



Digital Leadership Practices In Global Military Forces: Insights For Governance And Technological Adaptation In Defense Organizations

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Abstract

This research examines digital leadership practices in global military forces and explores their implications for governance and technological adaptation in defense organizations. Focusing on the United States Military, the Chinese People's Liberation Army (PLA), and the Israeli Defense Forces (IDF), the study employs a comparative case study approach to analyze similarities, differences, and challenges in the adoption of digital leadership strategies.

Findings reveal that effective digital leadership enhances operational decision-making, strengthens the integration of advanced technologies, and supports improved control of information flows and resource utilization. However, challenges remain in balancing traditional leadership with emerging digital practices, integrating new technologies with legacy systems, and addressing ethical concerns. Based on these insights, the study provides lessons and recommendations for the Indian Army to enhance its digital leadership capacity while ensuring robust governance of technological transformation. These results contribute to the broader understanding of how digital leadership and governance frameworks can intersect in complex defense environments.

Keywords: Digital Leadership, Governance, Military Digital Transformation, Information Systems, US Military, PLA, IDF, Indian Army

INTRODUCTION

Leadership practices are highly essential in military operations as it allows ensuring the success of the mission, cohesion between unit, and in adapting dynamic environments (Ulmer Jr, 2010). Hence, Effective leadership practices help leaders to safeguard the lives and well-being of personnel in military forces. In the current digital world, military forces are also transforming and embracing digital technologies in their leadership approaches. Under digital leadership, military forces are adhering digital tools, data, and innovation which is assisting to improve decision-making process, operational efficiency and strategic outcomes. In the current scenario, advanced militaries around the global platform have been eyeing on the digitalization of their war machineries and processes (Vego, 2015). Post world wars, industrialization took a front seat and technological breakthroughs were more than often made in industrial world than in the military (Tigre, et al., 2023). Apropos, defense forces have been largely playing catch-up.

In regards to this, this research paper is focused towards critically analyzing the digital leadership practices use by global military forces while conducting comparative analysis of digital leadership practices of US, China and Israel military forces and lessons learnt from it. With the help of case study analysis of three defense forces, this paper focuses to recommend effective digital transformation strategies, leadership styles and organizational adaptations for Indian Army.

Research Aim and Objectives

This research aims to derive lessons for Indian Army's digital leadership strategy from the case study analysis of the US Military, Chinese People's Liberation Army (PLA) and Israeli Defense Forces (IDF).

The research objectives of this study are as follow:

- To identify the increasing role of digital leadership practices in the military forces
- To conduct comparative case study analysis of the US Military, Chinese People's Liberation Army (PLA) and Israeli Defense Forces (IDF)
- To derive lessons that can be utilized for the Indian Army's digital leadership strategy from the common themes, differences, challenges and lessons learned from the case study analysis

Research Questions

- What are the similarities, differences and challenges of the US Military, Chinese People's Liberation Army (PLA) and Israeli Defense Forces (IDF)
- What are the lessons learned from the case study analysis for the Indian Army's digital leadership strategy

LITERATURE REVIEW

Digital Transformation

Digital Transformation involves designing of organizational structure and culture while utilizing the ways that can be used to aligning the work with digital

technologies. Digital Transformation remains concerned with the organization as well as its culture (Kraus, et al., 2021). Digital transformation includes radical process to assist organization to strategically leverage digital technologies. It helps to align resources and capabilities at a strategic level which further supports to redefine its value proposition for stakeholders.

Digital Leadership

Digital leadership can be explained as the use of technology to assist an organization to adapt the digital world for achieving its goals (Sağbaşı and Erdoğan, 2022). Digital leadership involves digital tools, data, and strategies so that productivity, collaboration, and customer experience can be improved. In the contemporary world, digital leadership is gaining its importance with the rapidly shifting business landscape and ever-changing technology. To stay competitive in the current changing environment, there is a need of adhering digital leadership as it assists in revolutionizing innovation, navigating technological shifts, and inspiring transformative change in the contemporary digital age (Vego, 2015).

Digital capabilities are essential in the current modern military operations as it allows enhancing the chances of accomplishment of the mission successfully. In the views of Rofiq, et al. (2023), the Industrial Revolution 4.0 and Society 5.0 have brought significant digital transformation. These phenomena have also increased focus towards collaborating with cyber technology and automation technology. Under the advent of these technologies, demand of evolving adaptation to changing environment is increasing.

Digital Leadership Practices in The Military Forces

According to Ulmer Jr (2010), some of the most strong, flexible, and successful leaders are found in the military at the global platform. The principles that are used by military leaders are focused towards clear and concise communication. Focus towards this perspective help to articulate expectations and objectives adequately. It also supports to provide constructive feedback which is highly essential for building understanding and cohesion among the team. Tigre, et al. (2023) explained that in military operations, teamwork helps in encouraging collaboration which further allows accomplishing goals while emphasizing on shared goals, and value the contributions of each team member. Vego (2015) pointed that technological leadership helps armed force to enhance the chances of achieving victory in war while maintaining efficient operational readiness and decreasing costs. Due to this reason, different countries are giving concern towards enhancing the embracement of digital technologies in armed forces under their national strategies.

Iyer (2023) determined that in regards to the US Military and PLA, it is identified that these armies are showcasing significant progress in their digital transformation strategies. Both these countries have given significant concentration on the strategic plans for emerging and

disruptive technologies, especially, in regards to Data and Artificial Intelligence NATO's new strategic concept also adheres digital transformation under Madrid Summit, 2022 (NATO, 2022).

