Analysis of China's Education Market and the Entrepreneurial Strategy of a Chinese Education Venture

By

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ABSTRACT

Since the past several years, Internet and Artificial Intelligence (AI) are at their zenith. Application of these technologies has reshaped most industries and has largely impacted the lives of people. Education is an essential part of an individual's welfare and a country's future. However, we find a slower than average speed, in the spread of Internet technologies in education. On the other hand, education in China is very backward. Millions of people who live in second-tier cities, small towns and rural areas do not have access to high-quality education. This phenomenon leads to Polarization of the Society and lowers social mobility. However, the situation of lesser development in education also indicates a market with great potential. The online education market is regarded as one of the most promising fields of the next decade. Moreover, people have witnessed many Chinese Online Education Technology startups emerged in the past several years. These education startups have different advantages and diverse strategies.

This thesis will examine the current e-learning market, analyze the pros and cons of different models, choose the right model for a startup and recommend a roadmap to viable and profitable Chinese Educational ventures.

Thesis Supervisor: Michael A. Cusumano

Title: Sloan Management Review, Distinguished Professor of Management

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Acknowledgments

First and foremost, I wish to thank Professor Michael A. Cusumano, my Advisor and Guide, for his patient support all throughout. His book about MOOC and Vision of Education were very enlightening and gave me many new ideas.

My thanks are also due to the Sloan and MSMS program. I had a very intensive and rewarding year in Cambridge. It was a life-changing experience here. I got to know many friends, whom I believe, carry the same passion in entrepreneurship and education.

I also wish to thank my family. During my past six years' career, their patience, tolerance, and sacrifices have been my constant support in the pursuit of my dream in education. This experience, in fact, is the backbone of my thesis.

Finally, my gratitude to my former employer, New Oriental, for providing me numerous opportunities to develop my deep understanding of the education field.

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Introduction

For the past several centuries, the main responsibility of our education system has been to train more skilled employees to fulfill the needs of industrialization. Majors in universities and subjects in high schools are mostly designed based on this principle. On the other hand, education is a field that has been least adaptable to new technology. The Internet Technology has disrupted many industries and greatly changed people's lives, ranging from the supply chain of the dairy products we have every morning, to the operations of global financial institutions. However, when we look back, we find education— almost the exclusively important thing for citizens' welfare and wellness— is falling far behind.

If we focus our scales on Chinese education market, we can find several interesting traits of the current education system. The public education system is controlled by the government, making the system more conservative and difficult to progress. The private sector education is also developing at a relatively low speed, compared to that of Internet-related industries.

The market is extremely segmented. The market shares of top 10 largest education companies are less than 8%. Such low number indicates that the market is far from mature and the efficiency is very low. In the next few decades, the education industries would catch up. We are fortunate enough to witness many game-changing turning points and experience many innovative approaches to education that are unbelievable to the last generation.

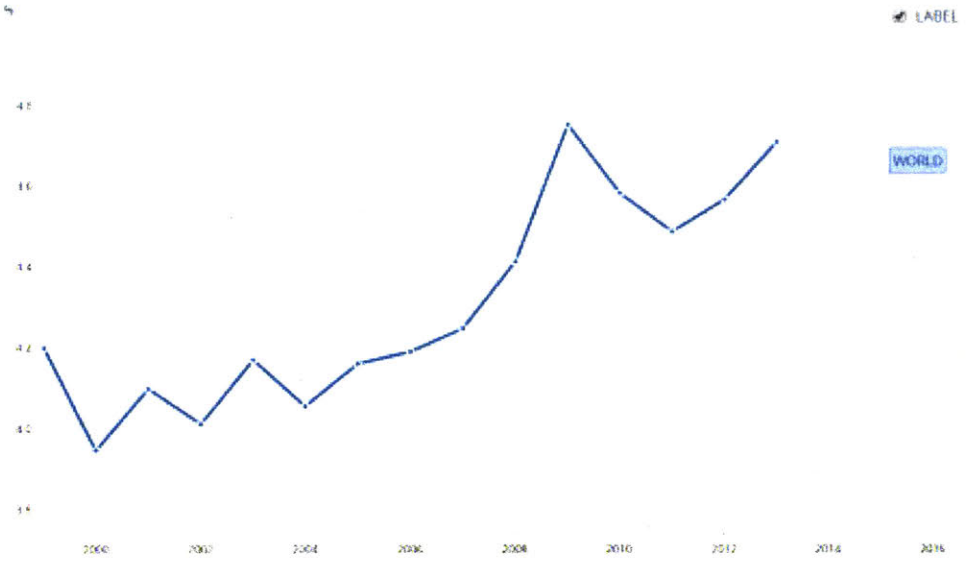
This thesis would analyze the Chinese education market and discuss the entrepreneurial strategies of Chinese education ventures. The first chapter analyzes the education market and

