Promoting Military Management System in India and Its Future Prospects

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Abstract:

The Military Management system is a method that integrates data collecting as well as processing to improve a military unit's command and control. In terms of raw numbers of soldiers, the Army of India is among the third-largest military force in the world. In previous, the management system in the defense sector going worst and the Indian government is not able to provide sufficient things due to which the militaries of India are facing various challenges in the battlefields. This study is to promote the military management system in India as well as introduce enhanced technologies among the Indian military through which the military's get more powerful and capable during wars. There is no doubt that the Indian Army is in urgent need of modernization therefore, in order to reach this goal, the government as well as the military will have to rethink the whole situation and come up with constructive solutions to the myriad obstacles that stand in the way. The result show how the strength of Indian army has increased in comparison to past years, and this is due only to capable military management system. Providing enhanced technologies and a better management system to the armed forces will promote the abilities and skills of the Indian army in the future.

Keywords: Artificial Intelligence, Cyber Warfare, Military, Management System, Technological advancements.

Introduction

The Military Management System (MMS) is a way for improving a military department's command structure by integrating data collection and processing. The military of India is amongst the world's third-largest armed forces in terms of raw troop numbers (Krelina, 2021). This portrayal, on the other hand, ignores the reality that it lacks the firepower of one of the world's most powerful militaries. Its capacity to execute military activities successfully in multi-domain, technology-dominated battlefields in the future is in jeopardy (Schmid, 2018). The Indian Army is still fundamentally a force that was organized, equipped, as well as trained to fight prior battles (Chen, 2021). Having said that, it's not as if the Army can't successfully carry out its mission and responsibilities if given the necessary resources. As a result, it appears to be practically unavoidable that the Military is modernized as soon as possible if it is to meet future security concerns.

India must simultaneously build on its military capability in the modern setting as it climbs in stature, technologically as well as economically, towards a more prominent place in the region and the globe, to deflect the challenges and risks that it is expected to confront along the road from prospective enemies. However, given India's budgetary limits, developing military strength is difficult, especially while the government strives to satisfy the demands of economic growth in order to offer social protection as well as a higher worth of life for its population. The paucity of finances is exacerbated by bureaucratic waffling, risk aversion, the Army's frequent changes in quality criteria, and the occurrence of corruption allegations, which result in unforeseen blacklisting of suppliers (Acosta et al., 2013). As a consequence, not only is it essential to rapidly identify the military's future orientation, as well as the facilities it necessitates in its role as the Indian military's biggest and most powerful constituent, and it is also essential to find a way forward to demonstrate performance and efficiency in the procurement process while addressing issues that may pose a challenge to the force (Parven & Hasan, 2018).

India's rapid economic growth and greater access to military technologies, especially as a result of its reconciliation with the United States of America (US), has given rise to hopes of a military rebirth in the nation. Against this confidence about the expansion of Indian military strength, the fact is that, despite being one of the world's major importers of modern conventional weaponry for three decades, India has been unable to change its military-strategic position (Mushtaq, Yadav, & Kumar, 2020). People argue that India's civil-military interactions have been overly concentrated on one side of the situation, namely, ensuring civilian controls over the military forces, while ignoring the other, namely, building and fielding a competent armed power. Military modernization and reforms have been hampered by a lack of political direction, a lack of unity of purpose and effort, including material as well as intellectual corruption as a result of this imbalance in the civil-military relationships.

Through this study the author wants to identify the military management system in India as well as introduce enhanced technologies among the Indian military through which the military's get more powerful and capable during wars. The present study is characterized into several sections where the first of which is introduction and the second section is the reviews and suggestions of previous studies from various literatures. After that the discussion section are discussed where the author elaborates the performance growth of Indian militaries and the need of technologies in the defense sectors and lastly the conclusion of this study is declared where the author provide the final outcomes and suggestions of the present study.

