafficking, sea drugs and weapons smuggling, piracy, illegal use of fishing resources and environmental sabotages (Büeger, 2015; Kraska & Pedrozo, 2013). Since Turkey's Aegean and Eastern Mediterranean coasts are located at the center of migration routes and illegal trade routes, it is quite clear to these types of threats. For example, according to the 2023 data of the Coast Guard Command, more than 60,000 irregular immigrants have tried to reach Turkey by sea (Coast Guard Command [SSI], 2023). It is not always possible to deter and detect these threats through traditional security methods. At this point, technological security systems come into play and play a vital role in detecting asymmetric threats. In particular, artificial intelligence-supported radars, smart surveillance systems, unmanned marine vehicles and data analysis software can detect suspicious mobility and provide early intervention (Liss, 2020). The integration of technological systems into this field reduces human error in the fight against asymmetric threats and increases operational effectiveness. It also develops various systems to prevent asymmetric threats through organizations such as domestic defense industry, ASELSAN and HAVELSAN. Coastal surveillance radars, electro-optical camera systems and unmanned marine platforms have become an important component of maritime safety operations along with border security (MSB, 2023). To summarize, asymmetric threats raise serious risks for both human and safety for the coast of Turkey. Effective struggle against these threats is not only possible with physical patrol and military deterrence, but also by integration of multi-layered technological systems. In this context, Turkey's technology-based security strategies play a basic role in the success of “Blue Homeland” policy.

The determination of maritime jurisdictions lead to historical and legal disputes between coastal states, especially rich in energy resources and geopolitically sensitive regions. For Turkey, the Aegean Sea and the Eastern Mediterranean stand out as two main regions in which the most intense border violations and energy-based competitions are experienced in this context (Özkan, 2021). Problems of continental shelf and waters in the Aegean and Greece; The unilateral economic regions (MoNE) declared by the Greek Cypriot Administration in the Eastern Mediterranean (MoNE); And the energy alliances of countries such as Israel and Egypt in this region cause Turkey to face increasing pressure in the areas of maritime (Gürdeniz, 2019; Gudev, 2020). Border violations are not only in the legal level; It also turns into security risks with actual interventions. Especially during the seismic research activities and drilling activities carried out in the Eastern Mediterranean, the confrontation with foreign military ships highlight Turkey's deterrence capacity in the seas and the technological level of this capacity. Similarly, it is known that platforms of the Turkish navy face technological threats such as electronic mixing, surveillance or radar locking in the tasks carried out in international waters (Bateman & Bergin, 2020). Turkey's energy exploration activities in the Black Sea and Eastern Mediterranean also reveal the direct economic aspect of maritime security. The natural gas reserve (Sakarya Gas Field) discovered in the Black Sea in 2020 and the hydrocarbon potential in the Eastern Mediterranean increases the strategic value of these regions and makes it open to external interventions (MSB, 2023). In this context, threats to sabotage, espionage, cyber attack or drilling ships for energy sources reveal the need to develop a new generation of safety expansions for Turkey. Technological maritime safety systems play a vital role in preventing such threats. Violation of advanced radar and sonar systems and the areas of maritime jurisdiction can be determined instantly; Unmanned marine vehicles (IDA) and submarine surveillance systems are used in the determination of enemy elements (Liss, 2020). In addition, fixed and moving camera systems, unmanned aerial vehicles (UAV) and artificial intelligence-supported threat analysis systems are actively used in the protection of energy platforms. Such domestic and national systems developed

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through institutions such as ASELSAN, STM and HAVELSAN play a deterrent role in the protection of energy infrastructure as well as border security (MSB, 2023). In short, the threats of Turkey's border violations and energy resources in the fields of maritime turn into a field of economic, political and technological struggle, raising maritime security from a mere military issue. In this context, the integration of advanced technologies increases the applicability of the “Blue Homeland” doctrine and strengthens Turkey's capacity to protect Turkey's sovereignty rights in the international arena.

