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### MILITARY IMPLICATIONS OF ARTIFICIAL INTELLIGENCE - CASE OF REPUBLIC OF TURKEY

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#### ABSTRACT

*The Republic of Turkey has an outstanding ability to wage war in both conventional war and hybrid war, where Artificial Intelligence technologies are applied. Accordingly, within the scope of this study, we aimed to put forth the general ongoing efforts to integrate the war capabilities of Artificial Intelligence technologies. Within the context of this conceptual article, we analyzed the attempt to construct the military capability of the Turkish armed forces and the effort to strengthen technological armament through the integration of Artificial Intelligence. We introduced the applications of artificial intelligence, which is the most important technological improvement that Industry 4.0 brought about in the applications carried out in the Turkish military sector. In this conceptual article according to the findings of the theoretical analysis of the factors identified, the Republic of Turkey has obtained successful results on the application of Artificial Intelligence technological improvements in a variety of war areas. The impact of these benefits makes Artificial Intelligence an essential part of modern war technologies in our time.*

**Keywords:** Artificial intelligence, Republic of Turkey, Technology, Operation, Drone.

#### INTRODUCTION

The areas evaluated in the analysis are: the main military applications changed by AI in the Republic of Turkey, the concept of the Turkish military, Turkish modernization efforts in defense, technologies focusing on AI, the potential of AI, Turkish practical experience in the war zones of combat to fight against terrorism with AI technology support, military intelligence and awareness of state, AI technology in conventional warfare defense as well as the most current issue: the experiment of the Turkish product of UAV (Unmanned Air Vehicle) in the Russian – Ukraine War. Information operations, surveillance and reconnaissance, logistics, cyber-space operations, intelligence, command and control, autonomous instruments, and autonomous

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weaponry systems are included in the growing military AI technology applications (Alawad *et al.*, 2021; Kopzhassarova *et al.*, 2021; Volodymyrovych *et al.*, 2021).

The technological developments of the 21<sup>st</sup> Century are considered a new revolution. Among the concepts that emerge in this age of technology, Artificial Intelligence (AI) and Machine Learning (ML) have become the most prominent concepts. In particular, AI is becoming the most effective technology converter and like in other spheres, it is a progressive utility choice in the military sector. Not only does the removal of probable human error become possible with AI applications but also military system applications backed up with AI enable larger amounts of data to be processed more efficiently. At the same time, the inherent data processing and decision-making capacity that AI provides can improve self-control, while organizing and working out the capability of battle systems (Singh & Gulhane, 2018). Furthermore, the Internet of Things (IoT), together with Robotics has many implications in defense sectors. The impact of these benefits makes AI an essential part of modern war technologies in our time. AI will take on a role in almost all military applications and is expected to be adopted even more as development funds for the utilization of AI increase.

### *Literature Review*

On the issue of operating military vehicles equipped with AI, the Republic of Turkey has attracted great attention among international strategic societies due to its unmanned aerial vehicle entities. In this field, the Turkish Armed Forces have achieved success by creating an organization that is capable of bringing an instant solution to a warfare incident and adjusting to rapidly changing conditions, constantly learning and making innovations. In military operations encountered in Northern Syria, Libya, Yemen and the mountainous Karabakh, the AI-guided technologies of the Republic of Turkey have been exploited. To commence “herd attacks” in Libya in March 2020, Kargu-2 unmanned aerial vehicles were deployed by the Republic of Turkey. In the Libya report, issued by the United Nations (UN) Security Council, this was proclaimed as the first AI-used drone attack without any human intervention. Moreover, it was indicated that the Republic of Turkey had achieved the technology to apply AI technologies in both conventional war and hybrid war scenarios. Therefore within the scope of our work we aimed to research recent attempts to integrate AI technologies into the war capabilities of the Republic of Turkey.

The Republic of Turkey has identified six coverage areas on the roadmap to be followed after the national AI strategy was declared publicly. Manpower, research, entrepreneurship, and infrastructure are the top four (Oktay & Azbay, 2021) targets in the designated strategy to place the Republic of Turkey among the first 20 countries of the international AI indexes. Together with the increasing adoption of AI technology in the defense sector of the Republic of Turkey, Turkish the aviation and defense industry made great strides in terms of both platform and sub-systems in recent years. For instance, using automatic targeting technology new products with image processing algorithms including AI and machine learning techniques have been acquired by the Turkish army. Platform designing, system integration, sensor build, and weapon integration are just some of the projects being focused on in this area. By developing armed and unarmed UAV systems for reconnaissance, surveillance, and military operation, the Republic of Turkey can maintain its target of manufacturing these devices using national resources and thus



become a regional power in addition to getting a considerable share of the growing market, particularly in Europe and Asia.

