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HY CAPITAL: Making vENTURE Capital INVESTMENT Decisions in a Changed Environment

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At the end of 2017, Jianfeng Hu, the director of HY Capital, a venture capital firm located in Dalian, China, was facing an investment issue. Two years earlier, HY Capital had invested in Dalian New Vision Media Co. Ltd. (New Vision), a company working on augmented reality (AR) early childhood education products. HY Capital’s investment provided sufficient funds for New Vision to promote its product and enter the market. However, over the next two years, after a quick success, New Vision could not make further significant progress since the original target market was saturated. Thus, the management team of New Vision proposed to alter the company’s strategy to target after-school education for kindergarten to grade 12 (K12), which would require more investment to support product development and marketing. Hu wondered if HY Capital should support New Vision with additional funds or just exit the investment?

HY Capital

HY Capital was a venture capital firm, founded in 2002 and located in Dalian, China. The firm was equipped with an experienced investment team and a mature projects evaluation system for screening and evaluating investment, management, and exit from entrepreneurial projects. Since its founding, HY Capital had invested over ¥70 million[[1]](#footnote-1) in more than 50 start-ups and co-invested over ¥150 million. HY Capital was interested and experienced in investing in emerging high technology industries and mainly funded online-to-offline commerce, mobile Internet, new energy, advanced materials, and smart hardware companies.

The firm’s classic investment cases included Continue Zeal Until Real (CZUR) Tech Co. Ltd., Flextail Technology Co. Ltd., and Dalian V.R. Global Vision Corp. (Global Vision). Global Vision, for example, focused on applying virtual reality (VR) simulation technology in the security field and providing new technology solutions for safety supervision, emergencies, public security, parks, petrochemical plants, and other industries. The scale of Global Vision expanded step by step over several rounds of venture capital investment from HY Capital. Global Vision was listed on China’s National Small and Medium Enterprises (SME) Share Transfer System in 2017. By the end of 2017, Global Vision was leading in the domestic market for product service maturity and research and development (R&D) capabilities.[[2]](#footnote-2)

New vISION

Lianghua Zhao started New Vision in 2003 as an animation studio. At first, the company had only four people working on new media program development and video production. Zhao saw the potential for using three-dimensional (3D) animation technologies as a market promotion method for the real estate industry. Thus, New Vision began to undertake outsourcing services such as software development and 3D video production. The 3D real estate video production brought New Vision its initial income and reputation.

Encounter with AR Technology

In 2003, Zhao became involved with a model digitization team founded by Science Centre Singapore, which is where Zhao first encountered AR technology. He was fascinated by the technology and thought that the unprecedented experience that AR provided would be promising in industrialization. He decided that New Vision would develop AR technology and amass AR intellectual property.

By 2007, New Vision had successfully developed its first new media technology, an interactive projection technique, using its own R&D. With that, New Vision transformed from a simple studio providing animation production services to a new media technology development company that possessed its own intellectual properties. In 2008, New Vision succeeded in developing Magic World, the first AR software in China, and was awarded national software copyright.

In 2009, when the original 3D video production business was at its best, Zhao realized that his outsourcing service was weak in core technology and New Vision could easily lose its business if the real estate industry declined. So he decided to make technical development as New Vision’s primary focus and put almost all of the company’s profit into the R&D of new media technology, such as interactive projection, AR technology, air cast imaging, and new stereoscopic imaging. In 2010, Zhao took six AR demonstrations (demos) involving real estate, education, film, and other fields to the 2010 Demo China competition. One of his demos, AR Magic Book, successfully entered the finals and won a prize.

Focusing on AR Applications

After many years of development, New Vision moved into a stable stage. In 2011, the company had more than 50 employees and earned an annual income of approximately ¥10 million. However, Zhao was not satisfied with the current situation. He noticed that the software outsourcing market was gradually declining due to a slow economy, and the profit margin for outsourcing services was decreasing.[[3]](#footnote-3) Meanwhile, New Vision had enough AR technology developed, but its technology had not yet matured into products. Thus, Zhao decided to shrink the outsourcing service business and focus on the development of AR applications.