identifies different market segments. Chapter two discusses the definition of Online Education. Different business models of online education will be introduced and analyzed with practical case studies, and the advantages and disadvantages of these models will be compared. In chapter three, the focus will be on the roadmaps and strategies for Chinese educational ventures. I discuss the market segments choosing, product design, long-term strategy and potential risks and challenges.

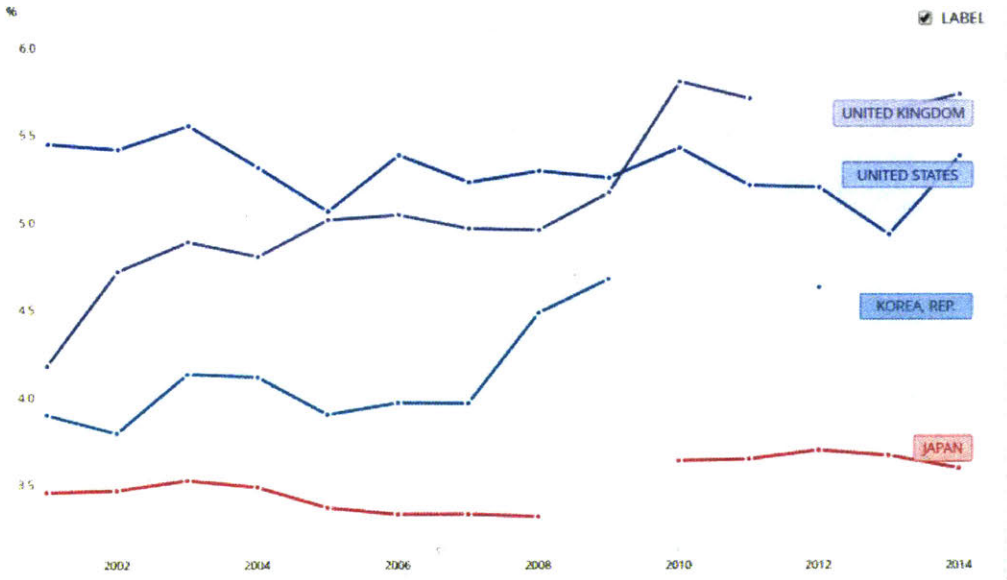
Chapter 1 Education Market Overview

Introduction

The system of education can be traced back to over a thousand years. In western world history, schools date back to the early Middle Ages. Monasteries of the Roman Catholic Church were centers of education and literacy, preserving Ecclesiastical Latin learning and calligraphy. Prior to their formal establishment, many medieval universities functioned for centuries as Christian monastic schools (scholae monasticae) and later as cathedral schools (Wikipedia, 2017). Around 400 BC, the great Chinese philosopher Confucius established a private academy, what was perhaps one of the earliest schools in China. Education, as a primary source of intelligence, is a prerequisite for developing any country's most important asset - its citizens. As per the World Bank, the percent of GDP in government expenditure on education globally has been increasing over the past 18 years. In developed countries such as the US, UK, Korea and Japan, the budget allotted for education has increased at a rate, similar to or even higher than the GDP growth. The education industry definitely has a great impact on its citizens' lives and a nation's future. This chapter first reveals the education market size of the globe and developed countries, such as the US. These indexes of developed countries are important benchmarks for Chinese market analysis. Then, it analyzes the Chinese education market size and the different segments.



