Experience military life with VR technology in the big data environment

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Abstract

In order to enable users to experience military life with VR technology, through literature research, questionnaire survey, in-depth interview, and field survey, we have a more comprehensive understanding of players' acceptance of using VR technology to experience military life and the feasibility and development prospects of the project. The result shows that the project has high feasibility and market value, and will get a good response in the market. It is suggested to put the project into the market for physical operation.

Keywords

Big data environment; VR technology; Military Camp Life Experience.

1. Introduction

In the era of big data, VR virtual reality is an emerging and fast-growing industry. Nowadays, VR virtual reality technology is entering every aspect of our life. Internationally, VR is one of the fields that enjoy the highest attention in military. The UK is committed to creating VR systems for combat and training in innovative ways, and delivering a realistic and bloody scene feeling to soldiers through simulation scenes. Israel has created a VR terror simulation training system that is suitable for simulation training in various complex environments, dangerous environments and long-distance conditions. In China, VR technology has been introduced into VR simulation training equipment to carry out mechanical professional simulation training, handle operations according to virtual rescue, and feel the actual combat atmosphere in rescue. This technology can restore the disaster relief scene to the maximum extent, not only reduce the safety hazards and equipment damage during training, but also improve the technical level of military rescue. In order to comply with the development law of the era under the big data environment, promote the development of domestic VR technology and holographic imaging technology, and give full play to the convenience of the high-tech era, this project enables some people who cannot join the military to realize their dreams due to their own reasons to have a way to realize their dreams, at the same time, more people can understand the military and understand the military barracks, so as to imperceptibly cultivate contemporary youth to join the military voluntarily and contribute their youth to the motherland Devote your selfless spirit.

2. Body

2.1. Research methods and process

2.1.1. Research methods

(1) Literature research

Adopt the literature research method to extensively consult and collect the literature and papers related to the project. In the early stage, the team thoroughly read 30 Chinese and 12 English literatures and completed the literature review. In the later stage, each member of the

research group read 15 Chinese literature and 8 English literature in depth, and completed the collation of the views of 8 Chinese papers, the post-reading feeling and 5 English papers, and finally integrated them into a literature review. The extensive reading of the existing research results, the massive screening of data and the collation of the project's views have made the team members have a deeper understanding of the research of VR virtual technology, the research of virtual barracks life, the research of VR technology experience barracks life and other aspects related to the project topic, and have a more specific rational and perceptual understanding of using VR virtual technology mechanism to simulate and experience the barracks life, Provide direction and basis for in-depth exploration.

The team also consulted online on the basis of literature and case study data, combined with the problems and difficulties of this study, and obtained the reference opinions of relevant literature and social survey, so as to help the team understand and master the problems and research obstacles related to the subject, and apply them to the follow-up social survey and interview.

(2) Questionnaire

Using the method of questionnaire, taking a representative large sample as the object, taking the experience of military life using VR virtual reality technology as the research object, and using the method of questionnaire, the overall characteristics of game players are estimated. After designing the questionnaire, a preliminary survey was conducted on 10 people of different regions and ages, and then the unreasonable and incomplete parts of the questionnaire were further revised and supplemented according to the problems found in the survey.

This study takes nearby universities, communities, and amusement parks as the object, and focuses on online questionnaire survey. A questionnaire survey is conducted on campus. 100 questionnaires are randomly selected from each area, and a total of 240 valid questionnaires are obtained, including 65 from universities, 50 from communities, 80 from amusement parks, and 45 from other public places. Schools and entertainment places are all young areas, while communities and other public places are comprehensive places. The sample selection is comprehensive and representative. The purpose of the survey is to understand the application of VR technology by young players, as well as the impact of VR technology on the physical, psychological, emotional and other aspects of players, how to view the feeling of VR virtual reality technology in the experience of military life, as well as the response to players' emotions and social emotions.

