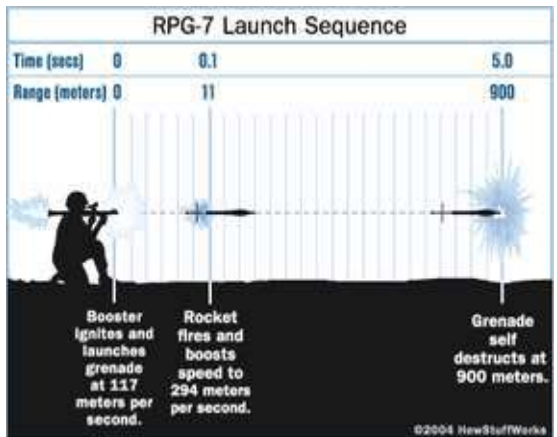
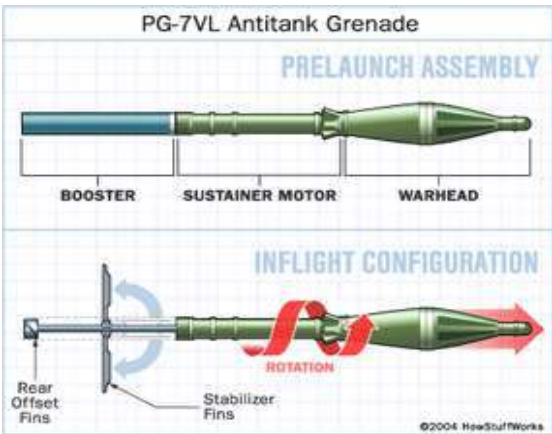


**Advanced English Language
Directed Writing:
Technological related essays/speeches/talks**

You are the president of an engineering society club of your high school. During the getting to know the latest mechanical engineering programmes which organised by your high school, you are invited to deliver a speech on the topic of "How Rocket Propelled Grenades Work"
In your speech, you should include all of the given information as provided below.



Model Answer:

Ladies and gentlemen,
Thank you - Mr chairman,
Good morning to teachers, industry players and all of those who are attending this event.
My speech today is about getting to know the technology and latest mechanical systems of the "Rocket Propelled Grenades" or famously known as RPG-7.

Ladies and gentlemen,
RPG-7 is a portable, reusable, unguided, shoulder-launched, anti-tank rocket-propelled grenade launcher. Another popular name of RPG-7 is an anti-tank grenade launcher. It is robust, simple and lethal. It is also extremely popular and outstanding in term of performance and effectiveness.. As it exists today, the RPG-7 is the result of many years of revisions and modifications. The "original" RPG -- based on the German Panzerfaust anti-tank weapon - was eventually followed by the RPG-2, the RPG-3 and so on. In fact, although the RPG-4 had passed field trials in 1961, test findings of a newer model, the RPG-7, were released that same year, but with much improved firing range and armor piercing capabilities. So, in 1961 it was the RPG-7, not

the RPG-4, which the Soviet Armed forces adopted for actual use. Today, the RPG-7 is used by the armies of over forty different countries and is also used, reportedly, by a range of terrorist organizations in the Middle East and Latin Americas.

Ladies and gentlemen,

Now that we know what an RPG-7 is, let's take a look at how one operates. The RPG operator or an artillery assistant takes a **propelling charge** and screws it onto the end of a **warhead**. Basically, this is a **stabilizing pipe** that has four stabilizing fins that are folded around it with two additional fins at its rear end. A cardboard container encases the back end of the stabilizing pipe. Inside the cardboard container, a **squib** of nitroglycerin powder is wrapped around the stabilizing pipe and a **primer** or charge of gunpowder is stuffed into the end of the stabilizing pipe. The RPG operator or artillery person then takes this assembled artillery and loads it into the front end of the RPG launcher so that it lines up with the trigger mechanism.

Ladies and gentlemen,

After the RPG operator pulls the trigger, this is what will happen:

(a) The force of the built-up gases throws the grenade out of the tube at approximately 384 feet per second (117 meters per second). The abrupt acceleration of the grenade leaving the launcher triggers a **piezoelectric fuze** that ignites the primer (pyro-retarding gunpowder mixture). This then ignites the squib of nitro, thereby activating the **rocket propulsion system** (sustainer motor) to carry the grenade the rest of its trajectory.

(b) A socket in the breach block alleviates recoil during firing. The exhaust gases exit to the rear of the launcher unit and the operator is free to immediately reload the weapon. In practice, however, no RPG operator would ever remain stationary and spend the time to reload; the launching flash and whitish blue-gray smoke provides a clear indication to the enemy of the RPG launcher's location. An effective, surviving RPG operator is one who quickly changes position and gets under cover.

There are several types of grenades that can be used in the RPG-7. Some have a point initiating, base-detonating (PIBD) piezoelectric fuze: meaning that they are impact grenades. And, many others have back-up time delay systems, so that if they have not reached a target in a certain amount of time (something like four and a half seconds) the grenade will self destruct. The most commonly launched grenades are a High Explosive(HE) or High Explosive Anti Tank (HEAT) rounds.