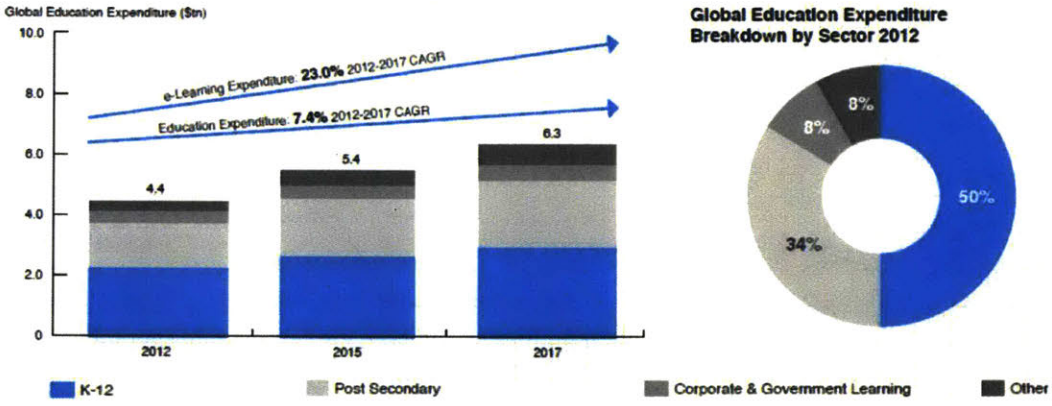
Total government expenditure on education globally (% of GDP) (United Nations Educational, 2016)



Government expenditure on education in the US, UK, JAPAN and KOREA (United Nations Educational, 2016)

1.1 Global and the US Education Market Size

In the Fall of 2012, about 76.3 million people enrolled in American schools and colleges; and about 4.7 million people were employed as elementary and secondary school teachers or as college faculty. A 2011 White House study shows that the total annual U.S. expenditure on education was approximately $1.3 trillion, with the K-12 online program accounting for close to half of this figure. Almost 9 percent of total U.S. GDP was spent on education, making it the second largest sector in the country, after healthcare. (DCR TrendLine, 2014)

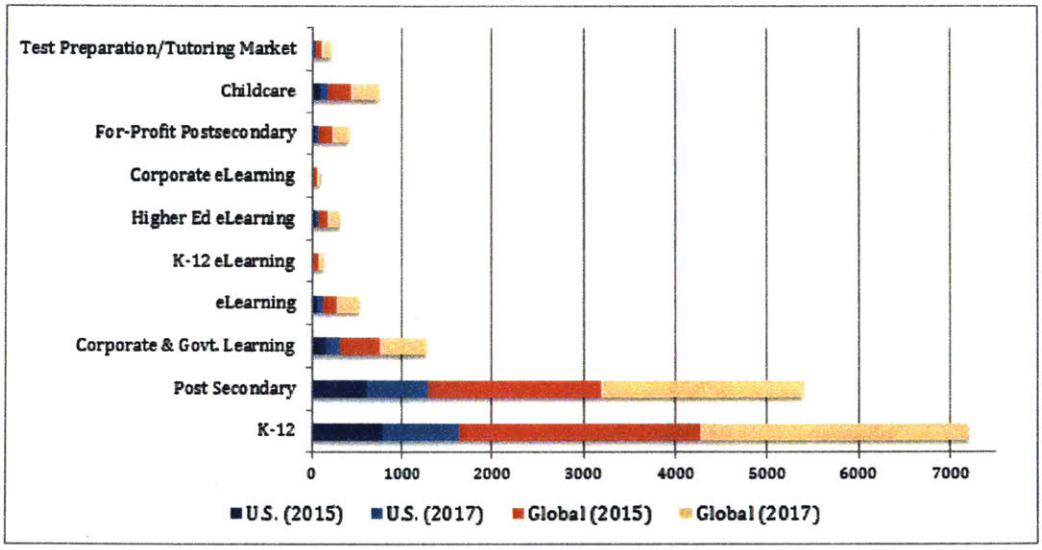


Global Education Expenditure ($tn) (Cavanagh, 2013)

		Market Size ($1 billion)	eLearning Expenditure ($ billion)	eLearning as % of Market Size
U.S.	Total	1,332	59.8	4.5%
	Post-secondary	432	24.4	5.6%
	K-12	625	2.9	0.5%
Global	Total	3,925	62.5	1.6%
	Post Secondary	1,311	31.3	2.4%
	K-12	1,878	9.4	0.5%