Within the scope of this research, we will first analyze the implementations of AI-guided technologies in the military area. Following that, the Turkish Army's modernization efforts in connection with the integration of AI technologies are explained. Later we will focus on various areas such as the war on terrorism, the Syrian war zone experiments, military intelligence, and conventional war to determine the usage level of the Turkish AI. In this study, we are identifying the Republic of Turkey's capacity to adapt to modern warfare through AI integration endeavors. The data presented are based on valuable contributions obtained from academic studies.

Regarding the impacts of the use of AI technologies in commercial areas, progresses of the implementations are progressing; yet, in the military area, consistency with technological developments is also important. The impact of AI on military applications can be explained from different points of view depending on the results seen in the different usage areas. For instance, according to Ture and Topuz (2021), the importance of the military advantage that autonomous unmanned vehicles will provide in changing the form of modern war is specified.

Some analysts draw attention to possible difficulties that could arise with AI usage. In this context, some opinions have been expressed that further developments are required to overcome diverse threats. The opinions expressed claim that the required functions are solved to a certain degree but it is argued that development is insufficient to cover all the solutions (Grooms, 2019). Some analysts have clarified that the low cost and high capability that the usage of AI can provide increases military strength, as seen in the samples above. Davis (2019), implemented "Big Data Based Modeling, Simulation and Warfare" to illustrate the importance of modeling scenarios of contact with the enemy that might happen in the course of the war. Although the data resources, algorithms, interfaces and correspondence lines required to integrate AI can improve the naval forces, it is alleged that good results are not guaranteed or the AI system gives no results in the case of a shortage of any item. From the air force perspective, to check the information coming from the sensors and to generate COP (Common Operating Picture) policy-makers, Saylor (2020) disputes that by applying AI the problems will be reduced to a minimum.

Studies have been carried out by some analysts within the frame of the predictions and make suggestions on the future usage of AI in the military area. These generally deal with the skill to act in conformity with human intelligence following further development in AI technologies. Based on the viewpoint of the legal and criminal liability of some AI-backed war vehicles, which reflects concern that they could lead to slaughter robots, some countries have decided to ban them. For instance, if there is an autonomous missile on a drone, which one will be banned and how the banned will impact the others has been a topic of discussion. Similarly, in the health sector, who will be responsible if a robot with AI that can diagnose gives an inaccurate decision? On this issue, primarily the importance of training aimed at usage or proposals concerning the authority and responsibility of commanders need to be identified (Ozdemir, 2019).

As regards AI implementations in the Turkish military area in the studies made by analysts, the power of unmanned systems is of primary importance.

Humanoid robot and robot soldier studies started with the "robot soldier" project of the Defense Industry Under-secretariat in the Republic of Turkey. The Konya-centered Akın Robotics, which was among many other companies already carrying out studies, started producing humanoid robots that could operate by five senses. In the utilization of robot soldiers, land conditions need



to be taken into consideration, so they manufactured a robot that could work in all circumstances. Watch sensors will be placed in diverse areas of barracks to perform missions like scanning, reconnoitering, targeting or material handling (Akin Robotics, 2022).

Aselsan had expanded the Turkish armed forces inventory to meet the requirements of hi-tech systems such as unmanned air, sea, and land vehicles (bomb disposal robots) and these systems carried out their duties for many years. “Barkan”, the robot soldier of the digital union, will implement tasks either as an unmanned vehicle or by sharing common tasks with other drones. Havelsan (2022) reported that it has achieved the level to contribute the mental power required to fulfill the task as the head of the herd. The paradigm of performance experienced in modern robotic usage should be considered an important opportunity enterprise pioneered by the Republic of Turkey.

## MATERIALS AND METHODS

### *Basic Military Implementations for AI*

Before countries and their armies were able to adapt to these conditions and before equipment had completed half its functional life, due to the advanced technology developments of the 21st century and as a result of the involvement of AI, the military world and security control entered an uncontrollable new era (Horowitz & Mahoney, 2018).