Impact grenades must be unarmed until they are actually fired because any accidental contact might set them off. Since they are usually shot from a launcher, they must have an automatic arming system. In some designs, like the one we describe above, the arming system is triggered by the propellant explosion that drives the grenade out of the launcher. In other designs, the grenade's acceleration or rotation during its flight arms the detonator.

Ladies and gentlemen,

As for the back-up timed delay, the same fuze mechanism that sets off the the rocket would set this off. The spark ignites a slow-burning material in the fuze. In about four seconds, the delay material burns all the way through. The end of the delay element is connected to the detonator. The burning material at the end of the delay ignites the material in the detonator, thereby exploding the warhead.

Ladies and gentlemen,

Technology is the application of scientific knowledge for practical purposes, especially in industry. It is a relentless disruptor. It changes the context for how we live, work and play, redefines businesses and industries, and offers unprecedented solutions for addressing complex planetary and societal challenges. But in a quick-changing world where ideas come and go, what emerging technologies should raise to the top of the agenda for decision-makers, entrepreneurs and citizen in the years to come?

Thank you.

Word bank:

Propelling charge = is a single increment red bag charge which contains a base igniter pad with 4 ounces CBI powder and a centre spot of 0.5 ounces of black powder

Warhead = the explosive head of a missile, torpedo, or similar weapon

Stabilizing pipe = is a stabilized austenitic stainless steel to avert sensitization at elevated temperatures.

Squib = a small firework that burns with a hissing sound before exploding.

Prime = of first importance or main

Piezoelectric fuze = is a property of certain dielectric materials to physically deform in the presence of an electric field, or conversely, to produce an electrical charge when mechanically deformed.

Rocket propulsion system = the propulsion of a rocket includes all of the parts which make up the rocket engine, the tanks pumps, propellants, power head and rocket nozzle.

Technology = the application of scientific knowledge for practical purposes, especially in industry

Additional knowledge:

The RPG-7, a name that resonates through the corridors of military history, is undeniably one of the most iconic and enduring anti-tank weapons ever devised. In an era when high-tech weaponry reigns supreme, and cutting-edge innovations redefine warfare, the RPG-7 retains its formidable presence. A timeless symbol of insurgency and unconventional warfare, this portable rocket launcher transcends the boundaries of time and technology, captivating imaginations and infiltrating global arsenals. Even though it emerged from the depths of the Cold War era, RPG-7 has continued to command attention and relevance in contemporary conflicts, notably making its presence felt in the Russia-Ukraine conflict. But what is it about the RPG-7 that has allowed it to withstand the test of time, still serving as the weapon of choice worldwide? Let's embark on a journey to uncover the secrets behind the RPG-7's unparalleled success and the compelling reasons behind its universal popularity.

Advanced English Language

Directed Writing:

The Impact of Military Technology on Modern Warfare – An Article

Lately, the global media is discussing on the influence of technology can be either positive or negative. In your class, you have been asked by your engineering professor to write an article on the topic below.

The Impact of Military Technology on Modern Warfare

Model Answer

Military technology is the application of technology for use in warfare. It comprises the kinds of technology that are distinctly military in nature and not civilian in application, usually because they lack useful or legal civilian applications, or are dangerous to use without appropriate military training. The line is porous; military inventions have been brought into civilian use throughout history, with sometimes minor modification if any, and civilian innovations have similarly been put to military use.

Military technology is usually researched and developed by scientists and engineers specifically for use in battle by the armed forces. Many new technologies came as a result of the military funding of science. **Armament engineering** is the design, development, testing and lifecycle management of military weapons and systems. It draws on the knowledge of several traditional engineering disciplines, which including mechanical engineering, electrical engineering, mechatronics, mechatronics, electro-optics, aerospace engineering, materials engineering, and chemical engineering.

For a decade, military technology has played a significant role in the history of warfare, and its importance continues to grow in the modern era. As the nature of conflict evolves and becomes increasingly complex, new technologies are being developed to address the challenges of modern warfare. Military technology is at the **forefront** of innovation, from advanced weaponry and unmanned aerial vehicles (UAVs) to cyber warfare and artificial intelligence (AI). It represents a critical component of national security.

The development and implementation of military technology are critical for national security and have significant economic implications. Governments and militaries worldwide invest billions of dollars each year in developing new military technologies, making it a critical component of the military-industrial complex. The technological advancements made by the military can also have far-reaching effects on society, including improvements in public safety and national defense.

In recent years, the rise of advanced military technologies has profoundly impacted global politics and warfare. Using UAVs, advanced weaponry, and cyber warfare has transformed the nature of conflict and revolutionized military strategy. As military technology advances, it is **crucial** to understand its implications for national security and global politics and the ethical considerations involved in its development and use.