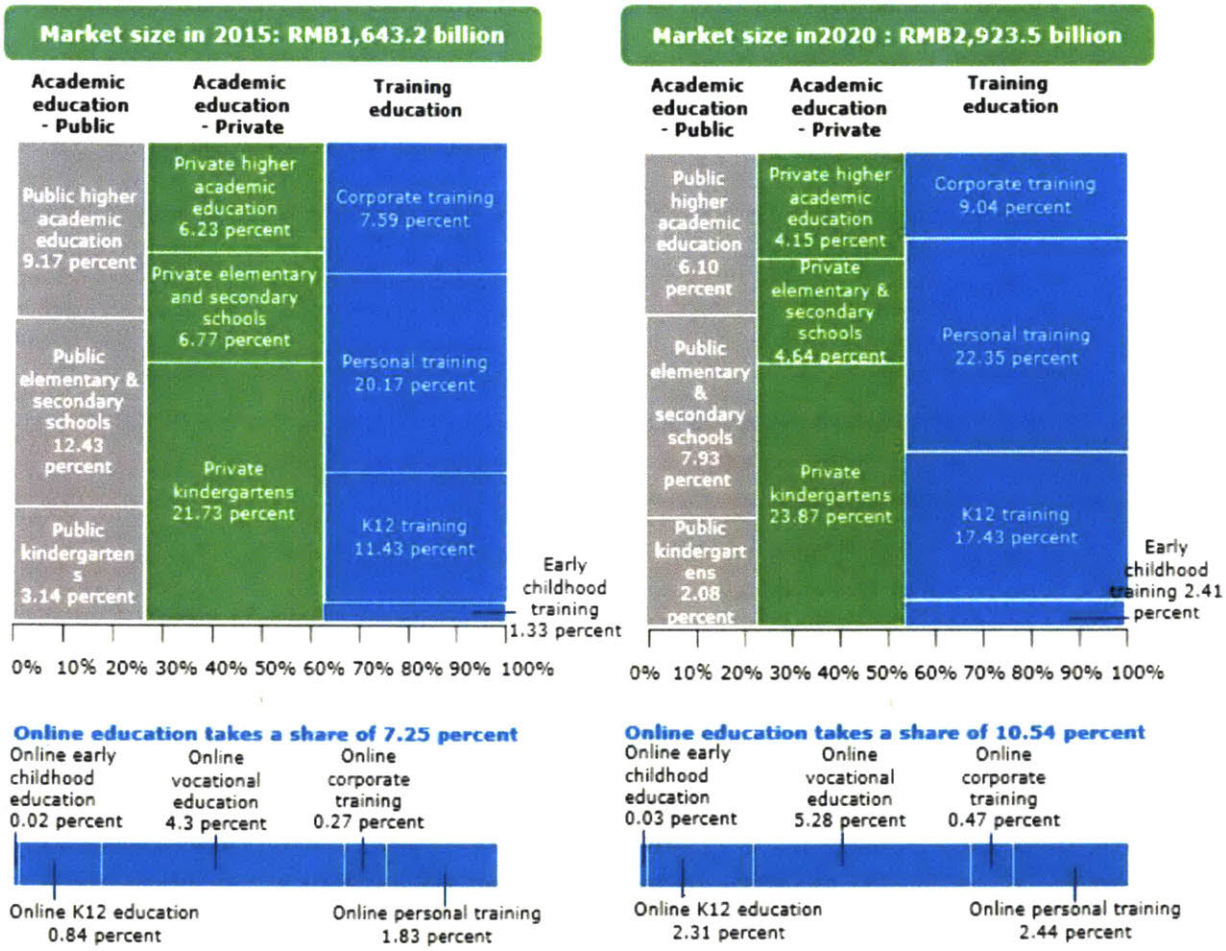
The U.S. and Global Education Spending (Executive Office of the President, 2014)

From these statistics, we can infer that the education and e-learning market size globally was about $3.9 trillion and $62.5 billion respectively until 2014. The Compound Annual Growth Rate (CAGR) for education and online education was 7.4% and 23% respectively. We estimate that the global market size would be about $6 trillion and e-learning market size would be over $220 billion. Education as an industry has experienced steady growth and could most likely maintain this trend in the next decade.