On the other hand, some analysts explain the importance of utility opportunities and have pointed out that AI utilization will provide benefits in terms of national defense. To exemplify, the usage of robotic vehicles and autonomous weapons in areas that would be extremely risky for combat personnel is gradually increasing. Furthermore, intelligent defense systems can detect and analyze and respond to attacks faster than human operators. Apart from this, greater data analysis technology covers information that is so immeasurable that neither human analyst groups nor military decision-givers choose the best action plan.

Opinions disclosed on the limitations generated by AI implementations state that autonomous systems need to be automated by making use of sensor fusion, to implement their tasks and make decisions faster than human beings can. This reveals some of the limitations of the present AI systems. In particular, autonomous systems are designed to implement a certain task, work under very special conditions, and contrary to humans, may not adapt well to new mediums and tasks. From this standpoint, it seems that there is little the AI system can do to understand how the human system makes its decisions. As AI systems have difficulty discriminating between correlation and causality, they will not achieve productive results (Maxwell, 2020). Apart from this, the facial detection, surveillance camera and biometric ID detection technologies being used in public spaces can lead to concerns regarding the possible impacts on the right to confidentiality and personal integrity.

Contrary to the concern that the developments in military AI, on the whole, may generate a dramatic transformation in modern war models, the rapid development of AI technologies and the integration of military applications are being carried out at an increasing rate. In particular, the military AI maintained by the USA, China, and the Russian Federation is being diligently followed. Therefore, we anticipate that the growth of expanding the application of AI technologies in various war capabilities will increase positive results (Morgan *et al.*, 2020). The increasing applications of AI technologies include intelligence, surveillance, reconnaissance,



logistics, cyber-space operations, information operations, command and control, semi-autonomous and autonomous vehicles and autonomous weapon systems. At this juncture, prominent benefits resulting from the use of AI in military operations can be disclosed (Qualetics Team, 2020):

- AI enables defense personnel to make more accurate decisions based on the defense data collected by sensors and satellites,
- Although previously ships equipped with sonar were used to detect submarine mines, AI strengthens this function so finding and identifying the mines in a shorter time and formulating the necessary decision will be possible,
- Military robots with AI may be used in operations and undertake tasks alone to save human lives,
- Unmanned war vehicles using AI, such as aircraft and the battle tank will be incorporated into personnel and equipment enabling easier decision-making will be easier and lessening expenditures. Moreover, military personnel will be far from life-threatening situations.
- Land battle vehicles provided with AI Machine Learning skills will be able to target better.
- Operations can be carried out by unmanned drones and using AQI for landing and takeoff.

#### *Turkish Army Concept and Modernization Attempts on Defense*

With regards to geography, history, religion, and culture Republic of Turkey is located in an important center position on both the east-west and the north-south axes. Because of its geography, on one hand, the Eastern Mediterranean, and on the other the Middle East, the conflicts encountered have a direct impact on the Republic of Turkey, thus threatening its security. At the same time, the Republic of Turkey is crossed by the sea, air, and land transportation lines of Eurasia, and the instabilities in the environment are expected to continue in the years to come. From the international perspective, the Turkish Armed Forces have had an active role since the Korean War in the 1950s and have experience going back many years on the subject of cooperation with other countries. The Republic of Turkey has played an important role in international operations by NATO and played a part in international coalitions that the United Nations assumes compulsory. For instance, it has had missions in the NATO Operations of Bosnia-Herzegovina (1996), in Kosovo (since 1999), in Afghanistan (since 2002), and in Somalia under the UN international coalition umbrella (1993).

The latest combat record of the Turkish Armed Forces shows that the defense policy of the Republic of Turkey is employed beyond the country's borders. Unmanned aerial vehicles circulating in Syrian aerospace, navy frigates on the Libyan coast, Turkish military consultants in Tripoli, alpine commando units in Northern Iraq, and the presence of high-ranking Turkish officers in Qatar and Somalia show that the Turkish army has become a dynamic actor.

Turkish AI unmanned aerial vehicles, together with remotely controlled ones, were utilized in the mountainous Karabakh region during the clash of arms against Armenia and also in the surrounding areas by the Azerbaijan forces. In the process of global and regional use of force by the actors in the surrounding areas of the Republic of Turkey, the Republic of Turkey will soon stay out of events in Northern Africa, the Middle East and Southern Caucasia, as the regional reorganizations regarding the role of the Republic of Turkey are implemented. Under these reorganizations the Republic of Turkey will take on a role as an independent regional power





with its own rising national interests rather than as a dependent actor. Yet, based on an over-enlargement or use of power, it is understood that the Republic of Turkey will face many new hardships.