Literature Review

H. G. Campbell discussed about the influences of military management in the International system. The authors examine the dynamics impacts to the militarization of US and Africa interrelation as well as their effects on transformation and security in Africa. The author wants to highlight the economic, social attempts as well as ideological which shapes the formulation and implementation of US policy regarding Africa's militarization. So according to author's research, the present global economic crisis, ongoing war preparations, and confrontation with China impact the mindset of a portion of the US foreign affairs elites who favors the militarization of US-Africa connections through African Command (AFRICOM). The findings reveal that Africans must prepare ahead of time to reject the militarism of international relations as well as war preparation; they should interpret safety in terms of their own humanity or enhance their capacity to preserve and protect their own internal security (Campbell, 2017).

J. Jackson et al. proposed that military experience is a crucial turning point Military service is a significant turning point inside a human's life as well as, as a result, is linked to significant life consequences. Researchers looked at whether personality factors played a role in this time by using a large longitudinal samples of German men. According to the authors personality qualities were shown to predict whether or not someone who will join the military in the future. This study military training has been linked to personality changes and authors concluded the results that Individual-level features may be influenced by military experiences for a long time (Jackson et al., 2012).

G. Cesnakas established that implications of technological advancements in military performance. Author claims that technology advancements alter warfare and encourages innovators to reconsider strategic, operational, and tactical decisions, raising new moral and legal concerns. The objective of their study is to declare how technological advancements improves militaries performance. According to their study technological advancements are significant for the defense of tiny nations, but the most important factor is the military and societal preparedness for total resistance with the goal of denying the invader victory. The findings suggest that small states must also think outside the box when it comes to defense, concentrating on non-conventional weapons, focusing on fighting without obvious command structure, investing in officers and troops personal talents, and preserving symbiotic relationships with technologically superior partners (Česnakas, 2019).

R. Mohril et al. discussed about maintenance management framework for military equipment's in his study. The authors proposed that Military equipment maintenance is critical to obtaining better levels of battle preparedness. According to the authors the sheer volume of military equipment and its dispersion around the globe makes upkeep a difficult undertaking and Decision-makers are constantly interested in understanding the most up-to-date state of equipment, developing effective maintenance programs, and accurately predicting mission reliability. Study suggest, military equipment maintenance data must be kept at a high level of granularity and precision, including information on every military equipment's lowest maintainable unit. In this research the authors aim was to develop a revolutionary block chain-based architecture for military maintenance management that is both comprehensive and future-proof and smart contracts are used in the proposed framework to make monitoring as well as validation more stringent and with less human interaction (Mohril et al., 2021).

The above reviews of the literatures shows the problems faced by the military's due to improper management in defence sector. In this study the author discussed the importance of proper management in defence sector. The government should provide the required things to the military's so they are able to work properly and do their best in the battlefield. The government must be surveillances and offer better management system for the military which promotes the skills of the armed forces.

Discussion

The speed at which the military modernizes and builds new capabilities due to innovative advances will influence the idea of warfare and the way military activities are led, including the fundamental function of militaries. Military execution would zero almost entirely on the pre-examinations and the humanitarian part of the war in the present. While there is a developing corpus of functional, fighting lab-style research pointing to observing the work of robots, data innovation, and Artificial Intelligence (AI), it is for the most part conservative.

Undoubtedly, the exam local area should benefit from being more active and important, focusing on research. From the northern border. Carrying out lawful or corrective deterrence against expected enemies, as required (Mathur, Ghai, & Singh, 2020; Sharma et al., 2019a).

1.1.1. Performance Development in Indian Military:

Although India is not a member of any conventional military alliances, it must retain its own military forces to maintain national sovereignty as well as protect its sovereignty and solidarity from any attacks. The Indian Army's principal mission is to protect the country's territorial integrity through deterrence or conflict. When requisitioned, the Army's secondary mission is to give aid to civil authorities. The Military should ensure multi-dimensional abilities to negotiate with external enemies from future threats, and also to be ready to facilitate in engaging with significantly elevated internal security risks, including such secessionist uprisings against the state or tragedy administration, in order to accomplish its mandatory roles. As a consequence, because the bulk of our imminent threats are traditional wars over disputed territory boundaries, as well as sub-conventional hurdles like insurgencies as well as cross-border terrorist acts, the Indian military has been arranged as a strength with the use of technology in defence, in which the Military has not only evolved conventional abilities to counter the threats along the Western and Northern Frontiers, but has also formed capacity to cope with the lesser 'sub-conventional from dangers (Sharma et al., 2019b). The Army's capability development is a continual process in which yearly budget requests, particularly for capital money, are made based on predicted demands for executing a fifteen year lengthy perspective plan. Furthermore, for many years, it has been the understanding that appropriate capital expenditures for modernization are not given, resulting in significant delays in obtaining new weapons and other war-fighting capacity in a timely way.