Projected Education Market Size (in billion dollars) (DCR TrendLine, 2014)

1.2 Chinese Education Market Size



Market size of China's education industry (Deloitte China, 2016)

A Deloitte report describes China's education as steering towards its 'golden age.' In 2015, the overall size of China's education industry was RMB 1.6 trillion. This figure is expected to grow to nearly RMB 3 trillion in 2020, with a Compound Annual Growth Rate (CAGR) of 12.7 percent. Implementation of the 'two-child' policy has given early childhood education the necessary impetus, and has created an adequate demand to encourage government policies on preschool

education; a growing school-going age population spurred an increase in K12 extra-curricular training, and the demand for K12 examination-oriented education and language education. This is attributed to a desire for further education and also international schooling, sustained on enhanced economic capability and competitive inclination for better personal training prospects. In the past 20 years, China has experienced rapid economic growth. We have seen a surge in the middle-class population. Some from this new middle class have transformed their life through diligent learning and excellent performance within the current education system; and as parents now to the younger generation, they understand the significance of education and are not frugal in their spending. Those that have acquired wealth but unfortunately missed out on a good education are even more willing to make up for that lack, through investing in their children's future. So they have an equal opportunity at success in their lives through education. Thus, it is reasonable to assume that China's education market holds great promise in the upcoming decade at least.

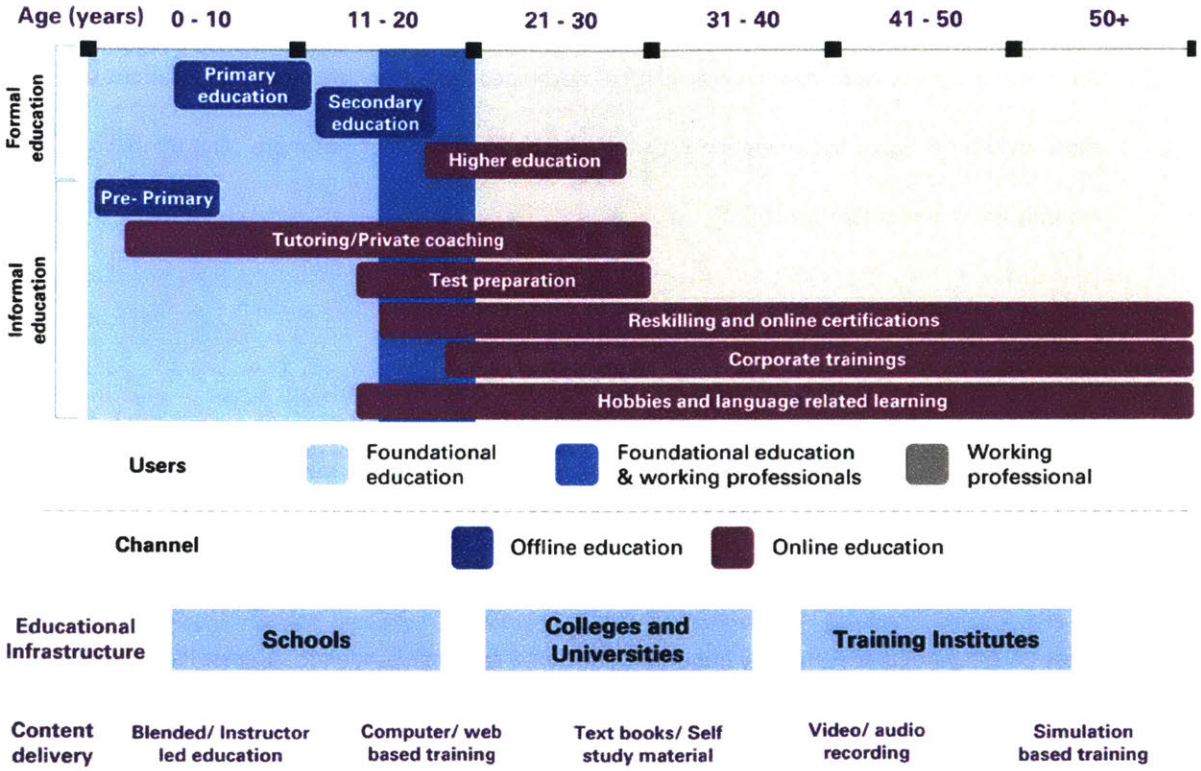
1.3 Segmentation of Online Education Market

Chinese Online Education Market Size (iResearch, 2017)

Introduction

Chinese online education market is in its infancy, relative to the US market. In 2001, Arnold Fu, a junior student at University of Shanghai for Science and Technology, created an online forum called 'Hujiang Yulin,' for the learner community. Hujiang was active as a non-profit organization till 2005, the year Arnold graduated. In 2006, Arnold restructured Hujiang into a profitable corporation. Today, Hujiang is one of the largest online platforms delivering educational content and courses. It has aggregated over 200 million e-learners and has a valuation of about RMB 100 million ($15 million) (Glassdoor, 2018).

