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The Development and Future Trends of China' s VR Industry in 2019: A Qualitative Study Based on In-Depth Interviews with 11 Industry and Academic Experts (Postprint)

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Abstract

The academic community has engaged in extensive speculation and discussion concerning the application prospects of VR technology across various domains. Although numerous data research firms have proliferated reports on the scale and investment/financing of China' s VR industry, these reports exhibit substantial discrepancies in their conclusions and lack transparency regarding data sources and computational methodologies. Therefore, this study adopts an empirical research methodology to investigate the actual development status and promising future trends of China' s VR industry, conducting in-depth interviews with 11 top-tier industry and academic experts in the Chinese VR field to examine the cutting-edge developments and future trajectories.

Full Text

Preamble

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Research on the Development and Future Trends of China' s VR Industry in 2019

A Qualitative Study Based on In-Depth Interviews with 11 Top Industry and Academic Experts

Abstract: Scholars have extensively envisioned and discussed the application prospects of VR technology across different fields. Although numerous data research companies have produced endless reports on the scale and investment

landscape of China' s VR industry, these reports exhibit substantial discrepancies in their conclusions and lack transparency regarding data sources and calculation methods. Therefore, this study aims to investigate the actual development status and promising future trends of China' s VR industry through an empirical research approach, conducting in-depth interviews with 11 top industry and academic experts in China' s VR field to examine the cutting-edge developments and future trajectories of the industry.

Keywords: VR industry; virtual reality; future of journalism; algorithms; robot journalists

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1. Research Background and Objectives

This research team aims to investigate the actual development status and promising future trends of China' s VR industry through an empirical research approach. While scholars have extensively envisioned and discussed VR technology' s application prospects across various fields, and numerous data research companies have produced countless reports on China' s VR industry scale and investment landscape, these reports show significant discrepancies and lack explanations of data sources and calculations. Therefore, this study seeks to understand the cutting-edge developments and future trends of China' s VR industry by interviewing top industry and academic experts in the field.

2. Research Methodology: In-Depth Interviews

Between September and December 2018, our research team conducted in-depth interviews with 11 experts and senior executives from both academic and industry sectors in the VR field. Prior to the interviews, the research group conducted extensive preliminary investigations into China' s VR industry development, including collecting industry data, visiting enterprises, and reviewing relevant literature. After focus group discussions, we developed an interview outline to explore the development status and future trends of China' s VR industry from four dimensions: market, content, technology, and capital. Regarding the VR market, the interviews focused on VR technology penetration, market potential, and the impact of the 5G era on future VR development. For VR content, we examined the democratization of VR content production, the imbalance between technology and content development, and VR filming "methodology." The technology dimension covered technical shortcomings, motion sickness issues, and future device form factors. The capital dimension addressed fluctuations in VR capital markets and investment priorities in 2018.

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3. Findings

3.1 Market Aspects

3.1.1 Market Potential for VR Industry Development Most experts expressed optimistic and positive attitudes toward the market prospects of VR industry development. Liu Yuejun noted that due to limitations in product maturity and terminal numbers, VR remains in its embryonic stage, but evaluating its future market space based on currently immature technology is clearly unscientific. He argued that as VR technology matures, it will revolutionarily disrupt current traditional media forms and become the next computing platform and information exchange interface. Chen Jingshu believes VR technology makes human-computer interaction more natural, opening possibilities previously impossible through screens. Some experts envisioned future developments for the VR industry. Li Xiaobo mentioned his vision of building a digital world parallel to reality, where all industries would find their own digital space. Future virtual reality will permeate various fields like the internet, including e-commerce, social networking, gaming, education, and more.

3.1.2 Factors Limiting Current VR Popularity Experts identified three main factors limiting VR' s current popularity: technology, content, and demand. First, regarding technology, Yu Guoming believes VR technology 普及 still faces a "chicken-and-egg" dilemma. On one hand, if VR device ownership remains low, developers will be cautious about creating VR content and applications. On the other hand, VR devices still have issues with comfort, safety, clarity, and aesthetics, preventing optimal user experiences. Second, content-wise, existing content fails to attract mass audiences. Although users experience immersion when wearing VR devices, the lack of interactivity prevents sustained engagement. Therefore, creators must explore how to make content more complete through VR approaches. Third, regarding demand, Zhao Xupeng believes VR' s current lack of popularization stems primarily from high usage barriers that limit the user base. VR' s pseudo-demand has created significant cognitive biases among the public. While many users express willingness to use VR, their psychological price points and sustained enthusiasm remain uncertain.

3.1.3 VR Technology in Professional vs. Consumer Markets The findings indicate that most experts believe VR technology will be widely applied in both professional fields and consumer markets in the future. However, at present, VR technology is more commonly applied in professional domains such as medical care, journalism, and education. Zhao Xupeng noted that in its early stages, VR technology can solve many previously unsolvable problems in professional fields, such as training issues for multinational corporations or the construction industry, where building training environments is extremely expensive.