1.1.2. Need of Modernization for Indian Army:

The defense forces of the future would need to be technically sophisticated, with far more specialists on staff than generalists. It will required to be gradually furnished with modern armament as well as weapons technologies, assisted by technology-based processes and automation, to introduce the needs and problems of future battles. As a result, the Military will have to replace or modernize its out-of-date armament as well as technology inventories, and also endure a radical reorganization. Budgetary restrictions will, however, play a key role in planning and executing future plans, given that the Army's modernization programs are currently well behind schedule. As part of the ability growth program, the Army requires the following equipment and weapons as a necessity to replace or revitalize antique equipment's are shown in Figure 1:
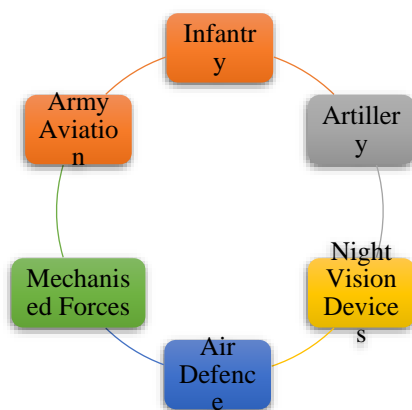

Figure 1: Illustrates the Various types of Facilities which must be Provides to the Military.

1.1.3. *Indian Military Modernization through Indigenization:*

A strong and very well-equipped army allows a nation to resist invasions and fight unjustifiable violence from abroad, as well as deal against domestic instability. It acts as a deterrence and symbolizes the country's military strength and capacity to protect itself against foreign adversaries. (Singh & Oberoi, 2019). It is consequently critical for any government to provide its military with cutting-edge technology and to modernize its existing arsenal of weapons and monitoring systems. India, too, has to establish a powerful military force that is equipped with all forms of technologically modern defense equipment in order to boost its security and intelligence capabilities, as well as to maintain its territorial integrity (Bhatta et al., 2019). Countries throughout the world that are dealing with internal security difficulties, have border conflicts with unfriendly neighbors, are facing a terror threat, or are in a war-like scenario are increasing their defense spending. Any country needs a strong and updated defense and security system to deal with any unexpected event. As a result, in addition to buying new defense items, special attention should be paid to ensuring which the armory systems that never becomes obsolete in a few years (Ratches, 2011).

Furthermore, such items should be able to be updated with minimal effort. Any country cannot ignore the need of modernization since it is the key to dealing with any sort of unforeseen hostility, whether internal or external (Mehrl & Thurner, 2020). In the present global scenario, maintaining India's regional autonomy has become critical. India has to demonstrate its existence as well as sovereignty over the border regions, and in order to do so, it requires modernized defense products as well as strategic autonomy over them. The development of a self-sufficient military sectors, that would assist the Indian economy overall, might help India achieve national sovereignty. Increased domestic defense manufacturing is urgently needed to satisfy the needs of the armed services while also reducing the load on the exchequer.

To satisfy the present requirements of contemporary warfare, India's defense goods need to be modernized. Creating a solid security foundation India has to modernize its surveillance network that would need the deployment of improved radars as well as aircraft as soon as possible to detect suspicious behavior as well as infringement at the borders. India must also recognize that, in times of crisis, it cannot always rely on emergency acquisitions of defense weapons, as seen by recent border battles with Chinese forces and escalating tensions along the northern frontiers. This has resulted in increased domestic and international weapon purchases, yet reliance on imports for emergency purchases contributes to exorbitant spending. Under the "Aatmanirbhar Bharat Abhiyan", attempting to make India an industrial center is a start in the right way. Encouraging investments in expansion and research as well as invention in the defense industry would help to improve the manufacture of defense products while also creating jobs.