(3) In-depth interview

Taking college students, military experts, scientific research and technology experts, and personnel engaged in VR technology research and development as research objects, in-depth interviews were conducted. At the same time, the observation method is used to contact the player's life, understand the use of VR virtual technology and the impact and response of the player's inner world, investigate the possible environmental factors around the player, conduct comprehensive research, and sort out the status of the experience of military camp life after playing with VR technology for later classification research and analysis. It is hoped that through in-depth research, the results of the questionnaire survey made by the team will be more practical.

(4) Field investigation

Using the field research method, select the appropriate research site, carry out a 5-day research activity, go to the VR security experience center, the VR technology town, the military training base, the military experience base and other places, go deep into the market to collect the original data, combine the research purpose of the project, make it more targeted, facilitate

various qualitative and quantitative analysis, and better grasp the laws and trends of the market, It has more important reference value for questionnaire survey and later paper writing.

2.1.2. Research process

Step 1: topic selection and feasibility analysis

According to the current needs under the background of big data, determine the research theme, consult relevant literature, and collect relevant materials in the application field of VR technology at home and abroad.

At present, the project has obtained relatively systematic first-hand information, and is systematically familiar with relevant basic theories and systematically collected relevant important documents. The technical route of the research work has been collectively discussed and approved. A large number of relevant documents can be found through the digital resource database of the library as a strong theoretical support. The practical investigation with strong reliability can strongly support the discussion process,

Step 2: the formation and writing of the project research plan

This topic should clearly state the background, significance and value of the research, and be considered and expressed through both theory and practice. Collect the latest research results related to this topic at home and abroad, sort out and summarize them, and point out the innovation of this topic. Collate and analyze the literature, draw up the writing outline and context in detail, and write and revise the first draft.

Step 3: project application and project approval

Understand the project application information in advance, and improve the request for the application subject according to the application requirements. When applying for a research project, the project researcher shall select the corresponding level according to the value of the project and his own scientific research level and scientific research ability. The text describing the research plan should be concise, and the main content, significance, methods, current situation, expected results, etc. of the research project should be written in a high summary.

Step 4: Implementation and management of project research

Go deep into the VR experience hall and other places to investigate and study, understand the current situation of VR technology application, collect data, and find relevant links in the research through the processing and analysis of data. Keep abreast of the latest research results of this topic and analyze the problems existing in the existing research. In the research activities, the division of labor should be clear and their respective strengths should be brought into play.

Step 5: Final appraisal and achievement promotion of the project

According to the results obtained in the early stage, the results will be summarized and displayed, the subject will be comprehensively summarized, the data will be sorted out, the analysis and reflection will be completed, the compilation of all process data will be completed, the whole research process and relevant analysis results, explanations and conclusions will be sorted into a paper according to the requirements, and the final acceptance will be applied for, and the publication and promotion will be carried out.

2.2.   Comparison and analysis of research results

2.2.1. Analysis of VR technology development status

VR virtual reality technology has the functions of multiple perception, sense of existence, interaction, autonomy, etc. It mainly uses computers to generate a simulation environment of multiple information fusion and interactive 3D dynamic scene, which makes users immerse themselves in it. In recent years, VR virtual reality technology has been widely and rapidly developed both at home and abroad, and gradually matured with the efforts of the global people. It has been applied in education and training, military training, cultural entertainment,

commercial trade, medical health and other fields. It has shown irreplaceable value in various fields of high-risk, high-cost, untouchable scenarios, and effectively reduced risk costs. However, VR virtual reality technology originally originated from abroad. Through comparative analysis of the development status and application scenarios of VR technology at home and abroad, it is known that the development of VR technology in China is still very different from that in foreign countries. At present, China's headworn VR is still in its infancy, and the problem of insufficient content is relatively serious. Although the full-scale industry chain is developing towards perfection, due to the lack of the overall industry strategy of giant enterprises, At present, there is no uniform industry standard, and there are still some problems in user experience.