In the security environment of the 21st century, physical conflicts are increasingly replaced by attacks in cyber space. Marine safety is also directly affected by this digital transformation. Today, all critical maritime components such as radar systems, communication infrastructure, satellite connections, ship control systems, port enterprises and coastal surveillance networks have become dependent on information infrastructure (Liss, 2020). Therefore, cyber threats are no longer a technical risk, but a strategic issue that directly affects marine security (Buer & Edmunds, 2021). Cyber threats; Spying software can occur in many different ways such as data leakage, making systems dysfunctional (DDOS attacks), communication interruptions and seizing control mechanisms. In particular, strategic tools such as warships, unmanned marine vehicles and seismic research ships can create great security deficits if they are targeted (GUDEV, 2020). Stopping port operations by remote intervention or manipulation of routing systems is at a level that threatens both military and economic activities (Bateman & Bergin, 2020). The technology -oriented dimension of Turkey's “Blue Homeland” policy is also manifested in the field of cyber security. Cyber defense teams were established within the Ministry of National Defense, Navy Command and Coast Guard Command; Institutions such as ASELSAN, HAVELSAN and TUBITAK have started to develop original software and protection systems against cyber threats (MSB, 2023). At the same time, within the scope of the Cyber Defense Concept of the Turkish Armed Forces (TSK), cryptographic software and artificial intelligence -supported attack detection systems are spread for the safety of maritime networks. When international examples are examined, it is seen that NATO and EU countries prioritize sea cyber security. As a member of the NATO Cyber Defense perfection center, Turkey has been included in international cooperation in this field. However, the high voltages in the region require Turkey to make Turkey's own cyber defense capacity more independent and stronger (Kraska & Pedrozo, 2013). As a result, cyber threats are complex forms of attack that reveals the fragility not only from invisible enemies, but also of countries that do not have a strong technology infrastructure. In line with the goal of protecting the sea authority and coastal infrastructure of Turkey, it is of great importance that cyber defense strategies are supported by preventive, proactive and domestic solutions.

5. TECHNOLOGICAL SECURITY APPLICATIONS

Turkey develops a multi -layered defense model based on advanced technologies by carrying sea security strategies beyond classical military approaches. This strategy, developed within the framework of the “Blue Homeland” doctrine, is based on a wide technological range from radar systems to artificial intelligence, from unmanned marine vehicles to cyber security. One of the game -changing technologies in Turkey's sea security was unmanned marine vehicles (IDA). The ULAQ Class Armed IDAs developed by STM are equipped to be used in tasks such as exploration-observation, overwater defense, port safety and electronic warfare. These systems can be commanded remotely and can perform autonomous tasks if necessary (STM, 2023). In addition, Denizgözü Electro-Opporttic Surveillance Systems and Coastal Radars developed by ASELSAN provide 24-hour uninterrupted coastal supervision in the Aegean and Eastern Mediterranean (ASELSAN, 2022). Turkey continuously increases surveillance, communication and target detection capabilities in the areas of maritime with its TURKSAT satellites and domestic radar systems. Thanks to satellite -supported communication systems, IDAs and ships can maintain long -range operations uninterruptedly. In addition, ASELSAN provides high -resolution data on marine platforms such as Alper developed, target detection, follow -up and threat classification. Thanks to these systems, Turkey has the capacity to determine cross -shore threats at an early stage (MSB, 2023). Artificial intelligence -based decision support systems based on large data analysis in marine security are used to increase situational awareness and save time in operational decisions. The Advent War Management System, developed by HAVELSAN, enables the personnel working on warships to analyze threats faster and to intervene effectively. These systems supported by artificial intelligence; Radar, sonar, satellite and camera data simultaneously process the operator to offer possible scenarios, optimizes intervention processes (HAVELSAN, 2023). With the digitalization of maritime infrastructure, cyber threats have become even more serious. In order to strengthen Cyber Security Infrastructure, Turkey has developed crypto communication systems, attack detection software and firewalls to protect critical defense networks in cooperation with ASELSAN and TUBITAK. The command control centers of the Navy Command were supported by secure network infrastructure and digital data safety systems. In this context, the HAVELSAN Cyber Defense Technologies Project is actively carried out to increase the cyber resistance of marine platforms (TUBITAK, 2022).

Considering that approximately 90 %of Turkey's foreign trade took place by sea, port safety has become an integral part of sea security. In recent years, in large ports such as Mersin, İzmir and Ambarlı, internal traffic management, load tracking and access controls are supported by artificial intelligence -based “Smart Port Systems .. These systems strengthen the defense of ports in terms of both physical security and cyber resistance. In addition, Port Information Systems, Operational OT (Operational Technology)