In the defense industry, Aatmanirbhar Bharat would minimize reliance on imports, resulting in lower foreign exchange spending and a significant increase in operational preparedness. Domestic production will spur the development of several auxiliary businesses while also generating significant money through the sale of defense items to other countries. This will also assist to reduce the trade imbalance. The Defense Acquisition Procedure, Defense Acquisition Procedure- 2020 (DAP-2020), aims to bring the Aatmanirbhar Bharat Abhiyan into line and assist it by emphasizing on self-reliance, strengthening local manufacturing, and encouraging private sector participation.

Furthermore, governments are expressing interest in building and strengthening defense industry in their areas. For example, Karnataka has asked the Indian government to establish a Defense Technological Hub because it already has Defense Research & Development Organization (DRDO) facilities. Whereas if Indian government continues to modernize the Indian Armed Forces with 'Indigenization,' the Indian economy would undoubtedly benefit greatly. For this ideal to come true, the stakeholders involved in governance must work together and effectively implement the self-indigenization campaign. In comparison to previous today the Indian army becomes more powerful and their size will also increasing day by day. The below Figure 2 represents the growth in size of Indian military since 2015 to 2018. Due to providing better management system in Indian armed forces it will improve the security management of our nation.

The primary goal of the Indian Army is to maintain the nation's territorial integrity through deterrent or combat. The Army's secondary role when requisitioned is to assist civic authorities. In order to fulfil its mandatory roles, the army should make sure multi-dimensional abilities to negotiate with foreign threats from future attacks, as well as be ready to assist in engaging with significantly elevated internal security risks, such as secessionist mass protests against the state or disaster administration.
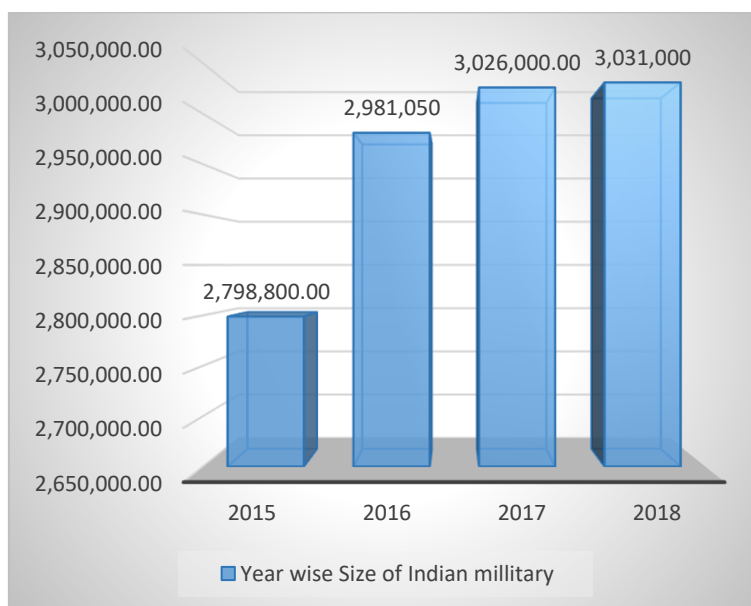

Figure 2: The above Graph Shows the Growth in Size of Indian Armed Force Since 2015 to 2018.

1.1.4. *Technological Advancements in Military:*

Introducing technological advancements in armed forces will provides much more enhanced performance to our nations. Quick advancements and intermingling in spaces like robots, data innovation, and man-made brainpower will keep on impacting future front lines. The human contender will feel the most interruption from these advancements at the strategic level, with expanded mental assignment to accomplish with the business and the utilization of inventive highlights. The methods of fighting and winning battles have become increasingly challenging throughout time. It has progressed from relying on your wits and survival abilities to winning a conflict through technological superiority. This necessitates the use of larger and more powerful weaponry. Aircraft that are more powerful sand faster. Technology has become a driving force in the military. To win conflicts, all military forces in the United States, as well