For military forces, it is necessary to give concern towards results, innovation and continuous improvement (Morgan and Papadonikolaki, 2021). Focus towards digital leadership practices help businesses to increase productivity. Moreover, in military organization, it is essential for the leaders to play the role of leading change. Ganz, et al. (2022) pointed that it is necessary to understand that the organizational culture of military organizations is significantly different from organizations in general. The culture of military organizations is strong culture and static in long term. Moreover, the strategies used by the military organizations are majorly considered as the principle of unity of command which represents different characteristics from non-military organizations. Due to this reason, the role of military digital leadership is highly influential for the occurs in military organizations. Digital transformation allows enhancing the existence of digital-based data management which supports in quick, easy and efficient decision making in military organizations (Ganz, et al., 2022).

Gans and Rogers (2021) explained that the market of military robots is showcasing continuous growth and it reached to approx. 20.5 billion US\$ in 2023 which is expected to grow at compound annual growth rate of 11% and interpreted to reach 42.6 billion US\$ by 2030. This advancement is fueling up with the advancements in artificial intelligence (AI) and increased demand for unmanned systems as it has the potential to deal with high-risk tasks effectively while decreasing the chances of human casualties on the battlefield (Sanaullah, et al., 2022).

Challenges Associated with the Implementation of Digital Leadership Practices in Military Forces

Wrzosek (2022) stated that to lead modernization through digital leadership, there is a requirement of applying multipronged approach which initiates with conceiving the idea and lead towards implementing the innovation to. Moving towards these steps further has to tide over issues such as economics, HR management, obsolescence as well as timely implementation. Leaders capable of digital leadership in the military are the corner stone of implementation & change management. Thus, it is prudent to analyse the global best practices before drawing implementable solutions for the Indian Armed Forces.

In the views of Quach, et al. (2022), digital technology creates challenges related to data security and privacy threats. Additionally, shortage of skilled human resources also create barrier in adhering advanced technology. At present, the use of technology and information carried out by the Indian military forces is not optimal as the level of digital maturity is increasing on a regular basis.

RESEARCH METHODOLOGY

This research has utilized **interpretivism research philosophy** as it remains relevant to execute the study in a subjective manner and allows viewing reality in a socially constructed manner (Panneerselvam, 2014). It has supported to emphasize on human experiences and interpretations with the help of qualitative methods. Moreover, **inductive research approach** is used as it has supported to lead the study from specific observations to generalizations and has allowed creating new or theory (Bhattacharyya, 2006).

To conduct this study, **secondary data collection method** is used. The reason behind this selection is that there is already huge amount of data online available regarding the digital leadership practices of US Military, PLA and IDF (Rajasekar and Verma, 2013). Moreover, secondary data collection method involves low cost and requires less time. Additionally, **comparative data analysis method** is used to compare the digital leadership practices of selected global military forces. For this purpose, different published articles available on internet and official publications of US Military, PLA and IDF are selected for data collection. There is special concern given towards selecting the sources that are published recently (2005 - till date) as it helped to collect the data related to recent adaption of digital leadership in these three defence forces and its impact on their success. The interpretation produced from case study analysis is further co-related with literature review finding to increase the reliability of the study.

While conducting this research, there is special concern given towards ethical aspect. It is focused to select only

relevant data sources and to conduct proper referencing and in-text citations. Moreover, plagiarism, copyright and patent related issues are also eliminated so that research paper can be submitted without any hinderance.

CASE STUDY ANALYSIS

United States Military

The United States Military is well-known for its technological expertise and leading innovation. Due to this reason, in military digital leadership, this force is considered as a global leader (Bach and Sulíková, 2021). This military force shows digital initiatives and remains focused towards increasing its operational capabilities. (Bach and Sulíková (2021) explained that US Military leaders utilize range of digital tools and it is assisting it to achieve superior outcomes, creating real-time situational awareness, leading data-driven decision-making, etc.

Networks-Centric Warfare: Enhancing Connectivity

According to Robb (2014), the digital initiatives of US Military is based on network-centric warfare (NCW) which gives concern to interconnectedness between different units, platforms and systems as it allows creating seamless communication platform to achieve enhanced situational awareness and precision in operations. By integrating sensors, communication systems and data-sharing platforms, the US Military Leaders ensures that information flows rapidly across the battlefield, enabling commanders to make informed decisions in real-time (Robb, 2014). Use of NCW supports US military forces to integrate their capabilities comprehensively while leading the operations according to the NCW principles.



Figure 1: Multi-Domain Operations
(Source: Tunncliffe, 2022)

US military has increased focus towards monitoring transnational ballistic missile, rocket and satellite launches in future. Such innovation has the potential to change warfighting (Tunncliffe, 2022). Distributed, multidomain and joint all domain operations will help to

overcome an adversary and to strengthen operational and tactical dilemmas through calibrated force posture (Tunncliffe, 2022). On the other hand, Walker (2022) argued that US military faces the challenge in integrating new digital technologies with legacy systems which create

barrier in leading digital leadership effectively. To deal with this issue, there is a need of utilizing strategic approach to lead modernization as well as interoperability.

From the above data, it can be construed that in the current digital world, it is essential for the army to have network-centric approach as it can be a 'game changer' during facing enemy who does not possess similar capability. Simultaneously, it is also essential to develop effective legacy systems with the help of strategic approach. Above data has shown resemblance with Rofiq, et al. (2023) that demand of advanced technologies has increased the adaptation of evolving technologies at fast pace.