The impact of military technology on warfare and global politics cannot be understated. Technological advancements in military technology have led to significant changes in military strategy, tactics, and doctrine. For example, the development of nuclear weapons changed the balance of power in global politics and led to the arms race between the United States and the Soviet Union during the Cold War.

Military technology has also had a profound impact on society, particularly in the areas of research and development. Many technologies used by the military have also been adapted for civilian use, leading to significant advancements in fields such as medicine, transportation, and communications.

In addition to its **impact** on society, the development and use of military technology also raise ethical considerations. For example, unmanned drones in warfare have sparked debates about the ethics of using **autonomous** weapons and the potential for civilian casualties.

Overall, military technology is crucial in modern warfare, national security, and global politics. Its evolution has been essential for ensuring the safety and security of nations, and the advancements made in military technology continue to shape the world we live in today.

Source: <https://defensebridge.com/article>

Word bank:

Advancements = the process of promoting a cause or plan

Forefront = the leading or most important position or place

Crucial = decisive or critical, especially in the success or failure of something

Profound = (of a state, quality, or emotion) very great or intense

Impact = the action of one object coming forcibly into contact with another

Autonomous = acting in accordance with one's moral duty rather than one's desires.

Additional knowledge

Military technology, range of weapons, equipment, structures, and vehicles used specifically for the purpose of warfare. It includes the knowledge required to construct such technology, to employ it in combat, and to repair and replenish it.

The technology of war may be divided into five categories. Offensive arms harm the enemy, while defensive weapons ward off offensive blows. Transportation technology moves soldiers and weaponry; communications coordinate the movements of armed forces; and sensors detect forces and guide weaponry.

From the earliest times, a critical relationship has existed between military technology, the tactics of its employment, and the psychological factors that bind its users into units. Success in combat, the sine qua non of military organizations and the ultimate purpose of military technology, depends on the ability of the combatant group to coordinate the actions of its members in a tactically effective manner. This coordination is a function of the strength of the forces that bind the unit together, inducing its members to set aside their individual interests—even life itself—for the welfare of the group. These forces, in turn, are directly affected both by tactics and by technology.

The influence of technology can be either positive or negative. The experience of the ancient Greek hoplite infantrymen is one example of positive influence. Their arms and armour were most effective for fighting in close formation, which led in turn to marching in step, which further augmented cohesion and made the phalanx a tactically formidable formation. The late medieval knight offers an example of the negative influence of technology. To wield his sword and lance effectively, he and his charger needed considerable space, yet his closed helmet made communication with his fellows extremely difficult. It is not surprising, then, that knights of the late Middle Ages tended to fight as individuals and were often defeated by cohesive units of less well-equipped opponents.

Source: <https://www.britannica.com/technology/military-technology>

Advanced English Language
Directed Writing:
Merkava Barak's technological advances – An Article

Model Answer

In 1967, Israel used the American M48 and British Centurion tanks to storm the Sinai Peninsula in a pre-emptive strike, which led to the end of the Six-Day War. However, this didn't come without consequences, as many of its allies, like the United Kingdom, did agree with their decision and withdrew their commitments, such as its planned joint tank-development project.

Knowing this, it is unsurprising that the development of what we now know as the legendary Merkava main battle tank began a few years later, in 1970. Under the leadership of Major General Israel Tal, former commander of the Israel Defense Forces (IDF) Armored Corps who led the victory at Sinai, Israel embarked on a mission to reduce its reliance on foreign powers for its military vehicles. After almost a decade in development, the first Merkava main battle tank began its service in 1979. Since then, the Merkava main battle tank, which means "Chariot" in Hebrew, has been a staple in the IDF arsenal and has undergone several iterations. However, what simply began as a journey to build an indigenous Israeli tank also led to it building one of the most impressive tanks of all time. Here's what makes the Merkava main battle tank so special and what its future could look like.

Before the Merkava was designed, Israel had no experience in making large armored vehicles. However, it did strive to create a tank that fit its specific needs as a small country that needed to keep its soldiers as safe as possible. Because of this, the Merkava battle tank was designed with protection as the priority.

For this reason, the Merkava employed a unique design wherein its engine and transmission were located in front of the vehicle, acting as a shield for the tank's inhabitants. Aside from this, it also stored ammo in protective containers and had fast-reacting fire suppression mechanisms to avoid explosions. However, these same changes also introduced unique issues to the Merkava, especially with risks of frontal attacks damaging the engine quickly.

Despite this, the Merkava retained these traits across its various **iterations**. Since 2004, the IDF began using its fourth version, the Merkava IV, as its main battle tank. It could hold eight infantry soldiers, had an all-electric turret, and a protection suite that used electromagnetic threat identification. The Merkava IV is fitted with the Trophy Active Protection System (APS), which provides coverage for threats while launching countermeasures.