Zhao made his decision for two reasons. First, years of development provided sufficient technology and personnel resources for New Vision to move to the AR business. Second, the rapid development of smart phones and intelligent hardware was increasing the demand for AR applications. By 2011, there were more than 100 million people using smart phones in China. The demand for applications for smart phones was booming, with an annual growth rate of 8 per cent, while the penetration rate of smart phones was only 13 per cent.[[4]](#footnote-4) The development of smart phones provided a great carrier for AR applications and reduced the user experience cost significantly. Thus, for New Vision, the rapid development of smart phones and tablets was the feasible premise for converting tested AR applications into actual products.

Positioning in the Early Education Market

AR technology had broad application prospects in mechanical manufacturing, medical treatment, military, television relay, education, construction, and many other fields. However, China’s real estate industry, which had been New Vision’s primary market, began to slump in 2012.[[5]](#footnote-5)

In 2013, Zhao’s daughter was born. Being a new father, Zhao began paying attention to early childhood education resources. He noticed that the market scale for early education in China was huge. But there was little AR product with early educational content in a high-end form. New Vision had sufficient AR technology developed and had the experience of its AR Magic Book demo. Zhao decided, therefore, to reposition the company to enter the early education market.

AR MAGIC SCHOOL

Early Education

As a country with a large population, China had a massive early childhood education market. In 2010, the Sixth National Population Census of the People’s Republic of China revealed that there were nearly 105 million children under six years old in China. Specifically, there were 60.31 million children under three years old, and 44.75 million children between the ages of four and six years old.[[6]](#footnote-6) Most of the children lived in urban areas and these families were the main consumers of early childhood education.[[7]](#footnote-7) Therefore, the size of the early education market in China would reach 20 million people after 2014. This number would continue to rise since China had gradually liberalized the two-child policy.[[8]](#footnote-8)

With the increase in family income, Chinese parents were more willing to spend money and effort on their children’s education. A survey from the China Youth and Children Research Centre in 2011 found that a Chinese urban family spent more than 35 per cent of family expenses on children’s education. An urban family spent an average of ¥816.45 on early education every month and ¥9,797.40 annually, which meant that the size of the domestic early education market was expected to exceed ¥200 billion.[[9]](#footnote-9) Based on these figures, the early education market had tremendous potential.

AR Early Education

Unlike traditional early education production, AR early education production required co-operative teamwork in product planning, two-dimensional design, 3D art, game engine programming, AR engine programming, and iOS and Android development. AR early education products were characterized by a complex industrial chain and long production cycles. Restricted by technological difficulties and production costs, there were only a few companies in China that had the qualified technological capability to apply AR in early education products. Most of the companies stepped into the industry by outsourcing their product, restricting their ability for development with product iteration. Thus, AR early education products in the Chinese market were commonly lacking valuable teaching content and excellent interactivity.[[10]](#footnote-10)

The Birth of AR Magic School

After conducting a market analysis, New Vision positioned itself in the AR early education market and developed AR Magic School, a series of early education productions involving AR technology, targeted to children aged three to 12 years. The products varied from books, to cards, to toys, all of which could be scanned by mobile terminals such as smart phones and tablet computers. AR Magic School’s products could convey information in multiple dimensions—in words, pictures, voice, videos, cartoons, and real-time interactions—covering a range of topics, such as language, nature, geography, and history (see Exhibit 1).

The AR Magic School series of products was successfully launched. To test market feedback, New Vision held experiential activities to attract customers who would try the products. The feedback was good. Zhao was looking forward to expanding the market; however, the company did not have enough money to promote its products. In July 2014, Zhao took his new project on a road show to seek investment. AR Magic School immediately attracted Hu and several other venture capitalists.

HY Capital’s Investment

Before Investment

Hu found New Vision and its AR Magic School series of products in July 2014, at an investment road show. New Vision caught Hu’s attention at once because the product engaged the high-technology industry that HY Capital was interested in and familiar with. After the investment road show, HY Capital investigated New Vision’s team resource, technology competitiveness, market potential, and other characteristics.