Command and Control Systems: Unifying Decision-Making

US military uses integrated data systems from diverse sources which includes satellites, reconnaissance aircraft and ground sensors (Boss and Gralla, 2023). All these

aspects provide a comprehensive operational picture. With the help of unified view, commanders become able to monitor troop movements, track enemy forces, and allocate resources effectively (Wirtz and Larsen, 2022). Such command and control (C2) systems facilitate dynamic decision-making, allowing leaders to adjust tactics swiftly in response to evolving scenarios. Leaders within the US Army harness digital capabilities to analyze vast amounts of data and extract actionable insights ensuring that decisions are informed and well-founded. US military forces use GPS jammers that assist them to block GPS signals which helps them to eliminate the chances of GPS navigation and precision guidance capabilities while leading operations within extensive area (Joint Chiefs of Staff, n.a.). GPS jammers technology has the potential to give calamitous effects and give immense war fighting capability to US against the global armed forces that use the GPS system.

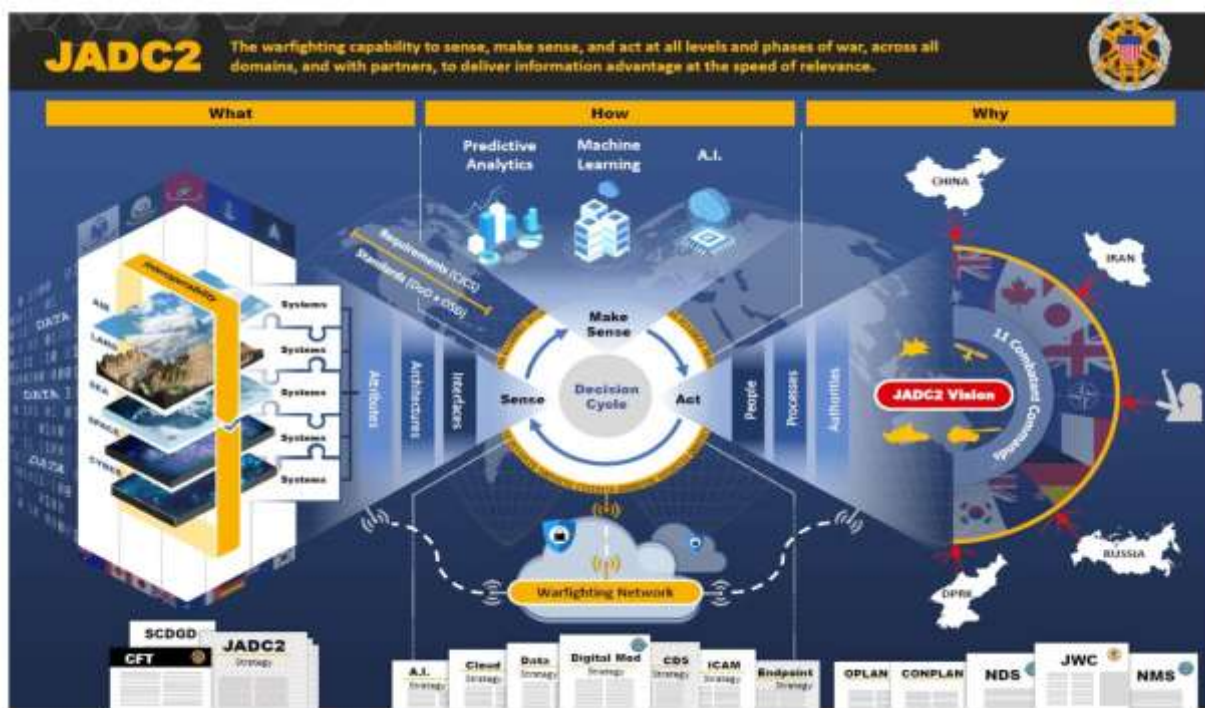


Figure 2: Command and Control Works of US Military
(Source: Demarest, 2022)

Above discussion helps to interpret that use of effective command and control (C2) systems and unified view is assisting US military to improve its digital leadership. Research finding of Bach and Sulíková (2021) has also supported to analyze that digital transformation involves radical process that helps organization to leverage digital technologies strategically.

Cyber Security and Information Warfare: Protecting the Digital Domain

Top team of US Military that is focused towards the data is ARCYBER (US Army Cyber Command) and it supports Army as well as Joint Force leaders to make effective decisions and to gain advantage from information to deal with challenging situations effectively

(US Army Cyber Command, n.a.). Digital leadership within the US Military involves not only utilizing technology but also protecting it from vulnerabilities that could be exploited by hostile actors (US Army Cyber Command, n.a.). Leaders prioritize safeguarding digital infrastructure against cyber threats, recognizing that maintaining operational resilience is crucial. They implement robust cyber security protocols to protect communication networks, data repositories, and command systems, ensuring that adversaries are unable to disrupt or compromise critical operations (US Army Cyber Command, n.a.). On the other hand, King, et al. (2025) pointed that the Department of Defense (DOD) are not trained military engineers which creates barrier

for them to collaborate with network defenders and create insecurity against cyber threats. The US military struggles in invigorating its digital infrastructure against cyber-attacks which create issue of improper safeguarding sensitive information from rampant utilization of cyber domain.

From the above discussion, it can be interpreted that with the evolving military landscape, threats related to cyber security is also increasing. To deal with this challenge, it is essential for the military forces to come up with effective initiatives that can assist to develop defensive as well as offensive cyber capabilities. US military requires increasing focus towards this aspect as it is essential to ensure the resilience of communication networks and countering attempts of adversaries to disrupt operations through information warfare. Above analysis has shown similarity with the views of Rofiq, et al. (2023) that the Industrial Revolution 4.0 and Society 5.0 have played significant role in leading digital transformation and has increased collaboration with cyber technology and automation technology.

