Augmented Reality as the Future of Defence

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Abstract

Augmented reality helps the defence sector to achieve excellence in terms of greater productivity and effectiveness in work ability and way of operations. Incorporation of AR technologies helps all the sectors to achieve the goal and ensure greater performance of the soldiers. Advanced technologies allow the management to ensure the training of the troops is precise and effective as the consequences of the realistic visuals and gained knowledge. There are some challenges related to adoption of AR technology that act as barriers in the path of the inconvenience of AR in the military mission. Higher officials need to look into all the crucial aspects related to finances, HR department, skilled employees and policies and protocols to ensure success in the process. By taking care of all the aspects the future of defence can transform to a much more robust system compared to traditional one. There are many devices and other technologies that can act as the catalyst and facilitate success in the transformation process to achieve greater dominance over enemies.

Keywords

Augmented Reality, technology, military, defence, troops.

INTRODUCTION

Augmented reality improves the overall digital experience for users as it provides the best user experience in terms of a perfect combination of physical and virtual components. It is clear that the technology provides the much needed link within the real world and digital world by maintaining well balanced within these two elements. This technology is capable of providing strength in every industry and this eventually enhances the work process, workflow and most essentially this is great for training purposes [1]. In defence, AR is primarily used in manufacturing and engineering and it is considered as a complicated procedure that helps to perform accurately. Apart from that this also helps remote assistance collaboration and also possesses the ability to replace physical manuals by producing step by step instruction to the users [2]. It is evident that AR can be used in the military and is capable of transferring warfare to a great extent.

With the assistance of this technology users obtain more awareness that is associated with the military and their work process as this provides both situational and operational awareness. This eventually results in better judgement of the circumstances and better actions. This technology is effective for training purposes and most essentially this is capable of lowering down the training cost [3]. Despite the low cost the impact of the training is more powerful and this helps the officials to ensure that the troops are ready for real life scenarios. AR helps the devices head mounted display to provide blueprint or provides realistic view from satellites. On the other hand, this facilitates better field vision through overhead drones and all ultimately allows the individuals to act better. It is clear that defence is developing as the technology is upgrading and it is a necessity for the armed forces to keep up with the latest military trends and take the chance to defeat enemies.

Tactical augmented reality states have the ability to bring the evaluation in these sectors and change the way of gathering information and carrying out military operations. It cannot be denied that this technology has the capability of increasing the number of uses in the defence industry [4]. By looking into the enhancing possibilities related to the data and graphics processing it is evident that in future this technology will change the overall working process. One of the major uses of this technology is the training and no one can deny that in defence training is considered as the backbone of the system [5]. Without appropriate training it is next to improve to send the soldiers into a war. AR helps to provide realistic visuals that in turn allow the soldiers to gain optimum knowledge about the real world situation to a great extent. Apart from that the device with AR technologies provides better information about surroundings that eventually leads to flawless work.

MATERIALS AND METHODS

Methods and methods are the essential factors that ensure the success factor of the study. It is a necessity for the researchers to select suitable methods and tools to effectively and seamlessly accomplish the study. Qualitative research design has been used to successfully accomplish the study and secure the success of the research by completing the study on time. One of the main advantages of this research design is that this process is less time consuming and provides faster results. On the other hand, inductive approaches have also helped to develop themes by critically evaluating all the observations. An advantage of inductive approach provides the necessary strength in terms of flexibility and provides the assistance to the researchers to generate new theories [6]. Apart from that, the secondary research type has also helped to ensure successful and on time accomplishment of the study.

One of the main advantages of secondary research types is

that it is comparatively less complicated and less time taking. Apart from that secondary research does not require much funding to carry out entire research and that make the research seamless and effective. Secondary data has been gathered from reliable sources such as peer-reviewed journals, articles and authentic websites to maintain the authenticity of the study and ensure the study is ethical. It has been taken care that no articles and journals have been used to collect data that has been published before the year 2019. No primary data has been used in this study and only peer-reviewed journals and articles related to AR and its impact on defence have been used to gather information to successfully accomplish the study.