Hujiang epitomizes the experience of a variety of Chinese online education companies over the past decade. Wider adoption of technology in the form of PC, tablet, and smartphones has promoted e-learning greatly. A rapidly changing world necessitates people update their knowledge periodically. This prevailing supply and demand cycle has fueled the progress of education corporations in many different sectors. The following part of this chapter identifies and classifies major segments in Chinese online education market.



Overview of Education System in China (KPMG Consulting, 2015)

1.3.1 Preschool Education

The target audience in this segment is children younger than seven years of age. The number of kids in the age group 0-6 has increased from 108 million to 114 million since 2015 and is estimated to cross 125 million in 2020. Implementing the 'two-child' policy has led to a swift increase in demand. Preschool education expenditure had crossed RMB 450 billion in 2017 and is estimated to be RMB 600 billion in 2020. In contrast to the demand side, the supply aspect is very backward. Resources for professional early childhood educators and education facilities in

public kindergarten are limited. This situation gives a big business opportunity to private companies. For example, Babybus, established in 2012, has been providing audio and video contents for Chinese and English learning. It has developed more than 160 mobile applications to allow children to learn by interacting with the system. Now Babybus has more than 60 million monthly active users. (SaaS, 2017)

1.3.2 K-12

Target end users are children aged 7-16 years. K-12 Online Education system contributes the largest market share and has the largest number of customers. K-12 covers students from elementary school through middle school and high school. For most Chinese people, these phases are regarded as extremely important ones for a student's academic success. Parents are willing to spend significant percent of their income on it. Education firms started setting the layout for K-12 around 2013. A relatively late time compared to other segments. 'Tomorrow Advancing Life' (NYSE: TAL) is the precursor of K-12 online learning. Its major competitor, New Oriental, followed this move closely. However, since for these two education giants, offline is the main part of the business, online course is defined as complements for offline education.

There is an emerging trend: that some tech companies, established by former employees in Internet companies are trying to integrate AI, machine learning, natural language recognition and some other cutting-edge technologies into education. They are trying to use the intelligent and interactive learning system to partly or totally replace the instructor's work. For example, Liulishuo created an "AI teacher", which is a self-adaptive, interactive learning system. The price

of one course of "AI teacher" is RMB 100, while the number of units sold is 600 thousand. Just six months after it was officially online, this product generated a 60 million revenue.

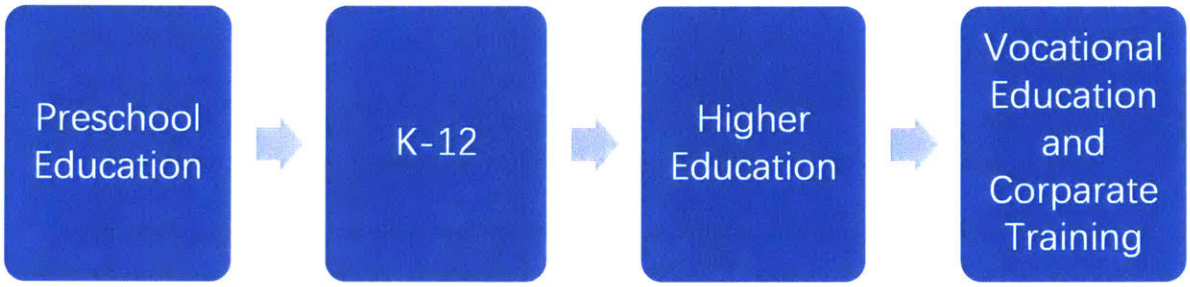
1.3.3 Higher Education

Target customers are *college students*. The best education resources are usually concentrated in top universities. Transferring to another school is almost impossible and moving onto another major is also very difficult in China. A lot of students desire better courses and instructors. Online education has become one of the best choices. Compared to K-12 students, college students are more motivated and self-disciplined. The Internet brings them abundant educational material and sources. For example, College English Test (CET) Level-4 and Level-6 are the tests most college students take. Students are able to complete all the preparation in Kaomanfeng.com, a website that offers exercises and realistic mock tests alike. Also, many platforms like 'Tsinghua MOOC' offer many online courses on diverse subjects.