Unmanned Systems and Robotics: Changing the Battlefield Dynamics

Technological integration extends to the deployment of unmanned systems and robotics, transforming the way the US Military conducts operations. Unmanned Aerial Vehicles (UAVs), Unmanned Ground Vehicles (UGVs) and autonomous platforms play pivotal roles in reconnaissance, surveillance and even combat (Takki, 2024). Digital leadership is evident in the development and implementation of these technologies, as commanders adapt their strategies to incorporate unmanned systems effectively and maximize their impact on the battlefield.

Above analysis allows construing that US Military is showcasing regular advancement in robotics technology. Above finding has shown similarity with the views of Gans and Rogers (2021) that there is significant increase taking place in the military robot market (20.5 billion US\$ in 2023) and it is expected to grow by 42.6 billion US\$ by 2030.

Training and Simulation: Preparing for Complex Scenarios

Leaders within the US Military embrace virtual training and simulation technologies to enhance soldier skill development (Army University Press, 2020). With the help of these technologies, soldiers get the capability to practice decision-making, tactical maneuvers and scenario responses in realistic virtual environments. US Military leaders advocate virtual training which allows ensuring that soldiers are better prepared to face complex and dynamic challenges on the actual battlefield. In the contrary, Errida and Lotfi (2021) argued that to lead transition from traditional warfare models to digital operations, it is essential to adapt effective change management model (Kotter's eight step change management model, Lewin's three step change management model, etc.). Focus towards this perspective will help to instill a mindset of embracing technology while also preserving core military values and practices.

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From this, it can be interpreted that high focus towards virtual training and simulation technologies is assisting US Military force to accept advance technology in its operations effectively. However, simultaneously, there is a need of adhering effective change management model too.

Data Analytics and Predictive Modeling: Data-Driven Decision-Making

Leaders within the US Army harness digital capabilities to analyze vast amounts of data and extract actionable insights ensuring that decisions are informed and well founded. Data analytics and predictive modeling are integral components of the US Military's digital initiatives (DeJesus, 2025). By analyzing vast amounts of data, military leaders can identify patterns, anticipate threats and make informed predictions (DeJesus, 2025). This data-driven approach empowers commanders to proactively address challenges, allocate resources efficiently and mitigate risks, ultimately leading to more successful outcomes in military operations.

From above discussion, it can be interpreted that Data analytics and predictive modeling are assisting US military to address challenges in proactive manner. Findings of Sanaullah, et al. (2022) also supported to discuss that AI is playing vital role in fueling up the demand of unmanned systems as it decreases the probabilities of human casualties on the battlefield.

Israeli Defense Forces (IDF)

The Israel Defense Forces (IDF) has the history of leading operations in resource-constrained environments. The IDF is also focused towards innovation as well as adaptability and these aspects are assisting it to lead seamless integration of digital technologies across various domains (Kaushal, et al., 2023).

Innovation as a Cornerstone

The digital initiatives of IDF are based upon the foundation of innovation and adaptability. This military is well-aware that technological advancement is essential for maintaining a strategic edge and enhancing operational effectiveness. The IDF's commitment to innovation has led to the development of cutting-edge solutions that address the challenges of modern warfare. Today the IDF is a global leader in innovation in Military Technology (The Economist, 2023). The ongoing war Ukraine has increased the exports of military technology and other advanced defense solutions from many countries (including NATO members). It is assisting IDF to increase capitalization from military equipment and expertise (The Economist, 2023). It has recorded \$13.1 Billion of exports in 2023 until now and is a major exporter of weapons to US, Europe as well as India (Reuters, 2024). Approx. 36% exports have taken place from missile, rocket and air defence systems, 11% from weapon stations and 11% from launchers and around 9% from crewed aircraft and avionics (Reuters, 2024). The major defence innovations are Iron Dome, Trophy Tank Protection System, F16I Sufa aircraft system, Merkava IV Tanks, Skylark I-LE UAV, Eyeball surveillance system,

Namer Infantry Fighting Vehicle, Spike Rocket Launcher etc. (IDF, 2022).

The military values its historical combat experience while embracing modern technology. Leaders navigate the integration of digital tools without compromising the core principles of effective military leadership, maintaining the agility to adapt tactics while leveraging technology's advantages (IDF, 2022). However, it is also necessary to understand that resource-constrained environment is creating challenge of fund and implementation of digital initiatives for IDF.

From the above discussion, it can be construed that increasing focus towards innovation is assisting IDF to enhance its exports of military technology and assisting to increase revenue generation. Moreover, it is the strength of IDF that it is focused towards maintaining balance between traditional as well as modern digital leadership technology. Moreover, an important aspect of the IDF's digital initiatives is the balance between tradition and

innovation. However, to deal with the challenge of resource-constrained environment, there is also a need of providing proper fund and encouragement to digital initiatives for IDF. Morgan and Papadonikolaki (2021) also described that innovation and continuous improvement help military forces to increase productivity.

Technological Integration for Intelligence Advantage

The IDF places a significant emphasis on intelligence gathering through technological integration, such as - advanced sensors, surveillance platforms, data analysis, etc. enhance situational awareness and intelligence collection (The Economist, 2023). With tactical utilization of unmanned systems, leaders within the IDF capitalize on satellite imagery, drones UAVs and robotic vehicles digital leadership capabilities of this armed force is increased which is assisting it to amplify their situational awareness and extend operational reach.