Team Building

To focus on the development of AR products, Zhao made a tough decision to eliminate all outsourcing business and to transform completely to build a team working on AR technological development and AR product design. By the end of 2012, New Vision was equipped with a whole industrial chain team working from preliminary planning, art design, 3D animation creation, and program development, to production and marketing. The whole team established the core foundation New Vision needed to carry out its own production, which had been a key resource for New Vision to enhance product independence and originality.

Technical Capability

Technical capability was always the core competitiveness of New Vision. Early in 2007, it successfully developed its first new media technology, the interactive projection technique, using its own R&D. New Vision subsequently developed other intellectual properties, including, in 2008, Magic World, China’s first AR software. In 2012, New Vision was selected by the supporting program for China’s 12th Five-Year Plan for Energy, Science, and Technology Development,[[11]](#footnote-11) and AR Magic School became one of the demonstration products under the program.

Competitiveness

Compared with other AR early education products in the market, AR Magic School had the competitive edge in two aspects. First, the product series for AR Magic School were rich in teaching content and functions. For example, flashcards were one of most popular types of AR early education products. “Magic Language Card I” and “Magic Language CardⅡ” were two typical early education card products in the AR Magic School series. The cards had barcodes that, when scanned by a tablet webcam, brought the images on the cards to life on the screen. The figures responded to touch and interacted with children in games. The cards were equipped with multiple language modes, multiple interactions, knowledge point expansion, large-scale scene display, single card games, and other functions. The abundant teaching content and functions were competitive in the market. AR Magic School’s second competitive advantage was the diversity of product, including cards, books, building blocks, graffiti books, puzzles, and other categories. New Vision kept product diversity by both developing new products and updating existing products.

After investigating New Vision, Hu believed that the investment in the start-up would net high return with great potential in the early education market in China. New Vision had diverse and creative product forms, and it also owned the advanced technology needed to sustainably develop products. New Vision’s team was stable and experienced; they did not need to outsource any part of the product chain. However, since AR technology had just started in the Chinese market, New Vision lacked experience and sales channels in the AR early education market. After careful thought, Hu decided to go with a staged investment with other venture capitalists.

After Investment

After receiving the investment, New Vision had sufficient funds to develop follow-up products and implement marketing activities. At first, Zhao tried to sell the products using sales methods traditionally used for books in bookstores. Zhao and his employees wanted to promote their products at one of the biggest bookstores in the area. However, only a few children at the appropriate age passed by New Vision’s booth in a day. This traditional approach to sales could not increase New Vision’s sales effectively, and bookstores only paid annually, which was not feasible for New Vision if were to operate normally at that time.

New Vision needed an effective sales mode to improve customer awareness and open sales channels. Zhao called a meeting to discuss the marketing strategy. The marketing director proposed two methods of promotion. New Vision could establish its own e-commerce platform to sell products directly to customers online, or it could recruit WeChat business agents to promote AR Magic School to customers. WeChat was an emerging way of doing business in China, combining traditional e-business and social networking communications.[[12]](#footnote-12) Both sales approaches had their advantages and disadvantages.

If New Vision built its own e-commerce platform, it would have channels to communicate with and receive feedback from customers who used New Vision’s products. Thus, a self-built e-commerce platform would help New Vision build its brand image in the long run. The platform would also be easier to control and more stable in daily operation. But establishing an e-commerce platform was costly and relatively slow; the company might not be able to profit quickly. The platform would also require lots of work and input to build and maintain.

If New Vision recruited WeChat business agents to promote its products, the company would not need to spend as much money or exert as much effort as required by self-built sales channels. WeChat business agents communicated with customers in WeChat to promote products interactively. There was no restriction on workplace and work time, allowing the sales mode to work flexibly and intensively to build fast connections with customers. Also, the recruitment standard for WeChat business agents was comparatively low, and agents were paid after successfully selling products.[[13]](#footnote-13) Thus, it would be easy for New Vision to hire multiple WeChat business agents without paying regular salaries.