RESULTS

Advantages of using augmented reality in defence

Most of the time, the military sector is at the forefront of the technology landscape. The government is willing to invest in defence and armed forces to ensure rapid growth and natural society [7]. In these present circumstances many countries are using AR in defence to boost the overall operation and mode of work in the defence sectors be it armed forces or air force. AR has the ability to change the traditional way of training and ensure that the soldiers are more than ready for combat. It is true that one of the major benefits of AR in case of defence is tactical AR. That ultimately refers to head-ups displays (HUDs) soldiers use their headsets to receive reliable information related to the surrounding atmosphere. Devices like 'Elbit system's X-sight fighter jet helmets' are capable of superimposing important information to improve situational awareness [8]. There are many nations that have already incorporated AR in their operations and training procedures.

It is visible that with the help of this advanced technology the ways of operations of armed forces are changing rapidly. The US army has launched a joint project with the collaboration with Microsoft to gain Integrated Visual Augmented Systems (IVAS) headsets. This advanced device is able to provide accurate location, way points and other crucial information to their headsets [9]. All the activities are more than able to transform the armed forces and it is helping the officials to achieve excellence in the field. Virtual and Augmented reality tolls are discovering training opportunities for the new troops. Visualisation of a warfare scene is not less than gating the real vive of a real war. It is essential for the soldiers to possess effective and valid information about the war and the necessary works that need to be performed in that very situation.

AR helps the troops to gain realistic and impactful knowledge through systematic training to ensure better performance and dominance over the oppositions. It is clear that with the help of this technology the soldiers can be prepared for the war both mentally and physically and that eventually facilitates better performance [10]. It is extremely essential for the individuals to be prepared mentally and physically as this in turn provisions the much needed strength that is required at the time of war. This helps the army officials to train the troops in a most realistic atmosphere without putting the indecisive at risk [11]. On the other hand, the right AR and VR technology can work along with sensors and AI for monitoring the performances of the team. It becomes essential for the higher officials to monitor the performances of the soldiers to ensure victory.

Operations of AR military

It is clear that the AR has the potential to change the overall way of operating and improving situational awareness in dangerous environments. The technological companies are working hard to make the experience seamless and more intense to ensure realistic experience and robust training [12]. The AR system uses cameras on military vehicles to provide a 360-degree view of the barrel field and this in turn allows the soldiers to gain maximum information about the overall field. Apart from that the AR headsets are capable of helping the armed forces to make a perfect shot in a complex situation [13]. On the other hand, these are effective to allow the soldiers to find the safest way to return to the base camp after crossing enemy line. Considering the circumstances it is more than clear that this has the ability to ensure success for every military mission from a distance.

The purchase of Eolian AR tactical headsets has been approved by the US special operations command for their special forces and it has the ability to empower troops with the assistance of a more diversified cache of headsets in various warfare circumstances. AR military has the ability to make every operation impactful and effective in terms of gaining information about the river nationally or conducting successful and seamless operations [14]. The AR military personnel are more than capable of handling a drone to gather information about the next move of the rival County without risking anyone's life. With the incorporation of latest technology the soldiers can ensure effectiveness in their performance and this also has the power to gain the full potential of the soldiers in case of critical situations. AR has the strength to make faster decisions and produce major inventory speedily. This can help establish more efficient aeroplanes, tanks, trunks and weaponry to secure the success.

With the assistance of the technologies, officials can effectively carry out all operations seamlessly and can also ensure that all the operations are capable of achieving success as the troops are more than ready for combat. In present warfare, it is essential for the higher officials to know the exact location of the soldiers to track their activities and provide strategy in case of emergency to prevent risk. Accurate positioning in indoor navigation can be gained with the help of XR technology by developing 3D point clouds of map and GPS with visual recognition objects [15]. In this scenario, AR based technologies helps the officials to conduct any operation successfully and securely with the assistance of advanced technologies and modified techniques. The AR military is much more effective and this has the strength and the willingness to effectively carry out all the necessary operations. XR is capable of capturing 3D

videos and 3D mapping and computing in real time and that eventually enhances the remote and field collaboration.