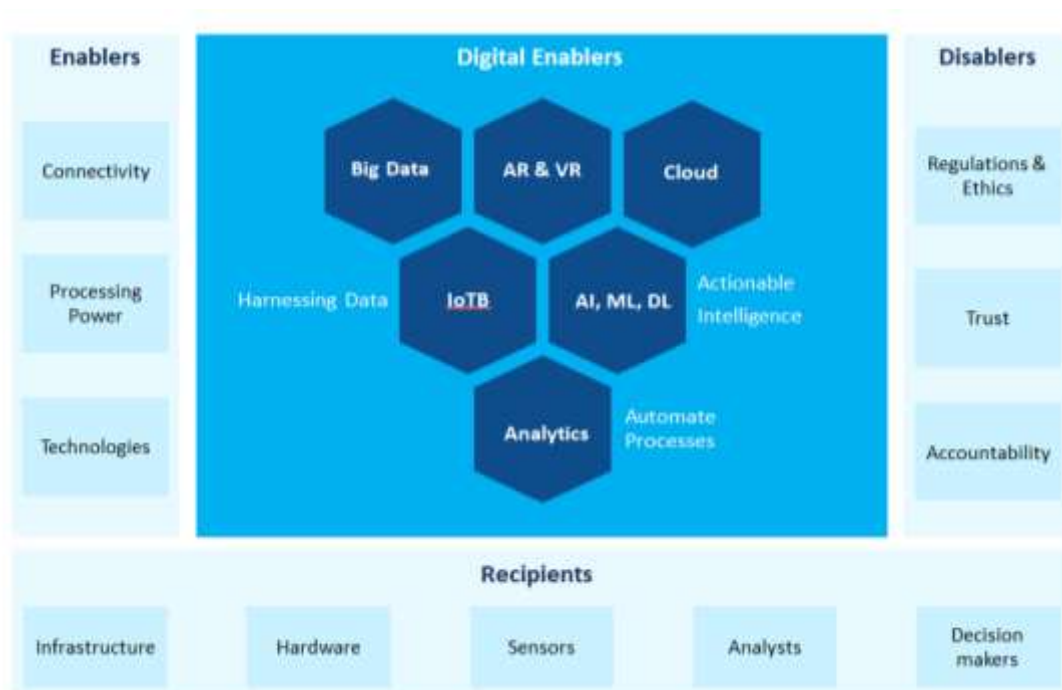


Figure 3: AI-Enhanced Military Intelligence Warfare Tactics

(Source: Kalo, 2021)

Digital initiatives within the IDF enable leaders to practice adaptive leadership, where commanders can swiftly adjust strategies and tactics based on real-time information (Israel Press Release, 2024). IDF utilizes advanced data technologies which assist to strengthen intelligence operations while leading precise and lawful military actions. It utilizes 'Habsora' and 'Lavender' tools which enable the analysts to organize and cross-reference massive intelligence sources. It also supports in improving speed and accuracy of target analysis without replacing human decision-making as analysts require to validate all suggestions under strict protocols so that they can be aligned with international law (Israel Press Release, 2024). IDF's intelligence technology uses multi-stage targeting process which includes legal, operational, and

humanitarian considerations which supports to responsibly integrating modern tools.

From the above data, it can be construed that the technological integration of IDF is assisting to decrease errors while minimizing civilian harm and countering complex non-state threats. The integration of communication systems, unmanned systems, and data analytics allows for rapid decision-making, responding effectively to evolving threats and opportunities. Above finding has shown similarity with the views of Vego (2015) that technological leadership remains highly supportive for military forces to increase the chances of victory in war while developing appropriate operational readiness and reducing the costs.

Cyber Security and Hybrid Warfare

IDF utilizes robust approach for cyber security and hybrid warfare which is assisting this military force to deal with the threat of cyber-attacks and enables to protect its networks and systems (Barak, et al., 2023). IDF's military force is also focused towards conducting offensive cyber operations to interrupt and degrade enemy capabilities. IDF uses cyber, electronic, and kinetic capabilities to create multi-domain effects environment that increases enemy vulnerabilities and protects Israeli interests. This hybrid warfare approach enables IDF to identify wide range of threats and allows dealing with conventional military operations to cyber-attacks and disinformation campaigns (Zhou, 2024). Recognizing the evolving nature of conflict, the IDF focuses on cyber security and hybrid warfare capabilities. The military's leadership prioritizes protecting its digital infrastructure and thwarting cyber threats that could disrupt operations (Tabansky, 2020). Digital leadership involves not only embracing technology but also securing it against potential vulnerabilities and attacks. In the contrary, Vuković, et al. (2016) argued that incorporation of advanced technologies is raising ethical considerations especially in regards to human control and accountability. Moreover, hybrid warfare tactics create difficulty to assess the legitimacy and proportionality of military actions.

Above data helps to construe that adoption of comprehensive cyber security and hybrid warfare strategy helps IDF to defend its digital infrastructure and counter evolving threats. However, there is challenge associated with hybrid warfare too. Quach, et al. (2022) also stated that military organizations face the issue of data security and privacy threats and requires effective cyber security.

Unifying Command and Control Systems and Interdisciplinary Collaboration

IDF utilizes unifying command and control systems as it assists this military to remain protected with multi-layered defense array (Arrow-2, Arrow-3, Iron Dome, etc.) against different threats (Ministry of Defense, 2018). Within the IDF, leadership strategies emphasize upon interdisciplinary collaboration. Military leaders engage experts from diverse fields, including technology and academia, to develop holistic solutions. This approach ensures that digital capabilities are effectively integrated into operations, leveraging a range of perspectives to optimize outcomes (Kaushal, et al., 2023). Its interdisciplinary collaboration supports improving its efficiencies that supports it to provide solution which are prerequisite for leading operation in a manner that future environment challenges can be combat.