In March 2020, Kargu-2 unmanned aerial vehicles were deployed to Libya against Caliph Haftar's militia to a 'herd attack' (Tekingunduz, 2021). In this Libya report prepared by the UN Security Council, this implementation was emphasized as the first AI-supported unmanned aerial vehicle attack (United Nations Security Council's Panel, 2021). After these unmanned aerial vehicles operated by AI were used in Libya for the first time, the question of whether people were killed was scrutinized, particularly by Western military experts. The UN made it clear that although many assaults had probably taken place, for the first time an attack was carried out that proved the success of AI-equipped unmanned aerial vehicles (Dettmer, 2021). While 62 defense projects were supported in 2002, this number rose to 700 in 2020, meanwhile, the annual defense budget went up to \$60 billion from \$5.5 billion. Following this, UAV production was even more successful (Tekingunduz, 2021).

- *Gokturk-2*: high-resolution remote sensing satellite,
- *Altay*: major battle tank,
- *Ejder Yalcın*: armored vehicle for the inner city, and open terrain,
- *Kirpi*: a vehicle for transporting soldiers, weapons and command control systems and vehicles that can detect and defuse mines, is resistant to mines, and has protection against ambush.
- *Anka*: a medium-altitude, long-lasting (MALE class) unmanned aerial vehicle (UAV) system for reconnaissance, surveillance, and target acquisition.
- *Atak*: a T-129- type rampage and tactical reconnaissance helicopter,
- *Milgem*: a patrol and submarine reciprocal war-ship (corvette)

#### *AI Potential of Republic of Turkey*

The Republic of Turkey's defense industry is based on an independent foreign policy and aims to lessen dependence on the importation of weapons. The development of the Republic of Turkey's defense industry has progressed considerably over the last ten years. For instance, there was only one Turkish company in the 2010 list of the 100 largest global defense companies, whereas today, the Republic of Turkey has seven more companies than the total of Israel, the Russian Federation, Sweden, and Japan. With the same objective, the Republic of Turkey's share of weaponry importation in the 2015- 2019 period lessened by 48 per cent compared to the prior five-year term. The rate of military equipment imported dropped from 70% to 30 %. While the Turkish weaponry industry in 2002 amounted to \$1 billion, in 2020 it went up to \$11 billion, and the Republic of Turkey rose into the fourteenth largest global exporter with the exportation of more than \$3 billion (Gurini, 2020).

The potential of the Republic of Turkey in AI can be an area compared to other countries. For example, the number of AI-centered startup companies in the USA and China is 2000, while the Republic of Turkey has about 200. Half of the investments are at the technology parks of universities, and 73 percent can be found in Istanbul. Two examples of Turkish-owned companies are TAI (Turkish Aerospace Industries); whose platforms are almost all AI-centered



strategies, and TUSAS, another important air platform developer. STM, who developed the first kamikaze UAVs, also manufactures drones that have been improved by employing AI technology. Owing to Bayraktar TB-2 (armed with tactical UAVs) and the high precision ammunitions produced by ROKETSAN, the Republic of Turkey's coping skill in the forceful battlefields of the Middle East has now advanced further. A drone manufacturer in the private sector, Baykar, is changing the supply potential by trying to reach much more challenging targets. With this objective, the Republic of Turkey is constructing a \$1 billion landing platform wharf at Spain's Navantia docks, which will start its activities in March 2022, and TCG Anadolu, an important attack ship, which will host a fleet of planes with vertical landing and flight capabilities (Bekdil, 2021).

During this process, the joint consortium of USA-centered Joint Strike Fighter multinational company suspended the participation of the Republic of Turkey due to the Republic of Turkey's purchase of the Russian-made long-range aerial and antiballistic missile S-400 defense systems. At the same time, Bayraktar announced the conceptual plan of the first Turkish AI-based war-plane as a high "top priority program" (Bekdil 2021). The Turkish government commenced investment in UAV innovation, in response to the USA holding back the sale of attack planes before 2010 – 2012 and delaying, the delivery of surface-to-air missile systems, which left the Republic of Turkey with no choice but to buy S-400 missile defense systems from Russia. As a result, the Republic of Turkey became the world's fourth largest drone manufacturer following the USA, Israel and China.