It is true that it is necessary for a soldier to be prepared for combat at any point of time and that training and readiness is important for the individuals. On the other hand, it is essential for the officials to maintain the complicated and expensive tools or equipment and other systems before preparing for a war or other military operations [16]. In case of system failure or faulty equipment there is a high chance of operational failure. It is evident that program or system failure can lead to risk and this scenario is not acceptable from any perspective. AR helps the personals to ensure all the systems are linked properly and capable of providing the much needed strength that is required to conduct all military operations. Incorporation of AR technologies officials can effectively and seamlessly guide their soldiers and this ultimately results in better performance.

Challenges associated with AR and VR

Despite the advantages there are some challenges related to AR and VR that need to be taken care of to ensure seamless operations. The leading concerns related to the adaptation of AR and VR tools include stability, consistency, and preciseness and so on. And these challenges are faced by all the sectors and in case of no effective measurements; these issues can lead to severe challenges. In the defence industry, insecurity is the primary concern and these issues can significantly impact the effectiveness of the operations. Data management policies and privacy issues are the most common and dangerous issues that have been faced by all the sectors. By considering the importance and severity of the defence sector it is evident that these issues can lead to critical challenges for high command and for the soldiers as well [17]. Apart from that often lack of proper devices and maintenance leads to challenges. It's becomes essential for the officials to make sure all the instruments are advanced and updated to enjoy the advantages of AR technologies and ensure all the operations are effective.

It is true that limitations in technology can effectively impact the security factor to a great extent. Lack of proper technologies and most essentially lack of expert employee's impact the utilisation of technologies to the core, and this leads to program failure. It is not expected to face a program or system failure in the middle of a mission or other serious operations. It is clear that there are a lot of aspects that need to be taken care of to ensure proper utilisation of technology and successful missions [18]. On the other hand, it is essential for the officials to ensure that the devices are new and\ has the capability to provide the much needed strength to carry out all the military operations. Often infrastructure also can be a barrier to adopt AR and VR in the operations as this not only impacts the effectiveness but at the same time this impacts the success factor of the mission.

Organisational security standard and protocol also plays a significant role in the incorporation process of AR and VR. This eventually impacts the overall activities and mode of action and in case of severe issues this has the ability to

impact the overall operational process. Apart from that, it is clear that the incorporation and maintenance of the AR technology is costly and that eventually impacts the utilisation of the technology. Despite the investments from the government these technologies need findings to maintain their effectiveness and secure the success of every mission in defence. Lack of resources and findings impacts the effectiveness of the technologies and this also affects the efficiency of the works [19]. Often the higher officials struggle to discover ways to devote AR technologies in an already lacking financial and insufficient resources atmosphere. Lack of resources in terms of money and expert candidates it becomes difficult to adopt and use AR and other upgraded technologies for ensuring successful completion of the military missions.

Often it becomes difficult to get the permission from the higher authority to incorporate AR in the military mission. Due to the security and management policies it becomes difficult to incorporate AR boosting the efficiency of the troops and secure the seamless and effective completion of the missions. Sometimes it becomes challenging to provide a proper justification and this results in a backward program. Due to the security and management policies it becomes hard to incorporate and maintain the advanced technologies such as AR and other technologies and this also results in program failure [20]. Apart from that also it becomes difficult for the officials to select the right technology and its proper method. It is essential for the officials to ensure that the purpose is well defined to gain the advantages of the technologies.

The entire issues act as the barriers in the path of incorporation of AR and VR technology and that eventually impacts the efficiency and productivity of the military operation to an extent. It is essential for the higher management to look into requirements of the utilisation of technology to ensure greater performance and secure success of all the missions with efficient training and knowledge. With the help of proper policies and greater involvement military sectors can effectively use the advance that is possessed by AR and VR technologies [21]. It is clear that these technologies increase the knowledge of the soldiers by providing realistic experience and by providing real life scenarios. That eventually impacts national security to a great extent, as the performance and efficiency of the troop's results in successful accomplishment of the secret missions.