1.3.4 Vocational Education and Corporate Training

Vocational education and corporate training have a long history in China. Since the society is evolving so quickly, the requirements from employers are also changing quickly. In addition, there is usually a big gap between school education and real-time work requirements. Thus, many education firms help students prepare for succeeding in certification entrance tests and seeking jobs. For example, Gongwen education, just like Wallstreet Prep in US, teaches students skills about financial modeling and industry analysis. APTECH and Tarena provide training in computer

programing.


Preschool Education
K-12
Higher Education
Vocational Education and Corparate Training

Chapter 2 Business Model of Online Education

Introduction

Just like all other industries, different online education companies have very different business focus. As we discussed in the landscape chapter, education companies are different in many aspects such as class size, teaching methods, offering services or products, platform or content providers. In this chapter, we will discuss main business models for content providers, because content is the key to education. We will explore the definition and case study of these models to help readers understand the differences between what the business models include and what are its applications in the real world.

2.1 Definition and Scope of Online Education

To begin with, Online Education development can be divided into two categories: *Content Provider and Infrastructure Provider*. Infrastructure providers are the software and hardware companies, who provide technical support for educational practices. For example, a Hardware manufacturer provides items like Blackboards, Canvases and VR devices for immersive learning; while Software Companies offer Learning Management Systems to the educational institutions. Since these companies are technology-oriented and their activities are not directly related to education, we shall not focus upon them in our chapter.

Our focus in this chapter shall be on Content Providers. Content provider is a very broad idea. In the encyclopedia, its definition is- an organization or individual that creates information,

educational or entertainment content for online delivery or optical media. For non-standard content, a provider may have to include the software used to access the material. (Pcmag) Per the business dictionary, content provider means firms which supply text and generate the graphics of articles on interviews, new developments, new stories, *etc.*, that can be employed to make a publication or appeal as more attractive and useful to its readers or visitors. (businessdictionary) For education situation, in my opinion, a content provider could be anyone and any organization that makes anything that facilitates the learning process. It could be a teacher who uploaded his video or gave instructions on the Internet. It could be a student who shared his experience and question in an online community. It could be a company that collected exercises and transformed them into an online practicing system. Of course, it also could be a company that hires teachers and gives online classes.

2.2 Business Model of Online Education

2.2.1 One-on-One Tutoring

one-on-one is the most common business model for course providers. This is the easiest way to start, and it provides a personalized learning experience for the student. Advantages of online one-on-one model include-

(1) For a large class, the user experience of online class and offline class can be very different. Teachers cannot instantly see the student's feedback nor can they interact with students online. However, for online one-on-one, the difference is not so obvious. There is only one student on the screen. Interaction and teaching efficiency does not differ too much from the offline course.

(2) In the Chinese market, big players are focusing on group tutoring business. The competition is not so tough for group tutoring. Most competitors are college students who want to earn some money in their spare time.

(3) Online one-on-one sometime is an even better choice than offline, because it saves much time on traveling while the learning experience is almost the same.

However, there are a lot of challenges to online one-on-one business-

(1) Low margin. The labor cost is very high. 50%-70% percent of the revenue gets paid to the instructors.

(2) Hard to expand and no economy of scale. For a group class, it can expand by enrolling more students, but it is impossible for one-on-one. The instructors' working time is limited. It is hard for a company to have a multi-fold growth by offering one-on-one tutoring.

(3) Hard to standardize and high training cost. one-on-one business needs more tutors, which would mean more investment in employee training.

Case: VIPKID

VIPKID is an education startup which focuses on providing one-on-one online English course for children from 4-12. Their instructors are all from North America and English-speaking countries like US and Canada. In 2007, it claimed that they have made RMB 5 billion revenue and had 50,000 teachers. They used the following method to solve the mentioned problem.

First, in order to expand without decreasing the quality too much, they developed standardized curriculums and teaching material by internal research and purchasing their textbooks from US publishers. They also have a packaged teaching and learning assistant system to minimize the impact on students caused by instructors' variance.