The domestic airdropped cruise missile SOM-A carried by Akıncı has a range of around 250 km and provides great strike power to Turkish military planners. Besides these achievements, Akıncı also brings further benefits to the Turkish defense sector. To exemplify, the Turkish national intelligence services of the Republic of Turkey have for a long time exploited the war capabilities of UAVs, which constitute the basis of the Republic of Turkey's fight policy against terrorism. By the virtue of the characteristic of Akıncı's lifting heavier and long-range capacity, the targeted attacks of UAV of Turkish intelligence can reach a more efficient level of its targeted UAV attacks. Regarding air warfare skills new combat load structuring of the Unmanned Aircraft System (UAS), the domestic visual ranged Bozdoğan, and the visual out of-range, air-to-air Gökdoğan missiles are available (Vavasseur, 2020).

The upgrading of the unmanned combat aircraft system carried out by Baykar on the Bayraktar Kızılelma (UAS) unmanned combat aircraft system will equip it with future technologies and shape the future of war. Kızılelma; possesses the skill to take-off and land with lower visibility from short-tracked aircraft carriers, and its high maneuverability will enable it to engage in air-to-air combat. Its AESA radar will create high situational awareness for the security forces enabling it to carry out attacks on the targets designated by the equipment (Baykar Technology, 2022).

TAI (Turkish Aerospace Industries), an institution that aims to design, manufacture and offer post-production support for all kinds of aerial vehicles is currently improving its AI-supported autonomous vehicles/ equipment, with image processing using resolution backup systems and big data analytical substructures. It is the first big defense company to establish an AI working unit. TUSAS (Turkish Aircraft Industry Corporation), under the auspices of TAI, works in collaboration with various academic institutions and currently has numerous ongoing AI projects. The Anatolian Agency revealed in June 2021 that the Turkish defense contractor DTC



(Defense Technologies Center) disclosed the army's plan to purchase 500 "Kamikaze" drone vehicles with autonomous facial recognition. A minor Turkish defense company called Akdas also acknowledged that a 40 mm hand grenade ejector had been mounted on Songar, a hand-made drone developed by Asisguard, another Turkish defense company. Songar, which had been upgraded and equipped with an AK40-GL system having a 400m firing range, passed the admission tests. In February 2021 of the same year, the electrical T629 offense helicopters and the assertive model of their unmanned version wars were introduced by TUSAS (Turkish Aircraft Industries Corporation) (Iddon, 2021).

The TAI T629 helicopter program, going on since 2017 commenced the assembly of the first flight model of the helicopter in 2019. This helicopter will weigh 6 tons and be equipped with 70 mm unguided missiles and L-UMTAS anti-tank missiles (Tubitak SAGE, 2021).

Kargu-2, manufactured by the Turkish company STM, is a 15-kilo multicopter with approximately 90 miles/hr. maximum speed and 30-minute enduring power. Kargu-2 will be equipped with a 3-kilo warhead, an explosive version for staff and light vehicles, a thermobaric version to demolish buildings and shelters or a heavy armor version (Baykar, 2020). AI-based UAV software developed by Turkish companies has been improved by MilSOFT after four years of research and turned into both fixed and rotating versions that can be used on winged drone platforms. Due to the low cost of UAVs having herd attack skills and the concealed technologies they contain, they will be used in unmanned air combat (Bekdil, 2020).

Although the Republic of Turkey is developing its domestic weaponry industry to overcome its dependency on foreign products, in reality it still depends on cooperation. Even though the defense industry is growing fast, it requires continued partnership with allies due to sectoral brain-drain, chronic engine problems, and a shortage of extensive knowledge. The biggest buyer of Turkish military technology products is the Republic of Turkey itself, and behind this lies the fact that the production level cannot meet the demands of other countries due to existing technical and structural drawbacks. Because facing all of the shortcomings of the internal market and solving the real technical concerns seems improbable in the short term, the boom of the Turkish defense industry cannot be reached yet.