In contrast, the consumer market faces numerous constraints, including supply chain issues, cost control, user education, and content ecosystem construction, which have slowed VR technology' s development in the mass consumer market.

3.1.4 Development of VR Games vs. VR Film/Television Currently, VR games are developing more rapidly than VR film and television. However, most experts hold positive and optimistic views about the development of VR in both gaming and film/television domains. Yu Guoming explained why VR technology has developed faster in gaming: first, the technical threshold for VR game production is not high; second, the gaming industry ecosystem is mature with a large user base and high willingness to pay; and third, VR games' first-person perspective operation experience aligns with human behavioral habits, easily creating immersive experiences. Conversely, VR film and television development has been slower because VR content production is more complex than traditional content. Issues such as VR video content capture and editing of footage have resulted in high production costs for VR film and television works, meaning VR film and television development still requires a considerable period.

3.1.5 Impact of the 5G Era on VR Industry Development Most experts believe that the arrival of the 5G communication era will have transformative significance for VR industry development and popularization. This transformative impact will mainly manifest in VR technology upgrades, popularization of high-end applications, and enhanced user experiences. At the technical level, 5G can provide high-bandwidth, low-latency, and high-stability networks, enabling smoother playback of mobile VR content and supporting higher precision. At the application level, more advanced applications such as VR, AR, MR, autonomous driving, and IoT will gradually become widely adopted with 5G support. For users, high-definition resolution, smooth playback speeds, and refined content presentation will bring unprecedented sensory experiences, increasing consumer interest and purchase intentions for VR products, thereby driving VR industry development in the mass consumer market.

3.2 Content Aspects

3.2.1 Convenience and Openness of VR Content Production Regarding whether VR content production will become increasingly convenient and open, experts held differing views. Some experts believe that VR production barriers will become lower, and everyone could become a VR content creator. Chen Jingshu mentioned that as technology develops, creation and distribution of any media will become increasingly decentralized, distributed to individuals. However, other experts argued that quality content requires high equipment barriers and production difficulty. Zu Kunlun believes that while VR may produce a platform for mass revelry like short videos, the presentation of high-quality VR content requires industry pioneers or leaders—content guides and professional creators. Zhao Xupeng noted that the difficulty of VR filming makes it hard for individuals to achieve good results, and the complexity of VR sharing leads

many platforms not to support VR, causing people to lose interest. Without improved terminal experiences and compatibility from mainstream platforms, development will be difficult.

3.2.2 Imbalance Between VR Hardware and Quality Content Development The findings reveal an imbalanced development trend between VR technology and quality content creation, primarily influenced by China' s VR market ecosystem issues, distribution platform construction, and business profit choices. Some experts believe this imbalance stems from China' s VR market ecosystem problems. Zhang Hang noted that China currently lacks genuine hardware companies, or that hardware companies are not strong enough. Most Chinese hardware companies cannot support content development, which is why China' s overall content ecosystem development is relatively slow. Other experts attribute the imbalance to distribution platform construction. Few platforms support VR content, making it difficult for quality VR content to achieve widespread dissemination. More content platforms are needed to help creators solve distribution problems. Additionally, some experts believe that business profit choices also affect VR technology and content development. Shang Lei mentioned that to date, 90% of VR industry profits come from hardware and platforms, while content remains in a gradual development trend without profitability, which is why high-quality VR content development has lagged in the early stage.

3.2.3 Unique Filming "Methodology"for VR Experts held different views on whether VR will develop its own filming "methodology." Fang Gan believes that current VR works increasingly incorporate technologies such as degrees of freedom, interaction, motion capture, and real-time rendering, which traditional filming cannot achieve. Even when creating pure VR film and television works, story development guides audiences to explore details in the film, so there is no so-called methodology. Instead, VR breaks the boundaries of traditional methodology and achieves innovative transformation in filming. Li Xiaobo proposed a concept called "virtual reality thinking," which involves three aspects: first, scenario-based construction of virtual reality thinking, where virtual reality creates a completely different world parallel to reality; second, the strong experiential nature of virtual reality; and third, virtual reality thinking as an inheritance of traditional internet thinking. Only by possessing the characteristics of virtual reality thinking and abandoning some traditional film and television development methods and filming experiences can we create a truly suitable model for the VR field.

3.3 Technology Aspects

3.3.1 Urgent Technical Shortcomings in VR The findings indicate that VR technology currently has numerous shortcomings and bottlenecks, mainly in two aspects: terminal experience and content production. However, most experts emphasized hardware shortcomings. Fang Gan believes that VR headset

clarity and portability most affect user experience, yet these two aspects are difficult to balance. Currently, supporting high-definition and smooth VR device experiences requires high computer processing speeds and battery life. Chen Jingshu also mentioned that for VR headsets, important factors include clarity, resolution, and field of view. The most urgent issue for VR technology to solve is how to smoothly stream high-definition content online. Zhang Hang believes that without breakthroughs in optical technology, the volume and weight of user-worn headsets can only be optimized within certain limits and cannot truly achieve breakthroughs.