According to Army Technology, the Merkava IV's engine components are manufactured by German company MTU and USA-based General Dynamics Land Systems manufactures its GD 883 engine under licensed production. However, the Jerusalem Post claims that 90% of the components in the Merkava IV are locally produced. In September 2023, Israel began delivery of the Merkava Barak, the next generation of its Merkava battle tanks. A joint development between Israel's Armored Vehicles Directorate and the IDF's Ground Forces and Armored Corps, the Barak uses various systems developed by Israeli defense firms, such as Elbit Systems and Rafael.

Despite being one of the most expensive military tanks ever built, the Merkava's new features can definitely be worth the money. The Globe reports that the cost of the Merkava Barak is \$3.5 million, which is similar to the Merkava IV. With its latest iteration, the Merkava Barak upholds the values of its **predecessors**, including similar automotive elements like the engine. It also uses the Trophy Active Protection System (APS) like its predecessor, the Merkava IV. The Merkava Barak does introduce improved sights and an upgraded Fire Control System (FCS), as well as changes that it hopes will improve the user experience of its young soldiers, like adding multi-touch screens that mimic smartphone interfaces.

In a statement to the European Defense Review, Idan Tavor, Elbit Systems' VP for Advanced Combat Vehicle Systems, shared, "We worked on it pretty hard for the last two years in order to

make it very **approachable** for young soldiers who are used to their cell phones and playstations." However, at the core of the new Merkava Barak's new features is how it **integrates** artificial intelligence. For years, Israel has been investing heavily in using artificial intelligence (AI) for its military vehicles. In fact, it's no secret that even other tank models have had a taste of AI upgrades in recent times.

In 2022, the Israel Ministry of Defense already revealed plans for its AI-powered robotic drone tanks, which were designed to refine things like target recognition, tracking, and prioritization. Knowing this, it is unsurprising that the latest generation of the Merkava tanks also received a few AI upgrades. In a tweet on its X, formerly known as Twitter page, the Israel Ministry of Defense (MOD) shared that the Merkava Barak will be equipped with advanced sensors and AI processing. In tandem with the Torch 750, the IDF's digital combat system, this will enable Merkava Barak to send and receive real-time battlefield data like never before.

But how does it help exactly? One way is to improve situational awareness for its commander by feeding relevant information while the tank remains completely sealed. In previous Merkava models, commanders would need to open the hatch to get a 360-degree view, which puts additional risk to the crew. On its website, Elbit Systems shares that IronVision can help crew members 'see through' the vehicle's armor. In a statement to The Times of Israel, the ministry said, "The system will allow 360-degree scanning by moving the head and locating targets in real-time with the help of artificial intelligence capabilities."

Through the years, Elbit Systems has made a name for itself as a leader in the field of Helmet Mounted Systems. In a press release, Collins Elbit Vision Systems, a subsidiary of Elbit Systems, also announced delivering 3,000 F-35 Gen III Head-Mounted Display (HMD) to the Joint Strike Fighter in 2024. Using pre-loaded terrain and distortion-correction algorithms designed to manage visual distortions, IronVision can help prevent motion sickness, which can be a common issue for soldiers in armored vehicles. In addition, with its patented Augmented Reality Integrated Training System (ARTIST), Elbit Systems also mentions that Iron Vision can simulate combat-accurate scenarios for cost-effective training programs.

In 2023, Reuters reported that Israel began talks to sell its Merkava tanks to two countries, citing high demand for Israeli products due to countries **replenishing** arsenals after providing weapons to Ukraine. However, months later, Calcalistech shared that the historic deal was canceled due to the IDF's ongoing efforts to rebuild its armed forces due to the ongoing conflict in Gaza. One thing is for sure: The true impact of the Merkava Barak's technological advances on the future of battle tanks is still underway. As Israel continues to iterate and improve its tank capabilities, it's only a matter of time before the use of real-time data and advanced helmet technology becomes the norm for the next generation of modern war vehicles.

Additionally, with the introduction of AR training **capabilities** for its new IronVision feature, the shift from training to the battlefield may not feel as drastic for new soldiers. Not only can this mean faster training periods before new recruits are battle-ready, but it could also lead to higher survivability, in line with Israel's longstanding position on protection-first promise for its soldiers.

Source: www.slashgear.com

Word bank:

Predecessors = a person who held a job or office before the current holder

Approachable = friendly and easy to talk to

Integrates = combine (one thing) with another to form a whole

Replenishing = to fill or build up again

Capabilities = the power or ability to do something

**Advanced English Language
Directed Writing:
Merkava Mark IV – An Article**

After visiting the 18th edition of DSA (DSA 2024) on 6–9 May 2024 at Malaysia International Trade and Exhibition Centre (MITEC) in Kuala Lumpur, your engineering professor asked you to write an article to compare the battle tank, Merkava Mark IV to an American M1 Abrams and the German Leopard 2 in terms of the vital qualities of the tank in the areas of:

(a) latest engineering technology

(b) design specifications

(c) performances

- firepower,

- mobility

- armor.