as foreign armed forces, rely on technology. Over time, technology has progressed to the point that conflict is now decided by who has the greatest technical advancements in their arsenal. The Cold War was one of the wars that made significant contributions to our history. The below Figure 3 demonstrates some technological advancements which are introducing to improve the Indian military effectiveness.
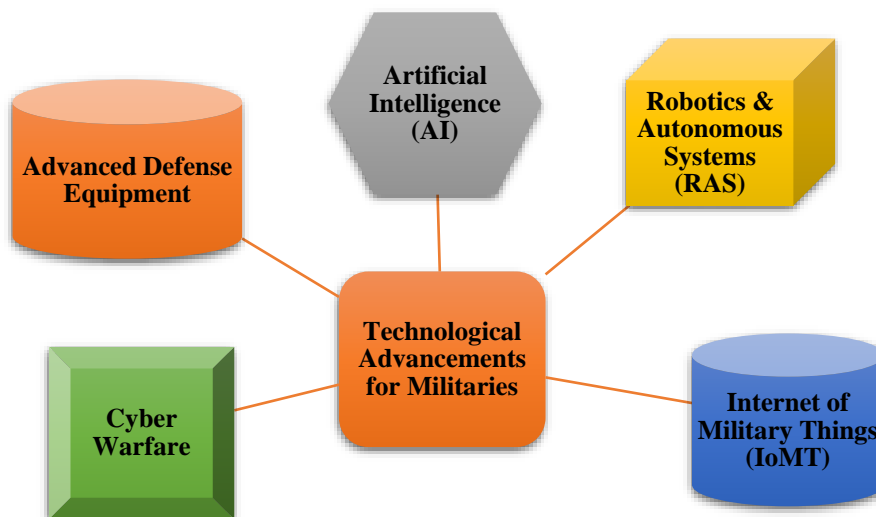

Figure 3: Representing Some Technological Advancements which must be introduced for Enhance the Effectiveness of Indian Armed Forces.

1.1.5. *Utilization of Artificial Intelligence (AI) in Military:*

The use of artificial intelligence (AI) in defense improves computational military intelligence for operations such as Intelligence, Surveillance and Reconnaissance (ISR) (Goswami & Goswami, 2020). The application of computer vision allows for the safe administration of equipment and the empowerment of autonomous weapon systems, resulting in fewer military deaths (Hatim, Siddiqui, & Kumar, 2020). Defense firms may test new military product iterations and allow predictive maintenance for military assets using digital twin technologies as well as machine learning (Rastogi et al., 2020). Startups are building self-organizing intelligent systems which collaborate to achieve a strategic goal thanks to the use of swarm computing.

1.1.6. *Advancements in Defense Equipment's:*

To confront rising threats, militaries are building increasingly complex and powerful defense technology. Hypersonic flight, directed energy weapons, and space militarization are all contributing in defence sector for enhance the military performance (Gill, 2021). In addition, the military sector is focusing on reaching net-zero emissions. It is engaging in battlefield electrification approaches, including testing hydrogen fuels and using electric propulsion in military aircraft. In addition, defense agencies are pushing biotechnology and nanotechnology research in order to develop self-healing armor as well as other technology.

1.1.7. *Using Robotics & Autonomous Systems (RAS):*

Protecting forces, boosting situational awareness, lowering soldiers' physical and cognitive stress, and enabling mobility in difficult terrains are just a few of the military's key goals. Armed forces can achieve these goals by integrating RAS technology and controlling

terrain, securing people, and consolidating gains. RAS is becoming increasingly vital in guaranteeing maneuverability and mission completion with the least amount of risk to personnel. Drones also improve situational awareness in the battlefield. Landmine clearing, search and rescue missions, explosive ordnance disposal, as well as logistics assistance are all made easier using multi-mission robots.

1.1.8. Implementation of Internet of Military Things (IoMT):

Aircrafts, connecting ships, soldiers, drones, tanks, as well as operational bases in a coherent network is one of the applications of IoT in defense. Perception, field knowledge, situational awareness, and response speed are all improved as a result of this. Information technology, AI, as well as 5G enable the seamless flow of data across all military services, bolstering the command and control system. Soldiers' sensing and computing devices, which are incorporated in their equipment and worn by them, acquire a range of static or dynamic biometric data in IoMT.