2.2.2. VR equipment market analysis

After tracking and investigating the sales data of VR equipment market in recent years, this paper found that the domestic VR equipment market has been in a tepid state. The main reasons are as follows:

(1) The price cost is too high

The VR glasses developed by this project are generally more than 3000 yuan in the domestic market, and the high cost is also one of the reasons for its higher cost. To solve the problems such as player experience, it will lead to higher cost of VR glasses, which also makes the promotion of VR technology gradually difficult.

(2) Poor user experience

Everything has two sides, and the development of high technology is even more so. While bringing convenience to people, it also brings great "disadvantages". VR glasses can bring new and interesting technological experience to players. However, when players wear them, they will feel headache, sore eyes, discomfort, nausea, disorientation and other feelings in a short time. If they wear them for a long time, because they are all that the body will see, they will make players have a sense of fear. The existence of these objective problems makes consumers have some hesitation when buying, and ultimately leads to the decline of players' desire to buy.

(3) Poor content supply

After players have a VR glasses, they can only watch a few videos or play some simple games when they experience the life in the military camp. For the following scenes that cannot be simulated by VR technology, it is a blind area for players to experience. Naturally, it cannot meet the experience needs of players. If the content is developed, it will lead to high costs, product prices will rise, and the final product sales will become a dilemma, Enter a vicious circle.

According to the statistics of authoritative institutions such as IDC, the global VR market size will reach 62 billion yuan in 2020, the global VR/AR total investment size will reach 14.67 billion dollars in 2021, and the global VR industry development market size will exceed 80 billion yuan in 2022. IDC Research Institute predicts that the volume of VR equipment shipments will increase by 31.5% year-on-year in 2023, and the VR market size will exceed US $13 billion by 2026.

Unlike the VR boom in 2016, the formation of this VR boom is more logical and the development is more rational. Because the VR market in 2016 is still immature, the mainstream VR products have high unit price, few application functions, and the user experience needs to be improved. In 2020, giant manufacturers such as Oculus launched VR products with high cost performance, further attracting potential players to enter the VR camp, and the emergence of VR device blockbuster games and richer applications have promoted the popularity of VR devices. A new round of VR craze has been started in 2021, showing an upward trend in 2022. It is expected that VR devices will continue to grow in a straight line in 2023 and beyond.

According to the public data, the shipment volume of VR equipment in 2021 will exceed ten million for the first time. In the short term, the giant manufacturers will continue to iterate new

products. Meta officially announced the launch of the next generation of VR head display in 2022, achieving continuous upgrading in optical display, MR function, handle control, positioning and tracking, etc. Sony launched a new generation of vr products in 2022, mainly focusing on display effect and immersion. In the medium term, it is expected that by 2025, the highly viscous and high-frequency application scenarios represented by games, video, live broadcast, and vehicle-mounted will be the key factor in the volume of VR terminals. At that time, it is expected to realize the replacement of 20%+of game consoles, with a stronger sense of presence and immersion, the widest video audience, the largest space, and the vehicle experience can reach a subversive level. In the long run, with the maturity of technology and the improvement of network infrastructure, VR is expected to break the circle in more B/C end core areas besides entertainment scenes such as games and videos. Therefore, in the long run, VR demand is expected to be applied in a large scale in B/C end such as social networking, office, education, fitness, engineering, and medical treatment. These scenes have larger market space and wider audience than entertainment scenes.

2.2.3. VR technology development trend

Domestic and foreign authorities have successively released research reports on the development goals and scale of VR in 2023.