Merkava Mark IV – Firepower, Mobility and Armor

Model Answer

The Merkava was first conceived by an Israeli General Israel Tal following the titanic armored clashes of the Yom Kippur War. Tal wanted a tank that prioritized crew protection above all else. The Merkava I entered service in 1978, and saw its first major action in Operation Peace for Galilee in 1982, where it performed well in **engagements** with Syrian T-62 tanks. Nonetheless, several were lost in battle, and the subsequent Merkava II tank featured upgraded spaced armor. The 1990s saw the Merkava III with a critical upgrade to a 120 millimeter main gun, and finally the latest Merkava IV has a more powerful engine and has recently been fitted with a **sophisticated** active-protection system for use against anti-tank **missiles** and rockets.

The Merkava IV and the M1 are both armed with powerful 120 millimeter guns of comparable performance--they can easily dispatch most Soviet-era tanks at any combat range. The Merkava may lack some of the fancy depleted uranium shells available to M1 tanks. These would be optimized for defeating advanced reactive armor systems on modern Russian tanks—but Israel hasn't faced significant opposition from enemy tanks since the early 1980s, and doesn't have to worry about any sophisticated armored threats in its neighborhood.

The Merkava can fire anti-tank missiles from its main gun tube, while the M1 cannot. The Merkava's LAHAT top-attack missiles would be suitable for attacking vehicles or helicopters (in direct fire mode) at extremely long ranges where tank shells lack accuracy and hitting power. However, it must be noted that tank-launched missiles have seen little actual use in combat and are seen in the West as a somewhat niche capability. Both vehicles are also armed

with sophisticated sensors and fire control systems, as well as data-links to network with friendly armor.

The Merkava and M1 now both feature remotely-operated machine guns, helping protect the crew from exposure when fighting in urban environments. However, the Merkava uniquely among modern tanks is armed with a 60 millimeter light mortar that can be fired from within the turret. This allows a Merkava to drop anti-personnel shells on targets out of line of sight—for example, behind a wall or on the other side of a hill. It also affords the crew an additional means to engage the enemy without resorting to the overwhelming blasts of its main gun, an important consideration in counter-insurgency warfare.

The M1 is designed to engage in fast-paced armored warfare with tanks making decisive thrusts over long distances as occurred in Operations Desert Storm and Iraqi Freedom. By contrast, the Merkava is oriented to meet Israel's operational realities, including defensive warfare against foreign invasion and counter-insurgency operations in urban environments and mountainous terrain.

Accordingly, while the M1A2 is capable of tearing down the road at over 42 miles per hour, early models of the Merkava crept along in the low- to mid-30s.

However, the Merkava IV has an upgraded 1,500 horsepower diesel engine, allowing it to attain 40 miles per hour, largely closing the gap. The M1's turbine engine is also an infamously demanding beast, limiting the vehicle to an operational range of 265 miles compared to 310 for the Merkava IV. Lastly, Israel claims the suspension on the Merkava is optimized to deal with the rocky terrain of the Golan Heights.

The Merkava also has one additional feature unlike any other Western MBT; its ammunition compartment can be repurposed to carry a team of four infantrymen. This is intended more as emergency field expedient—say to evacuate the crew of knocked out tank or wounded personnel—rather than as a standard tactical procedure.

When the M1 was first produced in the 1980s, its Chobham composite armor represented a breakthrough in armor technology. The M1's frontal armor completely outmatched most early anti-tank missiles and proved impervious to the standard 125 millimeter armor piercing shells fired by Iraqi T-72 tanks in the 1991 Gulf War. (Russia has since introduced more powerful 125 millimeter shells that may be effective against the M1's armor at shorter distances.)

The original Merkava I did not benefit from composite armor technology. Instead, the Israeli design featured a heavily sloped turret that gave the Merkava its space-age sleekness. Sloped armor plate is effectively thicker against most incoming shells (depending on the angle of approach), and also poses a lower target profile. Later Merkava models *did* incorporate new armor technology, and the Merkava IV now has a modular composite armor package. Though formidable, the Merkava IV's armor is still thought to be a bit inferior to the depleted-uranium armor in the M1A2, which has benefitted to constant upgrades over the years. The Merkava IV would not necessarily come out on top in a clash against the world's top main battle tanks.

However, the Israeli military is far more concerned with the threat posed by advanced anti-tank missiles fired by insurgents. In the 2006 war in Lebanon, out of 50 Merkava IIs, IIIs and IVs struck by Hezbollah projectiles and IEDs, 21 were **penetrated** and six destroyed. Such missiles have also reaped a **fearsome** toll on Saudi Arabian M1 tanks in Yemen—though it should be noted those M1s have inferior armor compared to those in U.S. service.

Following the Lebanon conflict, the IDF introduced the Merkava IVM Windbreaker variant possessing a strong missile-defense capability in its Trophy Active Protection System, which can detect incoming missiles using a radar and attempts to shoot them down with a shotgun blast. The system also notifies the tanks crew of the location that the projectile came from, allowing them to fire back quickly.