1.1.9. Introducing Cyber Warfare:

Cyber-attacks on military systems are common, and they can result in the loss of confidential military information as well as damage to military equipment. The severity and frequency of cyber-attacks have progressively grown during the last few years. Prescriptive security technology employs cyber security, artificial intelligence, and automation to detect and block possible attacks before they compromise defense cyber warfare capabilities. Large areas of study include integrated military weapons security, cyber protection for major organizations, and nuclear security. Military cyber warfare capabilities are also being developed, spanning from malware and ransom ware to phishing assaults.

1.1.10. Immersing Technologies:

Immersive technology make it simple to create immersive, repeating, and flexible experiences for flight or war training, for example. Virtual reality (VR) is being used by startups to create simulated training environments (STE). These experiences supplement traditional training as well as mission rehearsal, enhancing troop and unit preparedness. Aside from providing training chances, augmented reality (AR) helps on-the-ground personnel perform better in their tasks. Soldiers can use augmented reality headsets or wearable glasses to get mapping information's, movement markers, as well as other data. This allows ground forces to make better situational decisions in real time.

Conclusion

In this modern times Military effectiveness has decided to concentrate almost entirely on the human side of war combat in previous studies and current research. Now technology becomes the backbone of the defence sector and playing a significant role by providing sophisticated advancements to the military's. When it comes to prioritizing research, the research community could benefit greatly from becoming more aggressive and forward-thinking. The Indian Militaries, as the primary component of the defense, should be prepared to deal against asymmetrical, technological, as well as conventional challenges from outside enemies. India must simultaneously built on its army capability in the advanced setting as it climbs in stature, technologically as well as economically, towards a more prominent place in the region and the globe, to deflect the challenges and risks that it is expected to confront along the road from prospective enemies. Through the technological advancements the military become more aggressive and capable towards their goal as well as they becomes more reliable

by the utilization of modern technologies. The author suggest that Government should provide the better management system to the militaries of India which results the good security management for our nation. Providing enhanced technologies and better management system to the armed forces will promoting the abilities and skills of Indian army in future.

References

Acosta, M., Coronado, D., Marín, R., & Prats, P. (2013). Factors affecting the diffusion of patented military technology in the field of weapons and ammunition. Scientometrics, 94(1), 1-22. https://doi.org/10.1007/s11192-012-0857-8

Bhatta, D. P., Singla, S., Kaushal, M., & Sachar, A. (2019). Effect of retrofitting on beam-column joints. Int. J. Innov. Technol. Explor. Eng. https://doi.org/10.35940/ijitee.I1171.0789S19

Campbell, H. G. (2017). The United States and security in Africa: The impact of the military management of the international system. Africa Development, 42(3), 45-71. https://www.ajol.info/index.php/ad/article/view/167095

Česnakas, G. (2019). The implications of the technological trends in military on the defence of small states. Lithuanian Annual Strategic Review, 17, 273-293. https://doi.org/10.2478/lasr-2019-0012

Chen, Y. (2021). Application of Simulation Technology in Military Education. Journal of Contemporary Educational Research, 5(9), 121-123. https://doi.org/10.26689/jcer.v5i9.2569

Gill, J. (2021). Hybrid Classfication for Heart Disease Prediction using Artificial Intelligence. In 2021 5th International Conference on Computing Methodologies and Communication (ICCMC) (pp. 1779-1785). IEEE. https://doi.org/10.1109/ICCMC51019.2021.9418345

Goswami, G., & Goswami, P. K. (2020). Artificial Intelligence based PV-Fed Shunt Active Power Filter for IOT Applications. In 2020 9th International Conference System Modeling and Advancement in Research Trends (SMART) (pp. 163-168). IEEE. https://doi.org/10.1109/SMART50582.2020.9337063