#### *AI Technologies in the Conventional War Defense*

The armed forces of many countries in the world exploited IA in the systems and weaponry of land, sea, air and space, which has contributed to the development of conventional war systems (Singh & Gulhane 2018). However, these studies are considered inadequate in contributing to the intellectual background. The logic that guides the regional role of the Republic of Turkey strengthens the expression that the Republic of Turkey is already an important regional actor. While foreign powers carry out geopolitical strategies within and around the Republic of Turkey, the Republic of Turkey has the national will to ascertain new maneuvers under suitable conditions to protect its course of action and interests. The Republic of Turkey's power performance is now increasing due to its military maneuvers, intelligence sharing, military coordination programs and defense industry cooperation.

To engender significant supremacy against the Greek navy in the Aegean Sea and the Mediterranean Region, a new unmanned military ship has been built equipped with missile defense systems that can be controlled by AI technology. This unmanned war ship was built by





Meteksan and Defense Industry collaboration, together with the Turkish military and commercial ship-builder Ares shipyard (Oruc Reis). The AUSV (Armed Unmanned Surface Vehicle) which was built by the world's biggest composite ship-builder company at the Ares Shipyard, can reach a speed of 40 miles/hour (65kph) and will be deployed as an autonomous vehicle to assume the new mission requirements (Browne, 2020). The ULAQ serial, in addition to Sefine's NB57 / RD09 and Dearsan's USV 11 / 15, the three armed unmanned surface ships following the (AUSV) shooting tests were released to the market in 2021. The armament of these unmanned ships of the Republic of Turkey includes not only short-ranged antitank guided missiles but also Turkish-manufactured 220+km ranged "Atmaca" anti-ship missiles. The unmanned war-ships are equipped with laser-guided 70 mm and longer-ranged missile systems developed by the Turkish firm Roketsan. These unmanned ships can be controlled remotely from mobile vehicles and military bases, they can also be deployed even without the control of a human operator. AUSVs, with their intelligence and surveillance abilities, can also be used for surface war and escort missions. Apart from this, Aselsan's USVs were developed to function in packs in autonomous operations, performing on another independent operation level (Baran Journal, 2022). Military analysts around the world have become aware of the drone power of Turkish unmanned aerial vehicles because these vehicles have been used in various operations. However, they lack sufficient information about unmanned surface ship power thus far. The domestic unmanned aerial vehicle called Aksungur was recently added to the inventory of the Turkish Naval Forces within the scope of the "Blue Homeland" 2022 military exercise. For the first time, national intelligent ammunition (MAM-L) was successfully deployed and hit the designated target. The mass-production of the unmanned aerial vehicle AKSUNGUR that TUSAS built has raised the issue of whether it should be equipped with the features of anti-submarine warfare (ASW). Aksungur UAV' with the essential supplementary AI technology is expected to be used to conduct submarine wars. The Republic of Turkey, a NATO member country, will track the activities of Russian submarines in the Black Sea and the Mediterranean Sea. Due to possible tensions with Greece, whose navy has 11 submarines, the submarine platforms will be monitored by the Turkish naval Forces joined by Aksungur UAVs (CDefence, 2022). In the case of the Turkish defense sector, the use of robotic and AI technology will transform war systems. Focusing particularly on the areas that guide the on-going scientific technology reform in Turkish academia, especially research universities, will strengthen the quality and quantity of weapons.



### *Russia – Ukraine War and Turkish UAVs*

In the foreign media coverage of the war between Ukraine and Russia, it has been stated that the Ukrainian army was provided with exceptional power by the Bayraktar TB-2 AUAVs. In the days when the military assault of Russia started against Ukraine, by Axe (21 March 2022), it was indefinite whether the Turkish-made TB-2 unmanned aerial vehicles of the Ukrainian army would achieve success against the Russian missiles. The first unmanned aerial vehicle Baykar TB-2 was retrieved in July 2021 and after a few months the tests of Mini Intelligent Ammunition (MIA) missiles were completed. To avoid attracting attention to the Ukrainian war strategy and operations, very few photos and videos of the TB-2 attacks in the region were posted to journalists. Nevertheless, it was revealed that the Turkish TB-2 UAV's attacks had destroyed 60 tanks, air defense systems, helicopters, supply tracks, and a train belonging to Russia. Because

the Russian S-300s and S-400s are not strong enough to stop the TB-2s and the TB-2s have no target restriction, as Southern as Kyiv and Kherson and as Northern as the Kyiv suburbs. Videos showing the drone attacks were released. Turkish TB-2 UAVs have the characteristics of small size, modest horse-power, being silent, temperatures too low for infrared sensors, and being hidden in a war-plane hard to detect by many radar operators. Therefore, the opportunity created to wander 24 hours undetected on the motorway and to create the possibility to detect Russian war vehicles are clarified (Rudaw Group, 2022).