Table1 Domestic and foreign authoritative institutions for the development goals and scale in the VR field in 2023

Research institutions	Main contents and opinions
McKinsey and Company	By 2030, the aggregate potential provided by the yuan universe economy can have an impact of up to 5 trillion dollars.
HTC	The first XR all-in-one machine "VIVE XR Elite Set" was released on January 6, 2023.
Sony	The "PlayStation VR2" head display device will be shipped in February 2023.
Shiftall	From March to April 2023, the VR head display "MeganeX" was released.
Apple	It is planned to release the AR/VR head display device before WWDC in June 2023. It is said that the head display will be sold in the autumn of 2023.
Meta	It is planned to release "Quest 3", the next generation of consumer-level headphone display, in the second half of 2023.
PICO	It is expected to launch a new generation of VR all-in-one machine "PICO 5" in 2023.
Samsung	It is expected to launch XR hardware equipment.
Chinese head display manufacturer	It is planned to release "NOLO VR GLASS" head display and VR all-in-one machine "NOLO SONIC 2" at the beginning of 2023.
Goldman Sachs Group	The global VR market is expected to reach 182 billion US dollars in 2025.

Trend 1: Science and technology are the first and people-oriented. Jos de Mul, professor of philosophical anthropology in the Netherlands, believes that the experience of virtual reality mainly has three factors: "3I", namely, interactivity, immersion and imagination. Immersion means that in the VR virtual environment, players have real feelings of senses (vision, hearing, touch and smell). Interactivity means that players often use their behavior in daily life to communicate with people or things in the virtual scene simulated by VR technology to produce real interaction experience; Imagination means that users can acquire new knowledge and experience in the virtual environment as well as in daily life, form rational understanding, and then generate new ways of behavior for thinking and application in daily life.

Trend 2: rich content and cross-border integration. The future development of China's VR industry requires the richness and diversity of VR content. In particular, virtual reality technology can transcend industry restrictions and carry out "VR+". For example, Alibaba has begun to implement the "BUY+" VR e-commerce strategy and LeEco's VR platform ecological strategy. At present, domestic VR enterprises are not far behind foreign competitors in terms of the technical structure and control ability of hardware products. The most important factor determining the gap between domestic and foreign VR enterprises and the industry is the richness of VR content and the maturity of the content system. Domestic VR content can be tested boldly in live broadcast, conference, sports and concert areas, and promoted in some vertical application fields such as home decoration, tourism and real estate. After the experience and technology are mature, it will be radiated to the game and film and television areas, and finally build the content highland of China's VR industry.

2.2.4. Analysis of player's psychological behavior

According to relevant data, China's VR terminal equipment only had 386000 users in 2015, and began to grow rapidly in 2016. By 2018, the number of VR active users reached a record high of 1.182 million. Due to the outbreak of the COVID-19 in the past three years, VR devices are becoming more and more popular. The survey results of independent analysis institutions show that VR devices will continue to be popular, and it is estimated that by 2025 there will be 45 million active users.

According to the data of the China VR User Behavior Research Report, 68.5% of people aged 15-39 who have heard about VR products or related knowledge and are very interested in VR account for 68.5%, of which the main force is young men, and 25-34 pairs of young people account for 60%.

Google's management pointed out that price is the key factor affecting consumers' purchase at present, and the market needs cheap goods to cultivate consumers' habits of use, which is why Google insists on launching cheap CARDBORAD.

2.3. Summary

Through the methods of literature research, questionnaire survey, in-depth interview and field survey, the project has a more comprehensive understanding of the players' acceptance of using VR technology to experience military life and the feasibility and development prospects of the project. The result shows that the project has high feasibility and market value, and will get a good response in the market.

In recent years, VR virtual reality technology has been widely and rapidly developed both at home and abroad. With the efforts of the global people, VR virtual reality technology has gradually become mature and has shown irreplaceable value in various fields of high-risk, high-cost, untouchable and other scenarios. After tracking and investigating the sales data of VR equipment market in recent years, this paper found that the domestic VR equipment market has been in a tepid state. The main reasons are analyzed as follows: high cost, poor experience and lack of content. The reasons are analyzed and corrected accordingly. According to the analysis, the development trend of VR technology is mainly as follows: technology is the first, people-oriented; Rich content and cross-border integration. The data shows that it is expected that VR equipment will continue to grow in a straight line in 2023 and later, with excellent development prospects.

Project Fund

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