Most promisingly, the Trophy has proven highly effective in combat, shooting down dozens of missiles and rockets, including at least one RPG-29 and the AT-14 Kornet. Not a single Merkava

tank was lost in combat operations in 2008 and 2014—despite the war in 2014 being a costly one for the Israeli Defense Forces.

The U.S. Army is interested adapting APS technology to its own vehicles, but has been taking its time deciding whether to purchase Trophy off the shelf or field the domestically developed Quick Kill APS. Until that happens, however, the M1 will remain more vulnerable to missiles than the Israeli tank.

The Merkava has a number of other unusual design elements designed to improve crew survivability. For example, the engine is mounted in front of the crew compartment so as to absorb some of the force of incoming shells. The rear hull also has a small exit hatch allowing the crew to bail out from the vehicle in relative safety, as well as facilitating the transport of friendly infantry or wounded personnel. Chains dangling iron balls hang from the rear turret in order to prematurely **detonate** rocket propelled grenades aimed at the vehicle's thinner rear armor.

There are also modifications to **accommodate** the basic human needs of the crew. For example, the Merkava boasts a top-notch air conditioning system befitting its Middle Eastern stomping ground. There is even has an optional toilet module to protect the crew from exposing themselves to hostile fire on very long missions. As **depicted** in the Israeli war film Lebanon, tank crews have sometimes been forced to remain in action for days on counterinsurgency operations.

Source: <https://nationalinterest.org>

Word bank:

Merkava IV = is a 65t tank with a 120mm gun, a new all-electric turret and a fire control system that can lock onto moving targets.

Engagements = an arrangement to meet or be present at a specified time and place

Sophisticated = highly complicated or developed

Missile = capable of being thrown or projected to strike a distant object

Fearsome = causing fear

Penetrated = to pass into or through

Detonate = to explode with sudden violence

Accommodate = to provide with something desired, needed, or suited

Depicted =

Advanced English Language
Directed Writing:
Climate and Nature Crisis – An Article

Over 200 health journals call on the United Nations, political leaders, and health professionals to recognise that climate change and biodiversity loss are one indivisible crisis and must be tackled together to preserve health and avoid catastrophe. This overall environmental crisis is now so severe as to be a global health emergency.

Using the notes below, write your article on the topic of **“Time to treat the climate and nature crisis as one indivisible global health emergency”**

- The climate crisis
 - The nature crisis
 - The impacts on health
 - A global health emergency
-

Model Answer

Over 200 health journals call on the United Nations, political leaders, and health professionals to recognise that climate change and biodiversity loss are one indivisible crisis and must be tackled together to preserve health and avoid catastrophe. This overall environmental crisis is now so severe as to be a global health emergency.

The world is currently responding to the climate crisis and the nature crisis as if they were separate challenges. This is a dangerous mistake. The 28th Conference of the Parties (COP) on climate change is about to be held in Dubai while the 16th COP on biodiversity is due to be held in Turkey in 2024. The research communities that provide the evidence for the two COPs are unfortunately largely separate, but they were brought together for a workshop in 2020 when they concluded that: “Only by considering climate and biodiversity as parts of the same complex problem...can solutions be developed that avoid maladaptation and maximise the beneficial outcomes.”

As the health world has recognised with the development of the concept of planetary health, the natural world is made up of one overall interdependent system. Damage to one subsystem can create feedback that damages another—for example, drought, wildfires, floods and the other effects of rising global temperatures destroy plant life, and lead to soil erosion and so inhibit carbon storage, which means more global warming. Climate change is set to overtake deforestation and other land-use change as the primary driver of nature loss.

Nature has a remarkable power to restore. For example, deforested land can revert to forest through natural regeneration, and marine phytoplankton, which act as natural carbon stores, turn over one billion tonnes of photosynthesising biomass every eight days. Indigenous land and sea management has a particularly important role to play in regeneration and continuing care.

Restoring one subsystem can help another—for example, replenishing soil could help remove greenhouse gases from the atmosphere on a vast scale. But actions that may benefit one subsystem can harm another—for example, planting forests with one type of tree can remove carbon dioxide from the air but can damage the biodiversity that is fundamental to healthy ecosystems.

Human health is damaged directly by both the climate crisis, as the journals have described in previous editorials⁹, and by the nature crisis. This indivisible planetary crisis will have major effects on health as a result of the disruption of social and economic systems—shortages of land, shelter, food, and water, exacerbating poverty, which in turn will lead to mass migration and conflict. Rising temperatures, extreme weather events, air pollution, and the spread of infectious diseases are some of the major health threats exacerbated by climate change. “Without nature, we have nothing,” was UN Secretary-General António Guterres’s blunt summary at the biodiversity COP in Montreal last year. Even if we could keep global warming below an increase of 1.5 °C over pre-industrial levels, we could still cause catastrophic harm to health by destroying nature.