Aerial drone footage demonstrated the destruction of the Russian armored vehicles by the low price and fatal Turkish unmanned aerial vehicles that carried out the unexpectedly successful attacks by Ukraine. The fact that the technological warfare capability of the UAVs was an important tool in Ukraine drew great interest in social media. A few weeks after the combat started. Western military experts aimed against the bombardment of Russia, with appalling fatal effectiveness, using the Turkish-made UAVs directed by the occupants defending their cities. Later, Bayraktar TB2 UAVs carrying light, laser-guided bombs were sold by the Republic of Turkey to more than a dozen countries including Azerbaijan, Libya, Morocco and Ethiopia. In the armed forces, military power can be augmented by the application of robotic, and AI technologies, however, it should be taken into consideration that fully autonomous weapons have the potential of causing great destruction. In this respect, a correlation can be set up between the artificial intelligence armament race and the nuclear armament race.

In both cases, the aims are the supremacy of inter-state competition and to attain the new destructive technology before the rival. The artificial intelligence armament and nuclear armament races are used not only for defense but also to provide the potential for destructive outcomes. After the first production takes place, artificial intelligence armament has the characteristic of speeding up in a much shorter time by reducing the cost of production and the capability of being replicated, compared to nuclear armament. In this case, it reveals that the risky outcome that nuclear armament creates, artificial intelligence armament has the potential of causing more destructive results in a much shorter time. Under the circumstances, it is thought that the nuclear armament power that the countries with very strong economic power have will be replaced by artificial intelligence-driven armament power which almost all the countries will be able to get. In future wars, all countries will have the potential to create destructive outcomes.

## RESULTS AND DISCUSSION

In this conceptual article according to the findings concerning the outcomes and impacts of the parameters selected for the analysis of the subject of artificial intelligence implementations in the Republic of Turkey:

- Turkish Armed Forces are experienced regarding cooperation in the military field and already operate military bases in 12 countries on three continents.
- Because of its geographic position the Republic of Turkey can be an independent regional power, which stipulates the need for adaptation to AI utilization in the military implementations of the Turkish Armed Forces to ensure contemporary technological developments.



- Among the warring countries in the region, it has been proven that the Republic of Turkey has a share in the achievement of military success.
- Although the Republic of Turkey's economic power is not as high as the USA's or its technology as advanced as China's, the impact of the existence of artificial intelligence-equipped military vehicles of the Turkish Armed Forces has been confirmed by the military analysts in the world.
- Turkish Armed Forces have developed artificial intelligence war vehicles used for defense and attack on land, air, sea surface and submarine and their efforts are still ongoing.

## CONCLUSION

Due to the implementation of developing technology in the military field, and the impact of the Industry 4.0 reform, the world is on the verge of important changes in the characteristics of war. From a different perspective, the world is already aware of how the characteristics of war were impacted by the power of nuclear weapons, which only advanced economies can acquire. It is still ambiguous when these transformations will be realized and what sort of adaptation the military forces need to prepare for the superior competition in the new environment. With the new technological improvements, nations are gradually becoming more aware of how dangerous these military implementations can be. How successful they are in maintaining their military superiority in the world will depend on how wisely the national leaders carry out their administrative duties. Some countries around the world already benefit to the maximum level from AI systems in developing their war and defense systems. The Republic of Turkey also uses AI to enhance the performance of war machinery and improve the effectiveness of its defense mechanisms. The Republic of Turkey deployed its military force equipped with AI in the operations in Northern Syria. In Northern Iraq, it was used to suppress terror organizations and achieved positive results. The operations in Karabakh, Azerbaijan and Libya were not the only successes of the Turkish unmanned aerial vehicles. The ability of the Republic of Turkey in the unmanned aerial vehicle war should not be forgotten. In conclusion, recent interventions showed that the Republic of Turkey can develop its solutions for any war scene and can maintain its self-sufficiency from the perspective of technological modernization. The Turkish Armed Forces can now rely on a more powerful defense industry, and the Republic of Turkey is now looking out for its own political and military interests on a wider axis. All in all, the active military manifestation of the Turkish State administration will be long-lasting.



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