Another consideration was the vast potential customer base. In 2014, there were more than 600 million WeChat users around the world.[[14]](#footnote-14) The platform effect of WeChat removed New Vision’s restrictions on space and geography for selling products. Selling through WeChat could allow New Vision to enhance its market share and make a profit quickly. But New Vision would lose direct contact with its customers. It would be difficult to solve after-sale problems and maintain good customer relations. There was less chance to build a brilliant brand image.

The management team discussed the issue and decided that it was urgent for New Vision to enter the market and gain its share because there were already cheaper and inferior copies of AR Magic School showing up. The team decided that the company should recruit private sales agents to promote New Vision’s products. It would help to open the target market quickly and raise brand awareness without costing too much.

Zhao then proposed this decision to New Vision’s shareholders. As one of the biggest shareholders and a member of the board of directors of New Vision, HY Capital considered the impact of these two approaches on its capital. A self-built e-commerce platform required additional investment and the investment payback period was relatively long. The investment risk increased with the rising amount of investment. A self-built e-commerce platform might bring poor short-term returns for HY Capital. In contrast, recruiting private sales agents did not need additional investment from HY Capital and might produce quick returns on capital. This marketing method could guarantee the return of investment and reduce investment risk.

After these considerations, HY Capital agreed to New Vision’s proposed marketing strategy. In the meantime, one of HY Capital’s employees proposed entering New Vision’s management to further strengthen supervision; however, after consideration, Hu rejected that proposal. Subsequently, the investment provided sufficient funds for New Vision to explore the market, and AR Magic School captured market share quickly. In the first quarter of 2015, the overall sales for AR Magic School had reached ¥200 million, making New Vision and its shareholders ¥120 million in profits. However, the good times did not last long. With this quick occupation of the market share, New Vision was facing a new problem of market saturation. For most parents with early school age children, a recreational product like AR Magic School was a one-time purchase, not a continuous consumption. Thus, New Vision’s operating income had not increased significantly.

Zhao’s decision-making

Facing the dilemma of market saturation, Zhao shifted his attention to K12 education. In China, students from primary school to high school were facing intense competition to pass entrance examinations for better educational opportunities. Therefore, in contrast to what they spent on early school education, Chinese parents tended to spend money continuously on their children’s K12 education, especially the after-school education. This enormous market segment had drawn attention from entrepreneurs and spurred creative products. For example, in 2015, a K12 tutoring application, ZuoYeBang, came out online and functioned as study tutorship with more than 10 learning tools, such as article search, topic search with photography, and one-on-one tutoring. It was popular in the K12 tutor market quickly; by August 2015, there were already 50 million users of ZuoYeBang.[[15]](#footnote-15)

China’s K12 Education Market

Deloitte reported that in 2016, the K12 education market value in China was about ¥500 billion. By 2020, it was expected to reach ¥880 billion, with a compound annual growth rate of about 12 per cent in the next five years.[[16]](#footnote-16) China’s comprehensive second-child policy, allowing families to have two children instead of the previous restriction to one, was formally implemented in 2016. In the same year, the number of second-born births exceeded 8 million. That number was expected to continue to grow with the liberalization and promotion of China’s second-child policy. The incremental population would begin to enter the K12 stage by 2021,[[17]](#footnote-17) adding to the 233.35 million students under age 14 already in the system as of 2017.[[18]](#footnote-18) With the newborn population continuing to provide new users for K12 education and the average annual family expenditure on educational consumption increasing year by year, the K12 education market was expected to reach trillions of yuan in the future (see Exhibits 2 and 3 ).[[19]](#footnote-19) The prospect of China’s K12 education market was very promising.

New Vision’s AR Technology in K12 Education

Based on the current Chinese K12 education market and the future prospect of the K12 industry, Zhao further analyzed the advantages for New Vision’s AR technology in K12 education from an online and offline perspective.