Access to clean water is fundamental to human health, and yet pollution has damaged water quality, causing a rise in water-borne diseases. Contamination of water on land can also have far-reaching effects on distant ecosystems when that water runs off into the ocean. Good nutrition is underpinned by diversity in the variety of foods, but there has been a striking loss of genetic diversity in the food system. Globally, about a fifth of people rely on wild species for food and their livelihoods. Declines in wildlife are a major challenge for these populations, particularly in low- and middle-income countries. Fish provide more than half of dietary protein in many African, South Asian and small island nations, but ocean acidification has reduced the quality and quantity of seafood.

Changes in land use have forced tens of thousands of species into closer contact, increasing the exchange of pathogens and the emergence of new diseases and pandemics. People losing contact with the natural environment and the declining biodiversity have both been linked to increases in noncommunicable, autoimmune, and inflammatory diseases and metabolic, allergic and neuropsychiatric disorders. For Indigenous people, caring for and connecting with nature is especially important for their health. Nature has also been an important source of medicines, and thus reduced diversity also constrains the discovery of new medicines.

Communities are healthier if they have access to high-quality green spaces that help filter air pollution, reduce air and ground temperatures, and provide opportunities for physical activity. Connection with nature reduces stress, loneliness and depression while promoting social interaction. These benefits are threatened by the continuing rise in urbanisation.

Finally, the health impacts of climate change and biodiversity loss will be experienced unequally between and within countries, with the most vulnerable communities often bearing the highest burden. Linked to this, inequality is also arguably fuelling these environmental crises. Environmental challenges and social/health inequities are challenges that share drivers and there are potential co-benefits of addressing them.

In December 2022 the biodiversity COP agreed on the effective conservation and management of at least 30% percent of the world's land, coastal areas, and oceans by 2030. Industrialised countries agreed to mobilise \$30 billion per year to support developing nations to do so. These agreements echo promises made at climate COPs.

Yet many commitments made at COPs have not been met. This has allowed ecosystems to be pushed further to the brink, greatly increasing the risk of arriving at 'tipping points', abrupt breakdowns in the functioning of nature. If these events were to occur, the impacts on health would be globally catastrophic. This risk, combined with the severe impacts on health already occurring, means that the World Health Organisation should declare the indivisible climate and nature crisis as a global health emergency. The three pre-conditions for WHO to declare a situation to be a Public Health Emergency of International Concern are that it: (1) is serious, sudden, unusual or unexpected; (2) carries implications for public health beyond the affected State's national border; and (3) may require immediate international action. Climate change would appear to fulfil all of those conditions. While the accelerating climate change and loss of biodiversity are not sudden or unexpected, they are certainly serious and unusual. Hence we call for WHO to make this declaration before or at the Seventy-seventh World Health Assembly in May 2024. Tackling this emergency requires the COP processes to be harmonised. As a first step, the respective conventions must push for better integration of national climate plans with biodiversity equivalents. As the 2020 workshop that brought climate and nature scientists together concluded, "Critical leverage points include exploring alternative visions of good quality of life, rethinking consumption and waste, shifting values related to the human-nature relationship, reducing inequalities, and promoting education and learning." All of these would benefit health.

Health professionals must be powerful advocates for both restoring biodiversity and tackling climate change for the good of health. Political leaders must recognise both the severe threats to health from the planetary crisis as well as the benefits that can flow to health from tackling the crisis. But first, we must recognise this crisis for what it is: a global health emergency.

Source: www.nature.com/articles

Word bank:

Advocates = a person who publicly supports or recommends a particular cause or policy

Biodiversity = the variety of plant and animal life in the world or in a particular habitat, a high level of which is usually considered to be important and desirable.

Climate change = a change in global or regional climate patterns, in particular a change apparent from the mid to late 20th century onwards and attributed largely to the increased levels of atmospheric carbon dioxide produced by the use of fossil fuels.

Disruption = disturbance or problems which interrupt an event, activity, or process

Diversity = the state of being diverse; variety:

Health = the state of being free from illness or injury.

Pollution = is the introduction of harmful materials into the environment.

Professional = to describe work, people, and skills in different contexts and domains.

Advanced English Language

Directed Writing:

What Are the Pros and Cons of Digital Banking? – An Essay

As per Statista's recent predictions, engagement with online banking is expected to follow an upward trajectory from 2021 to 2024. 2020 witnessed a staggering 805 million active online banking users globally, projected to crest at approximately 1 billion by 2024. Reflecting on the monetary aspect, the digital banking market, valued at roughly \$47.4 billion in 2021, is forecasted to skyrocket to a colossal \$2.05 trillion by 2030.

A pioneer of this transformation, the banking and financial sectors began adopting digital strategies as far back as the 1990s. Traditional brick-and-mortar banks, recognizing the convenience and efficiency digital technology offered, swiftly transitioned to online platforms, a move that proved to be a resounding success and catalyzed other banks to follow suit.

However, while offering many advantages, online banking also has its share of drawbacks.

Write an essay on what exactly are the advantages and disadvantages that consumers experience in digital banking? And how has the advent of digital banking revolutionized the financial landscape?

Use the notes below to write your essay.