From the above data, it can be construed that the IDF emphasizes on interdisciplinary collaboration while uniting military, technological, and academic expertise which is assisting it to improve operational efficiency, integrate digital capabilities, and to develop innovative solutions so that future security challenges can also be addressed effectively. Above finding has shown consensus with the views of Vego (2015) that adhering digital leadership allows creating revolutionizing innovation

while navigating technological shifts, and inspiring transformative change in the modern digital era.

Strategic Focus on Training and Simulation

The IDF's digital initiatives extend to training and skill development. The military embraces virtual training environments and simulations, enabling soldiers to practice decision-making, tactical maneuvers and response strategies (Fabian, 2023). IDF uses virtual reality (VR) in its remote training program which is assisting to eliminate the need of special training center and remaining quite helpful for the soldiers who are in faraway places (Ortmor Agency, 2025). IDF has also started using VR in tank training programs which helps tank crews to practice in the situation of realistic simulations which supports them to improve their war skills (Ortmor Agency, 2025).

Above data helps to construe that IDF uses digital tools like virtual reality for training which is assisting soldiers to practice tactics remotely and also to improve decision-making and war skills while decreasing the need for training centers.

Chinese People's Liberation Army (PLA)

The Chinese People's Liberation Army (PLA) was found in August 1, 1927 and it is one of the largest military forces at global platform (Wortzel, 2008). PLA is the military of both the Chinese Communist Party as well as the People's Republic of China while including four services - navy, air force, ground force, and rocket force. it includes four arms, they are: aerospace, cyberspace, information support, and joint logistics support (Scobell and Stephenson, 2023).

PLA has embarked on a transformative journey, leveraging digital capabilities to enhance its military operations and achieve strategic objectives. Underlying this progress is a series of leadership strategies that focus on harnessing technology, centralized command, and innovation (Wortzel, 2008). The PLA's strategic focus on harnessing technology and digital integration has elevated its capabilities in command, control, communication and decision-making. This overview delves into the digital initiatives and technological integration within the Chinese military, highlighting key areas of emphasis and the impact of these initiatives on modern military leadership. *For instance*, in 2016, China aimed to come up with significant progress in "Informatization" under the document "China's National Defence in the New Era" and by 2020, it achieved its goal through leading digital transformation and also has a goal to implement the "Intelligentisation" concept by 2035 (Bommakanti and Singh, 2024).

Network-Centric Warfare Command and Technological Leapfrogging

PLA is highly focused towards centralization and streamlining the command and control so that better posture can be created for the armed forces to achieve success during warfare and to conduct integrated joint operations (Scobell and Stephenson, 2023). At present, PLA is going through significant modernization and centralized command assisting to lead change through

improving its command-and-control systems which is assisting to develop faster and more efficient decision-making (Alsaied, 2023). Moreover, focus towards technological leapfrogging is assisting PLA to rapidly acquire and integrate advanced technologies (AI,

cybersecurity, hypersonic missiles, etc.) so that the gap with more advanced militaries can be reduced and PLA can project power beyond its borders (Barak, et al., 2023).

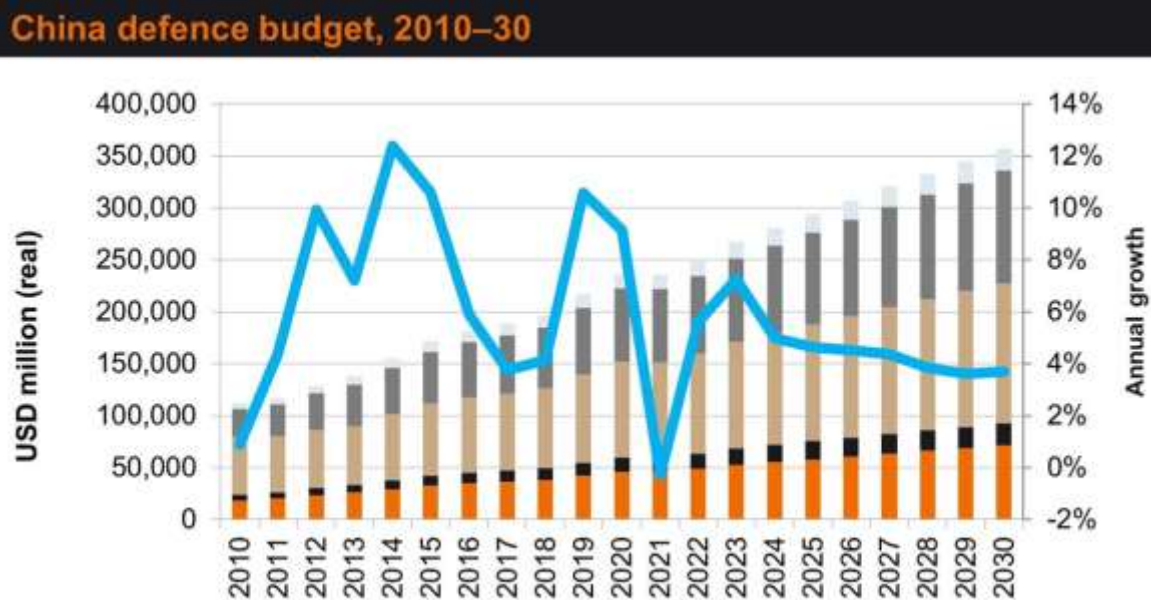


Figure 4: PLA Modernisation Budget, 2010 - 2030
(Source: Grevatt, 2024)