3.3.2 Future VR Device Form Factors Experts had different visions for future VR device forms, with three main viewpoints. The first viewpoint is headset-style VR devices. Chen Jingshu believes that future VR devices should still be headset-style but will become increasingly lightweight. Fang Gan also noted that many new device concepts or models have already emerged in the industry, and headset-style VR devices will become more common in the future, developing toward lightweight designs that better conform to aesthetic principles. The second viewpoint is glasses-style VR devices. Zhang Hang believes that wearable devices will eventually replace portable devices. Through glasses-style terminals, overall interaction efficiency and display efficiency will become higher. The third viewpoint is that no human-worn devices will be needed. Li Xiaobo believes that the future world should be an era full of screens, where everyone is equivalent to a data exchange center for the internet, able to receive and process information without carrying any devices.

3.3.3 VR Sickness Issue The findings show that motion sickness from using VR devices is one of the most critical challenges the VR industry urgently needs to address. Experts analyzed the causes of motion sickness in detail. On one hand, hardware issues such as low VR device resolution, low refresh rates, and high latency cause discrepancies between what users see visually and what their bodies feel. Additionally, the smoothness of VR content production and editing also affects motion sickness. On the other hand, there are issues with content designers themselves. Content design should include specifications to avoid inducing motion sickness. Zhang Hang believes that certain things should be avoided, such as fast relative movement and rapid switching, which can be addressed through content design. Li Xiaobo believes that solving motion sickness requires users to adjust both physiologically and psychologically, continuously adapting to environmental changes.

3.4 Capital Aspects

3.4.1 Fluctuations in VR Capital Markets Experts held different views on VR' s market fluctuations from "investment boom" to "capital winter" to "recovery." Chen Jingshu affirmed the "recovery," believing that new technologies receive massive media exposure in their initial stages, creating overly high expectations. After passing the peak of excessive expectations, anticipation for

the technology gradually returns to rationality. The so-called investment winter occurs when investors see that investments are not monetizing or not easily monetizing. However, after the winter, steady development begins again—a process of returning to rationality. Zhao Xupeng believes that the current state of the VR industry should not be called "recovery" but rather rational treatment, where only truly technologically substantive elements stand out. Shang Lei believes that current VR investment has become increasingly rational, shifting from broad investment to deep, targeted investment in areas such as high-quality content and advanced equipment.

3.4.2 Changes in VR Investment Focus Compared to 2016 The findings indicate that VR investment has become increasingly rational, with significant differences in investment priorities compared to 2016. Fang Gan believes that recent VR industry capital has mainly shifted from online platforms to offline distribution, with investors paying more attention to projects such as VR cinemas, large-scale VR spaces, and VR entertainment arcades. Another trend is content creation—excellent studios can still gain advantages in capital markets, but investors increasingly value creativity and experience in content creation. Hou Yanan believes that current investment markets place greater emphasis on scenario usage, business logic, and rational investment. When investors return to rationality, it does not mean the industry or sector has entered a winter period but rather that it is slowly rising.

4. Research Conclusions

Through further refinement of the above findings, we draw the following conclusions:

4.1 Market Aspects

Currently, VR technology remains limited to research and application in certain industry sectors and has not gained a foothold in the consumer market due to factors such as hardware technology, content experience, and market demand. However, with scientific and technological progress, VR device improvements and innovation, content ecosystem development, and changes in user cognition, VR technology can achieve mature development in both professional fields and consumer markets in subsequent development.

4.2 Content Aspects

Relying solely on hardware, platforms, content, or services may not guarantee a VR enterprise' s future discourse power. Only by attracting user attention and purchases through content and services, mastering platform advantages and standard-setting advantages through hardware development, and constructing a VR industry chain from hardware, software, distribution, content, and services to establish an ecological industry layout is a sound choice for VR manufacturers.

4.3 Technology Aspects

Currently, VR technology has unresolved shortcomings in hardware, content, and applications. Display resolution, graphics computing performance, and human-computer interaction forms affect user experience, thereby hindering VR industry's progress toward the consumer market. However, these deficiencies are temporary. With technological development, VR technology shortcomings will be effectively addressed, such as through the introduction of artificial intelligence and 5G technology.

4.4 Capital Aspects

The market fluctuation of VR from "investment boom" to "capital winter" to "recovery" is a normal state. The long-term market prospects for the VR industry are broad, while short-term markets may have twists and turns, but they still conform to the development 规律 of new Moore' s Law for new-generation products. The recovery state of VR capital also proves that investors generally have a positive outlook on the industry' s future. However, businesses should not blindly follow investment trends but should view VR investment issues from a broad perspective, making investments based on industry development 规律, business logic, and independent judgment.

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