DISCUSSION

AR has the potential to make the traditional way of operating all military activities to ensure greater performance and efficiency in operations. Technology plays a greater role in everyday life and this has the ability to impact the overall performance of an individual. With the assistance of the right technology and proper support from the expert and talented workers all sectors including the defence sector can change their way of operations and secure victory over their enemies. It is clear from the above discussion that incorporation of AR has a great influence on the training of the troops and this

leads to excellence as this provides realistic experience. Whenever soldiers gain proper training this leads to seamless operations. On the other hand, this realistic experience that is provided by the technology helps the individuals to gain proper experience about real combat. This eventually increases the chances of victory and ensures that the national security is robust and capable of providing the much needed security to the civilians

Governments have taken initiatives to make the defence stronger and ensure all the operations conducted by the military are effective. With the help of AR technologies officials can ensure that the training of the soldiers is capable of bringing success. It is true that training is an integral part of defence and lack of sufficient training leads to failure therefore it is essential for the high command to look into the training procedure of the soldiers to ensure dominance on the enemies. It is crucial to invest in the development of the infrastructure and make sure the instruments are advanced to provide a much needed outcome and secure the success of the overall process. The realistic experience and experience of combat help the soldiers to prepare themselves for the real war both mentally and physically.

It is evident that, without a strong mental preparation it becomes challenging for the individuals to perform best in a mission or in combat. Most of the soldiers feel the pressures due to lack of mental strength and that directly impact the performance of the soldiers. On the other hand, AR also helps the higher officials to prevent any unfortunate incident during the training period. As mentioned earlier, AR provides realistic experience to the soldiers and that in turn prevents unnecessary risk factors. AR helps soldiers to gain greater confidence and this eventually helps the individuals to achieve their goal seamlessly. Incorporation of technology into devices helps the officials to ensure greater efficiency at the time of operations as this not only allows the officials to track the locations of the troops but at the same time this helps the soldiers to get required assistance from the base camp.

By focusing on the above discussion it is noticeable that there are some challenges associated with the incorporation of AR technologies. Lack of expertise and insufficient financial backbone; act as the barriers in the path of the adoption of the advanced technology to a great extent. On the other hand, protocols and management policies often act as barriers in some cases and eventually act as hurdles in the procedure of incorporation of AR technologies in the military operations. Apart from that, security and privacy related issues also make the incorporation process challenging for the user. This ultimately impacted the overall effectiveness of the operations to a great extent. In addition, the identification of proper needs is essential as this determines the effectiveness of the operations in the future. All the issues need to be considered and taken into account to ensure success in the military operation and transform the national security into more robust and sustainable.

CONCLUSION

Technology has a great influence on the effectiveness of the operations and the results in excellence. In the past few years AR has improved digital experience to a great extent and this has resulted in greater work efficiency and improved performance of the workers. It is clearly noticeable that AR have successfully transformed the mode of activities in all the sectors and have provided the much required strength to ensure greater performance and power over the rivals. In the case of the defence industry, the increased number of AR usages has changed the traditional way of training and have allowed the nation to secure the success of all the missions and ensure dominance. Training is conducted as the most critical part of the defence sector as this determines the victory over the enemies.

With the assistance of the AR technology, higher officials ensure accuracy in the performance as AR provides realistic experience related to combat and related activities related to war and other military operations. AR helps the defence management to reduce the cost for the training purposes and that in turn allows the management to manage their allocated money. On the other hand, this technology is ideal for the selection of the right candidate before sending the individuals to war or other secret military missions. Better field expense, greater knowledge regarding the activists required to achieve success in combat eventually leads to operational success. AR has the ability to change the overall working process in the defence industry as this helps both the soldiers to perform better and at the same tone allows the office to stay connected and monitor each and every activity to plan effective strategy.

Although it is also essential for the officials to ensure that the management possesses the much needed strength in terms of skilled employees and sufficient financial backups. Both the aspects are the primary concerns and have the capability to change the situation upside down. Apart from that, often officials face issues to maintain the effectiveness of the technologies due to lack of proper infrastructure and tools and that ultimately make the process difficult for the higher authority. With the help of proper guidance and by taking care of government protocol along with the proper justification of the necessity of the AR technology may result in a better future. As this has the strength to provide the best security to the nation by ensuring dominance over enemies with the help of greater performance and experience of the individuals.

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