Above graph represents that there is significant amount of investment increased in modernization of PLA from 2010 to 2025 and expected to remain stable till 2030 (Grevatt, 2024). The Chinese military leader's digital initiatives are characterized by a network centric command structure and a strategy of technological leapfrogging. By aggregating data from various sources such as satellites, reconnaissance systems and sensors, commanders obtain real-time situational awareness. This strategy of network centric warfare empowers leaders to make informed decisions and coordinate operations more efficiently, ensuring a coherent response to dynamic situations. In the contrary, it is also identified that PLA has the traditional bureaucratic and hierarchical structure which create hurdle in the adherence of advanced technologies (Bresnik, 2024).

From the above discussion, it can be construed that the approach of centralized command and technological leapfrogging enables China to bypass certain stages of technological development, allowing it to emerge as a significant player in global military affairs. However, it is also necessary for PLA to deal with traditional bureaucratic and hierarchical structure so that the barrier in global defense landscape can be removed. This interpretation has shown resemblance with the opinions of Iyer (2023) that PLA is showcasing significant progress in its digital transformation strategies and shows significant concentration to the strategic plans for emerging and disruptive technologies.

Artificial Intelligence (AI) for Tactical Analysis & Intelligent Command System

PLA utilizes cutting-edge AI system which is designed to increase tactical analysis and command decision-making capabilities (Masaaki, 2022). It is also supporting in encouraging modernization and increasing competitiveness of military force. It utilizes advanced data analytics, real-time data processing and machine learning algorithms which supports PLA commanders to take more informed and data-driven decisions during the war and supports in improving overall military effectiveness as well as strategic situational awareness (Masaaki, 2022). Chinese military leaders capitalize on the power of artificial intelligence for tactical analysis. China's military has invested heavily in the integration of AI and big data analytics. AI-powered algorithms analyze vast amounts of data, enabling the PLA to predict adversary behavior, optimize resource allocation and enhance strategic planning. Big data integration supports informed decision-making by providing commanders with insights derived from historical data, patterns, and trends. **Intelligent Command Systems** is an example central to the PLA's digital initiatives. These systems integrate data from various sources, such as satellites, reconnaissance assets and sensor networks, to provide commanders with a comprehensive and real-time view of the operational environment.

Above finding has shown similarity with the views of Ganz, et al. (2022) that military organizations majorly utilize principle of unity of command which supports

military organizations require to successfully lead digital leadership in the current digital world.

Digital Reconnaissance and Cyber Operations

Research finding of Fritz (2017) has supported to analyze that PLA utilizes state-sponsored as well as "patriotic hacker" groups for cyber spying, influencing operations, and to deal with disruptive cyberattacks. Leaders utilize unmanned aerial vehicles (UAVs) and cyber tools to gather critical intelligence and disrupt adversary communication networks. This strategic approach enhances the PLA's intelligence advantage and extends its reach into new domains of warfare. They have made significant strides in the development and deployment of unmanned systems, including drones and robotic vehicles (Rugina, 2023). These platforms augment reconnaissance, surveillance and combat capabilities. China has a well-developed cyber warfare capability which has been developed as response to cyber warfare prowess of countries like US & Russia (Rugina, 2023). Chinese military leaders prioritize counterintelligence and network security. They employ digital tools to identify potential threats, monitor cyber activities and safeguard critical infrastructure. This proactive strategy demonstrates leadership's commitment to protecting digital assets and ensuring operational continuity. Additionally, China's emphasis on cyber capabilities enhances its digital leadership. On the other hand, Bresnik (2024) pointed that with the expansion in cyber capabilities, PLA is facing significant challenge in protecting its digital infrastructure and guarding the data against counterattacks. It is also facing challenge in creating alignment with the stringent national policies on cyber security.

From this, it can be construed that PLA required increasing focus towards improving its cyber security capabilities. Above finding has shown similarity with the views of Rofiq, et al. (2023) that collaboration with cyber technology and automation technology helps to enhance the chances of mission accomplishment successfully.

Simulation and Training in Virtual Environments

Use of simulation and VR based training is significantly used in PLA as it helps to improve war capabilities and make ready troops for future warfare, especially in missile training and close combat scenarios (Xuanzun, 2022). By creating simulations that mimic real-world scenarios, soldiers practice decision-making, tactical maneuvers and response strategies. This digital approach to training enhances soldiers' readiness and ensures they are better prepared to navigate complex challenges.

Information Warfare for Strategic Influence

Leaders within the Chinese military understand the power of information warfare. By leveraging digital tools, they shape narratives and influence perceptions in the digital domain (Xuanzun, 2022). This strategic approach enhances China's global influence and highlights its commitment to employing digital capabilities beyond traditional warfare. At the same time, Bresnik (2024) discussed that there is a need of dealing with the

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associated issues related to personnel data security, privacy concerns and potential misuse of AI and cyber capabilities. Additionally, PLA requires enhancing concern towards employing the technology in a manner so that it can remain consistent with international norms and humanitarian principles.

CONCLUSION AND RECOMMENDATIONS

Above research paper helps to conclude that this study remained supportive to achieve research outcome at a greater extent.