Online K12

Introducing New Vision’s AR technology to online K12 education allowed students who were learning with tablets to see the teaching-related content in 3D. The vivid and intuitive format helped students to understand and remember. With AR technology, students’ in-class experience changed from 2D to 3D. AR could visualize and display abstract or invisible content, such as radio waves, magnetic fields, atoms, and geometry. Students could clearly understand physical concepts because AR technology completely transformed abstract concepts into visible and specific things. The image teaching replaced the boring theory, which stimulated students’ learning interest and enhanced their ability to learn.

Offline K12

At first, Zhao believed that New Vision’s AR technology applied mainly to online education. However, the introduction of AR technology to offline K12 education could also achieve excellent results. For example, Zhao’s research revealed that teachers were often concerned that the chemicals used in chemistry experiments in primary and secondary school labs were unsafe for students, so the teachers often cancelled the experimental portion of a lesson. Zhao believed, however, that after applying the AR technology to the classroom experiments, the students could visualize the entire virtual chemical experiment and finish the chemical experiments without touching the dangerous chemicals. The AR technology could also be applied to experiments in the fields of physics and biology, which not only eliminated the danger of the experimental process but also reduced the significant cost of the experimental materials.

Finally, Zhao and New Vision’s management team decided that New Vision should make a strategic adjustment and target the K12 tutoring education market. With advanced technology and market experience, New Vision could achieve stable income and sustained growth by developing competitive K12 tutoring products involving AR technology.

Hu’s Dilemma

Zhao proposed this idea to New Vision’s board of directors. Representing one of the biggest investors and shareholders, Hu believed that if HY Capital continued to follow New Vision as it entered the K12 market, HY Capital might make significant profits as a result of the good prospects in the K12 market and the technical advantages of New Vision. But the K12 market was a new field for New Vision and there were competitors. Therefore, HY Capital’s investment would also be at risk. If Hu chose to withdraw at this point, HY Capital would save the funds and current income, but also lose the possibility of harvesting larger profits in the future. Hu wondered if HY Capital should support New Vision’s strategic reorientation or just withdraw the investment with the current return.

eXHIBIT 1: AR MAGIC SCHOOL, Selected PARTs OF THE SERIES







Source: “Magic Library,” AR Magic School, March 18, 2018 [in Chinese], accessed January 18, 2019, www.armagicschool.com/product.

eXHIBIT 2: Expenditure of Chinese middle-class families in single-child extracurricular education, 2016

Note: ¥ = CNY = Chinese Yuan; ¥6.51 = US$1 on December 31, 2017.

Source: “The Analysis of K12 Students’ Population Size, Middle Class Education, Education and Penetration Rate, Customer Unit Price, and K12 Education Market Space in 2017,” China Industry Information, December 25, 2017 [in Chinese], accessed January 26, 2019, www.chyxx.com/industry/201712/596602.html.

eXHIBIT 3: Estimation of the market size of China’s K12 teaching and training industry, 2022–2026

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Years** | **Incremental New Population (Millions)** | **Urbanization Rate** | **Urban Population of K12 Students (Millions)** | **Permeability** | **Unit Price (¥)** | **Market Size  (¥ Billions)** |
| **2022** | 1.5 | 64% | 118.87 | 90% | 10,500 | 1,123.3 |
| **2023** | 1.5 | 65% | 119.84 | 90% | 11,025 | 1,189.1 |
| **2024** | 1.5 | 66% | 120.83 | 90% | 11,576 | 1,258.9 |
| **2025** | 1.5 | 67% | 121.84 | 90% | 12,155 | 1,332.8 |
| **2026** | 1.5 | 68% | 122.86 | 90% | 12,763 | 1,411.2 |

Note: Permeability refers to the percentage of parents willing to let their children participate in K12 education. Unit Price refers to the cost of one year's K12 education for each child.

Source: “The Analysis of K12 Students’ Population Size, Middle Class Education, Education and Penetration Rate, Customer Unit Price, and K12 Education Market Space in 2017,” China Industry Information, December 25, 2017 [in Chinese], accessed January 26, 2019, www.chyxx.com/industry/201712/596602.html.

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