Hatim, M., Siddiqui, F., & Kumar, R. (2020). Addressing Challenges and Demands of Intelligent Seasonal Rainfall Forecasting Using Artificial Intelligence Approach. In 2020 International Conference on Computation, Automation and Knowledge Management (ICCAKM) (pp. 263-267). IEEE. https://doi.org/10.1109/ICCAKM46823.2020.9051516

Jackson, J. J., Thoemmes, F., Jonkmann, K., Lüdtke, O., & Trautwein, U. (2012). Military training and personality trait development: Does the military make the man, or does the man make the military? Psychological science, 23(3), 270-277. https://doi.org/10.1177/0956797611423545

Krelina, M. (2021). Quantum technology for military applications. EPJ Quantum Technology, 8(1), 24. https://doi.org/10.1140/epjqt/s40507-021-00113-y

Mathur, G., Ghai, W., & Singh, R. (2020). A totalitarian technique for wormhole detection using big data analytics in iot network. Int J Sci Technol Res, 9(1), 1672-1678. http://www.ijstr.org/final-print/jan2020/A-Totalitarian-Technique-For-Wormhole-Detection-Using-Big-Data-Analytics-In-Iot-Network.pdf

Mehrl, M., & Thurner, P. W. (2020). Military technology and human loss in intrastate conflict: The conditional impact of arms imports. Journal of conflict resolution, 64(6), 1172-1196. https://doi.org/10.1177/0022002719893446

Mohril, R. S., Solanki, B. S., Lad, B. K., & Kulkarni, M. S. (2021). Blockchain Enabled Maintenance Management Framework for Military Equipment. IEEE Transactions on Engineering Management. https://doi.org/10.1109/TEM.2021.3099437

Mushtaq, Z., Yadav, V., & Kumar, A. (2020). Effect Of Carbon Fiber In Rigid Pavement Partially Replacing Cement With Marble Dust. INTERNATIONAL JOURNAL OF SCIENTIFIC & TECHNOLOGY RESEARCH, 9(02), 4325-4329. http://www.ijstr.org/final-print/feb2020/Effect-Of-Carbon-Fiber-In-Rigid-Pavement-Partially-Replacing-Cement-With-Marble-Dust.pdf

Parven, A., & Hasan, M. (2018). Trans-boundary water conflicts between Bangladesh and India: water governance practice for conflict resolution. International Journal of Agricultural Research, Innovation and Technology, 8(1), 79-84. https://doi.org/10.3329/ijarit.v8i1.38233

Rastogi, A., Singh, R., Sharma, R., & Kalony, S. D. (2020). The survey of digital image analysis with artificial intelligence-DCNN technique. In 2020 9th International Conference System Modeling and Advancement in Research Trends (SMART) (pp. 209-211). IEEE. https://doi.org/10.1109/SMART50582.2020.9337062

Ratches, J. A. (2011). Review of current aided/automatic target acquisition technology for military target acquisition tasks. Optical Engineering, 50(7), 072001. https://doi.org/10.1117/1.3601879

Schmid, J. (2018). The diffusion of military technology. Defence and Peace Economics, 29(6), 595-613. https://doi.org/10.1080/10242694.2017.1292203

Sharma, M., Singh, M., Walia, K., & Kaur, K. (2019a). A comprehensive study of performance parameters for MANET, VANET and FANET. In 2019 IEEE 10th Annual Information Technology, Electronics and Mobile Communication Conference (IEMCON) (pp. 0643-0646). IEEE. https://doi.org/10.1109/IEMCON.2019.8936159

Sharma, M., Singh, M., Walia, K., & Kaur, K. (2019b). Comprehensive Study of Routing Protocols in Adhoc Network: MANET. In 2019 IEEE 10th Annual Information Technology, Electronics and Mobile Communication Conference (IEMCON) (pp. 0792-0798). IEEE. https://doi.org/10.1109/IEMCON.2019.8936135

Singh, H., & Oberoi, A. (2019). An efficient Romanization of Gurmukhi Punjabi proper nouns for pattern matching. Int. J. Recent Technol. Eng, 8(3), 634-640. https://doi.org/10.35940/ijrte.B2467.098319