Pros of Digital Banking

- Adaptability
- 24/7 access to banking services
- Digital banking solutions for business
- Seamless online experience

Some Limitations of Digital Banking

- Internal restrictions
- Issues related to security breaches and identity theft
- Depositing cash could be a challenge
- Lack of human interaction

Impact of Digital Banking on Financial Inclusion

Model Answer:

Digital banking demonstrates the most significant transformations in the banking industry. Conventionally, many established banks and FIs were not proactive in embracing a comprehensive online banking product suite as the digital transformation took time and labor with risks of data loss. Because of the recent technological advancements in the financial sector, many financial establishments are adopting digital banking. Here are some of the significant benefits and risks of embracing digital banking in today's world:

Digital-only financial institutions and banks are more highly adaptable than conventional banks. These digital banks are startups letting them become more agile than major banks with thousands of employees. Consequently, these banks can incorporate features long before conventional banks start.

This is the most significant benefit of digital banking. You can get round-the-clock access to your bank account with a digital bank. You will never need to wait for long working hours to deposit your funds and obtain an account statement, transfer funds, and modify your account details. The best part is that you can access your bank anytime and anywhere.

While signing up for digital banking, you may conveniently regulate all your finances online. It's the right strategy for people who work for longer times and have to travel long distances to deposit cash in a bank branch.

Recent research by Statista shows that 73% of UK inhabitants actively use online banking. Most polled people said they prefer to regulate their cash using their smartphones.

Therefore, using digital banking to handle your money means you don't have to wait in long queues. You can access your accounts anytime and anywhere.

Bain and Company has conducted a survey showing that digital banking providers are better than brick-and-mortar banks in areas that highly matter to customers. It includes the simplicity, speed of transactions, and quality of banking experience.

A cultural revolution is necessary for both the financial industry and staff if banking needs to be entirely digitized. But it's great to know that banks have a distinct way of departmentalization, which significantly affects the technology level.

A computerized financial system will help certain divisions, forcing some departments to make workforce reductions. Training for staff members might also be necessary.

Smartphone apps and online banking platforms must be secure as banks install novel safety measures. Nevertheless, not every system is entirely safe, and hijacked accounts may result in security breaches and identity theft because of stolen login credentials.

Even though you use a smartphone or digital banking with utmost confidence, be wary of using insecure networks. Moreover, you must not change passwords too frequently and protect your login credentials.

Checks are simple to deposit from your phone with online banks, but money can be a little more challenging.

For instance, you might need to locate an ATM that accepts deposits. Alternatively, you might have to deposit into a regular bank account and then into your online account. You might alternatively use cash to purchase and instantly deposit a money order through the mobile app of your online bank.

Apart from the convenience of digital banking, the lack of human interaction is the biggest con. Despite giving consumers fast, round-the-clock access to their accounts, digital banking sometimes lacks the private touch of in-person contact with bank employees.

Customers sometimes require assistance to receive the help or guidance they need. Customers who are older and may not feel comfortable utilizing computers or mobile devices will notice this disadvantage more.

Wondering how digital banking has transformed the financial landscape? The banking or financial industries are facing technological modifications by introducing novel financial products provided digitally from both banking and non-banking sectors.

McKinsey reported that digital finance is "financial services provided via mobile phones, cards, and internet." Moreover, digital financial inclusion is the utilization of financial services by excluded and underserved members of the population.

The full impact and future possibilities of digital financial services are advances that won't be known until they've been put into practice. According to Hanning, the director of the Association for Financial Inclusion, "The widespread use of online finance will have an important effect not only on the accessibility of financial services but also comprehensive economic expansion."

Furthermore, online banking can give 1.6 billion people in emerging markets the opportunity to utilize financial services based on their research on seven nations: Brazil, The People's Republic of China, Ethiopia, Mexico, Nigeria, India, and Pakistan.

The widespread adoption of digital finance can potentially boost developing nations' GDPs by 6%, or \$3.7 trillion, by 2025—a growth comparable to Germany's economic growth.

The interaction between people and their funds and institutions has radically changed due to the advancement of technology in banking. It provides a variety of advantages, including ease, 24/7 possession of your money, automated payments, reduced expenses, excellent interest rates, and improved banking service.

It's nevertheless necessary to be mindful of its disadvantages, such as security risks, the potential for technological difficulties to lock you out of your account, and the propensity for spending the funds on items you hadn't planned for.

Most individuals will discover that the advantages exceed the disadvantages. However, remember to take the necessary precautions to protect your money to make the most of digital banking.

Source: www.rootquotient.com

Word bank:

Convenience = the state of being able to proceed with something without difficulty

Cultural revolution = was the upheaval launched by Mao Zedong during his last decade in power (1968 – 76) the upheaval launched by Mao Zedong during his last decade in power (1966–76)

Digital banking = is the online provision of banking products and services through digital channels

Emerging markets = are countries that are transitioning from the developing phase to the developed phase, with high growth and investment potential.