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and IT (Information Technology) requires the integration of infrastructures, these points have also become critical infrastructures to be protected against cyber attacks. With the digitalization process in port management in Turkey, platforms that provide coordination of coastal security units with these infrastructures are being developed (TUBITAK, 2022). The spread of energy search and production activities in the Black Sea and Eastern Mediterranean has made the protection of submarine pipelines and communication cables a critical priority. These infrastructures are open to threats such as sabotage, cyber attack or electronic mixing. For this reason, submarine surveillance systems, sonar -based tracking devices and autonomous underwater vehicles (AUV) are included in Turkey's security strategy. In addition, magnetic abnormal detectors and environmental sensors have been used to detect threats for energy platforms (Liss, 2020). Although technology in sea security is decisive, it is not possible to fully exclude the human factor. Turkey adopts a model that increases the cooperation of human and machinery through hybrid surveillance systems. In particular, human operator support is critical in the verification of the threats perceived by artificial intelligence and the management of the intervention process. This approach supports the reduction of false alarms and the formation of rapid decision -making mechanisms (Buer & Edmunds, 2021). Turkey's efforts to increase electronic warfare (eh) capabilities on marine platforms are also evaluated within the scope of technological security. Systems such as Ahtar and Redet developed by ASELSAN; It is used for mixing enemy radars, blocking communication networks and superiority in the electromagnetic spectrum. These systems are effective especially in providing tactical superiority in crisis regions and preventing border violations (ASELSAN, 2022). As well as hardware -based solutions, domestic software development activities are an important dimension of Turkey's technological maritime security strategy. Havelsan's maritime data fusion systems have the capacity to process data from different sensors to be used in threat analysis and operational planning simultaneously. In addition, artificial intelligence -supported marine traffic simulations and decision support software contribute to the execution of marine operations in a much more planned and safe manner (HAVELSAN, 2023).

6. TURKEY'S STRATEGIC PRACTICES AND POLICIES

Turkey has established an effective defense mechanism not only through technological investments in the field of maritime security, but also through strategic policies and institutional structures that direct these investments. In particular, the national security perspective shaped around the “Blue Homeland” doctrine reinforced Turkey's determination to protect the sovereignty rights in the seas at both regional and international level (Gürdeniz, 2019). Turkey's claim of rights in the areas of maritime jurisdiction in the Eastern Mediterranean, Aegean and Black Sea is located at the center of the “Blue Homeland” strategy. This policy; Continental shelf aims to protect the international law -based maritime jurisdictions such as exclusive Economic Zone (MoNE) and territorial waters. Turkey has reconstructed its defense plans within this framework by adopting this strategy not only a foreign policy element, but also as a national security paradigm (Özkan, 2021). Among the main institutions in Turkey's maritime security are the Ministry of National Defense, the Navy Command, the Coast Guard Command and the Ministry of Transport and Infrastructure. These institutions effectively carry out the distribution of duties in the seas with their internal structures and coordination mechanisms between them. For example; The Naval Forces Command is responsible for open maritime operations, intervention in border violations and deterrence activities. The Coast Guard Command fights civilian threats such as illegal migration, smuggling and environmental security. The Ministry of Transport and Infrastructure regulates areas such as maritime trade, port safety and navigation security (MSB, 2023). Turkey aims to reduce foreign dependence by adopting strategic policies that encourage domestic and national production in the defense industry. In this context, organizations such as ASELSAN, HAVELSAN, ROKETSAN, STM and TÜBİTAK were supported; R & D projects have gained speed. Thanks to these policies, Turkey, Unmanned Marine Vehicles (ULAQ), Electronic Military Systems (Ashtar), War Management Systems (Advent) and surveillance networks have significantly reduced external dependence on external technologies (HAVELSAN, 2023; STM, 2023). Turkey's strategic maritime policies are supported by an effective diplomatic defense approach not only on a national scale but also in the international arena. Participation in multinational maritime operations such as NATO and Turkish Naval Mission Group (Turmarfor) allows Turkey to show its effectiveness in the seas globally. At the same time, Turkey uses maritime security policies as a foreign policy tool; it advocates dialogue and rights -based negotiation methods instead of mutual agreements in limiting the areas of maritime (Buer & Edmunds, 2021). The Naval Forces Command and the Coast Guard Command, which are among the implementing institutions of Turkey's maritime security policies, can perform an active and effective task in both peace and crisis periods thanks to their technological infrastructure. Navy Command; Domestic production increases regional deterrence with war management systems, radar and sonar systems, electronic warfare capabilities and UAV/IDA integrations (MSB, 2023). The Coast Guard Command is equipped with systems such as ASELSAN MUST ELECTRO-OPPOINT ELECTRO-OPPLICED RADIVES, COAST RADARS, Mobile Communication Infrastructure and Emergency Response Boats for coastal safety. In addition, artificial intelligence -supported motion analysis systems have been used in the fight against irregular migration and smuggling (ASELSAN, 2022). Turkey's defense industry strategy is supported by projects developed by leading organizations such as ASELSAN, HAVELSAN and STM in line with the target of domestic and national production. ASELSAN has signed many hardware-based projects with electro-optical systems, radars, electronic war solutions and communication infrastructures. HAVELSAN develops tactical superiority to the navy

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by developing war management systems, data fusion platforms and cyber security software such as Advent. STM draws attention with engineering solutions for water and underwater platforms, especially in Ulaq Ida (STM, 2023).