From the *case study analysis of US Military*, it is identified that the leadership strategies in the US Military are evolving to embrace the transformative power of digital capabilities. By integrating network-centric warfare, data analysis, unmanned systems, cyber security measures, virtual training and more, leaders are driving the armed forces effectiveness in a rapidly changing operational landscape. Through these strategies, digital leadership in the US Military empowers commanders to make informed decisions, adapt swiftly to emerging challenges and ensure mission success in the dynamic world of modern warfare. The US Military exemplifies how digital leadership transforms military operations.

From the *case study analysis of US Military*, it is identified that the leadership strategies within the Israeli military display the art of effectively leveraging digital capabilities. By embracing innovation, integrating technology and fostering a culture of adaptability, IDF leaders position their armed forces at the forefront of digital transformation. Through these strategies, the Israel Military underscores the significance of leadership in orchestrating the fusion of technology and military expertise to achieve operational excellence in a rapidly evolving global security landscape.

From the *case study analysis of PLA*, it is identified that the Chinese military leader's digital initiatives underscore their commitment to leveraging technology for operational superiority. By centralizing command, embracing technological leapfrogging and integrating advanced capabilities like AI, big data, and unmanned systems, the PLA's leadership is reshaping modern military practices. China's approach to digital integration underscores the evolving nature of military leadership in the 21st century, where harnessing technology strategically is pivotal to achieving military objectives in an increasingly complex and interconnected global environment.

Moreover, from the comparative analysis, following similarities and dissimilarities are identified:

Similarities:

Research result helps to conclude that all the three military forces are focused towards *cyber security* and utilizes both *defensive and offensive cyber capabilities* so that they can not only become able to embrace advanced technology but can also become able to secure the data against potential vulnerabilities and attacks. However, all the three armies found *struggling in invigorating the digital infrastructure against cyber-attacks*. Hence, the

need of introducing proper safeguarding strategy is found to secure sensitive information from rampant utilization of cyber domain.

All the three armies are focused towards adhering **advanced technologies**, such as – AI, robotics, unmanned systems, data analytics and predictive modeling, etc. **For instance**, PLA utilizes state-sponsored as well as "patriotic hacker" groups for cyber spying whereas US military utilizes GPS jammers and IDF utilizes advanced sensors, surveillance platforms, data analysis, etc. Moreover, All the three armies are also using VR technology for simulation and training of the troop which is assisting them to improve their decision-making and war skills while decreasing the need for training centers. It is assisting to create readiness of soldiers while making them prepared to navigate complex challenges.

Dissimilarities:

From the above case study analysis, it can be concluded that where US military and PLA utilize **networks-centric warfare**, IDF utilizes hybrid warfare. It is also identified that network-centric approach is better than **hybrid warfare** as network-centric warfare approach as it is coming as a game changer during war whereas hybrid warfare tactics create difficulty in assessing the legitimacy and proportionality of military actions.

Similarly, US military and IDF use **unifying decision-making** whereas PLA utilizes **centralized decision-making** command and control systems. It is identified that unifying decision-making remains more effective as compare to centralized decision-making as it provides multi-layered defense array to the army.

IDF is showcasing success at greater extent to create **balance between traditional and advanced digital leadership practice** as compared to PLA and US military. For instance, PLA is facing major challenge in balancing these two perspectives due to its **bureaucratic and hierarchical structure**.

Moreover, IDF is facing major barrier of **resource-constraint and ethical consideration**; US military is facing major issue of **integrating new digital technologies with legacy systems** and PLA is facing major challenge of **ethical consideration** and **aligning with the stringent national policies** on cyber security.

The major **strength of IDF is innovation** which is assisting it to increase exports of military technology (\$13.1 Billion of exports in 2023) and assisting it to lead continuous improvement to increase productivity. On the other hand, the **strength of PLA is power of information warfare and technological Leapfrogging**. Similarly, the strength of US military is increased focus towards **military robot market**.

Recommendations

From the above conclusion, following lessons can be recommended for Indian army to lead digital leadership practices effectively in future context:

- It is recommended for Indian army to increase concern towards **cyber security** and to upgrade the security strategies on a regular basis. Additionally, there is a

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need of providing adequate military engineer training to DOD so that they can deal with the network insecurity at their own level too.

- It is recommended for Indian army to show positive attitude to adhere latest technologies and to use effective change management strategies so that troops can adhere change easily and effectively. Enhancing concern towards **innovation, information warfare, technological Leapfrogging and military robot market** can remain supportive for Indian army to stand distinguish in global army forces.
- It is suggested for Indian army to increase concern towards adhering **networks-centric warfare** as compared to **hybrid warfare**. Similarly, giving concern towards **unifying decision-making** can assist Indian army to enhance multi-layered defense array to the army.
- While adhering advanced technology, it is suggested for Indian army to not to forget its root and to maintain **balance between traditional and advanced digital leadership practice**.
- It is essential for Indian army to **integrating new digital technologies with legacy systems** while giving special concern towards **ethical aspects**.

Research Limitations

Due to limitation of time and budget, to conduct this research, secondary data collection method is used. Hence, there is an opportunity for the future researchers to utilize primary data collection method along with secondary data collection method. Moreover, to conduct this study only the cases of three countries' military forces are used which has created limitation in the production of research outcomes. Hence, there is an opportunity for the future researchers to involve cases of large geographic extent.

Research Implications

This research is focused towards military forces and their digital leadership practices. Hence, the findings of this research have implication for military forces especially in regards to Indian military forces. This study offers lessons for Indian military while conducting study on global military forces. Moreover, the findings of this study are also be implicated for study purpose by the scholars to gain knowledge about the importance of digital leadership and what are the contemporary challenges that are faced by military forces while leading digital leadership and what strategies they can use to deal with these challenges effectively.

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