While these projects reduce Turkey's dependence on external defense and maritime safety; It paves the way for the development of original and integrated systems. At the same time, these companies improve NATO standards and increase international competitiveness.

Within the scope of the “Blue Homeland” doctrine, Turkey supports its technological capacity through concrete operational activities. During the seismic research activities carried out by Oruç Reis and Barbaros Hayreddin Pasha ships in Eastern Mediterranean, he actively used Turkish Navy, Native Radar, Sonar, Electronic Warm and Advent systems. In addition, the security shield established around the Sakarya Gas Field in the Black Sea with the activities carried out by Libya and the Multi -Layered Marine Safety model in the “Blue Homeland” has been practical equivalent. In these processes, IDAs, UAVs, satellite -based sea surveillance systems and port safety infrastructures were coordinated in coordination (Gürdeniz, 2019; MSB, 2023).

7. CONCLUSION

This study analyzes the importance and applicability of technological security practices in the process of ensuring maritime security within the framework of Turkey's “Blue Homeland” policy. Turkey's geopolitical location, the fact that three sides are surrounded by seas and the increasing international tensions in various regions, especially the Eastern Mediterranean, have made the issue of sea safety a strategic priority. In this new period, where traditional security understanding are insufficient, technology -oriented solutions ranging from radar systems to unmanned marine vehicles, from artificial intelligence -based decision support systems to cyber security stand out.

Developed by Turkey's Defense Industry Institutions (ASELSAN, HAVELSAN, STM, etc.) and Strategic Institutions (Navy Command, Coast Guard Command), reinforce both operational success and reinforce strategic autonomy by reducing the dependence on outside. Seismic research activities implemented within the framework of the “Blue Homeland”, Naval Authority Protection Duties and Border Safety Operations are carried out more effectively and sustainable thanks to technological infrastructure.

In this context, every investment in technology should be considered not only for a defense expenditure, but also as a security insurance and strategic independence move. Especially as digitalization in the maritime sector increases, cyber threats and data safety violations will increase, as investments in technology should be constantly updated and a dynamic defense model should be adopted.

RECOMMENDATIONS:

1. Dissemination of Integrated Command Control Centers: Situational awareness should be increased by collecting the data obtained from radar, satellite, IDA, UAV and port safety systems at a common network; Decision -making processes should be accelerated.
2. Artificial Intelligence and Domestic Software Development Investments: Domestic software production should be supported in threat analysis; risk classification and data processing areas and university-industry collaborations should be increased.
3. Development of Cyber Defense Trainings: Cyber safety awareness of the personnel working in the field of maritime should be increased and expert staff specific to this field should be trained.
4. Protection of Port and Energy Infrastructures: AUV systems, sonar technology and environmental sensor network should be installed for submarine energy transplant lines and communication cables.
5. Deepening of International Cooperations: The diplomatic dimension of maritime security policies should be supported through technology transfer and joint exercises with organizations such as NATO and IMO.
6. Increasing civil-academic participation: Universities, private sector and non-governmental organizations should be actively involved in the process; Interdisciplinary studies should be encouraged.

Strengthening technological infrastructure in the context of sea security is not only for short -term operational activity; Long -term strategic autonomy is also vital in terms of deterrence capacity and international competitiveness. Technology -based security systems; It increases the prediction capacity, accelerates decision -making processes, reduces human error and provides the opportunity to produce flexible response to threats. This is a critical basis for Turkey to effectively protect the sovereignty rights in the seas.

During the study, the following gaps have been identified in the literature and advanced researches for these areas are recommended:

1. Tomoty of the digital dimension of marine safety by case analyzes based on cyber attack scenarios.
2. Field -based examination of the security gaps encountered in the digital transformation of ports and coastal infrastructures.
3. Performance Analysis on Integration of IDA, UAV and AI systems.

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4. Integration of Artificial Intelligence Supported Marine Safety Simulations to Defense Strategies.

5. Analysis of “Blue Homeland” from international law perspective and comparative assessments with other countries.

These research areas will not only fill the literature gaps; It will also contribute to the creation of more effective strategies by providing qualified data to decision makers and defense planners.

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