For example, in a 45 minutes long class, first 10 minutes are dedicated to reviewing the content of the previous class and homework explanation, while the last 10 minutes are a summary of the on-going class. All these contents, along with exercises after the class are standardized videos. This means a teacher only needs to spend 25 minutes for one class. This method effectively lowers the cost and ensures the effectiveness of instruction. However, VIPKID could not eliminate all the mentioned problems. After two years of rapid expansion, there are more and more complaints about deteriorating teaching standards and encountering of unprofessional teachers. In addition, the margin was always a problem. The average price of one class is RMB 100, and the instructor's salary is around RMB 70. If we take marketing and operating cost into account, the end-margin would be very low. This is still a potential threat to VIPKID's business. At the beginning of 2017, VIPKID started to explore the possibility of 1-on-6 class. We will discuss the model in the next part (阿猿, 2016)

2.2.2 One-on-Six Tutoring

In order to solve the problem of one-on-one online course, one-on-six group class has been developed. Compared to one-on-one, one-on-six has very obvious advantages:

(1) *High margin rate*. In one-on-one class, more than half of the revenue is used to pay for the

teacher's salary, but for one-on-six, the percentage could be lowered to 20%.

(2) *Social interaction among peers*. One of the problems of the one-on-one model is that students do not have peers to interact with. Such interaction is very important for user experience. It encourages students to learn and encourage each other. The class environment would give them a sense of belonging and make them feel learning is a natural group behavior.

1-on-6 also has its disadvantages.

(1) *Logistics would become much more complicated* for one-on-six. Scheduling becomes difficult. Actually, in traditional offline education companies like New Oriental, different scheduling would make a big difference. This process needs to consider many factors such as in which time would be viable for all the students, during which time period should the management arrange more courses and which time slot is appropriate for which instructor. The dropout rate has become more significant as well. In the one-on-one course, dropout of one student would not affect other customers; while in a one-on-six class, a drop-out would lower the margin and lead to the same dropout decision of other classmates. Imagine that if one student dropped the course and then the next day one more dropped out as well, how would it impact the rest four students who would re-consider taking the class.

(2) *The difficulty of class management*. A class with six students is most complicated to manage. For a larger lecture, the lecturer just needs to give lessons and is not expected to have much interaction. For one-on-one, it is easy to observe the student's facial expressions. For one-on-six, it is a small group class, and the instructor needs to respond to every student's questions. The interaction between classmates promotes good class atmosphere, but the tutor needs to manage it, to prevent it from interrupting the course of teaching. According to the above point, a

one-on-six class requires much more in operation management and instructor training. How to balance the increase in profit and rising cost in operation and training is a major challenge.

(3) In one-on-six, it is very *important for the students to be of the same intellectual level*. If one cannot follow the class, the instructor would have to repeat the same point and spend more time to explain the same, thus worsening the experience of the other students.

Case: Codepku(编学编玩 bian xue bian wan)

Codepku originated in 2013. Its founder, Xianglin Hao, built a club called 'Early Bird Club'. This club taught young children computer programming. Three of their students won top 3 place in a nation-wide competition, which encourages them to pursue a full-time job in programming instruction area. Now, as Xianglin announced, the company has an annual revenue around RMB 3 million. Codepku just completed a RMB 10 million pre-A fund raising.

Their most popular product is one-on-six programming. Every class lasts for 45 minutes. In the first half of the class, every student shares their project progress and discusses the same with his/her classmates. In the second half, teachers make comments on the students' presentations and give lectures. I think the most important reason why this one-on-six class runs well is that programming is a project-based-learning. The knowledge explanation is not the most important.

Student's exploration and research are most valuable to the class. Hand-on-hand instruction is not appropriate for this subject because creating something new is the ultimate goal. Also, Codepku provides one-on-one instruction for those students who were unable to follow the class. However, Codepku still has not found a good strategy for expansion. The instructor for project-based-learning is hard to train and recruit. Although Codepku has designed a good strategy to minimize the teachers' variance impact, it is still not easy.

2.2.3 Group Lecture Class and MOOC

A Massive Open Online Course (MOOC) is an online course aimed at unlimited participation and open access via the web. In addition to traditional course materials such as filmed lectures, references, and problem sets, many MOOCs provide interactive user forums to support community interactions among students, professors and teaching assistants (TAs). MOOC is a recent and widely researched development in distance education, which was first introduced in 2006 and emerged as a popular mode of learning by 2012.

Early MOOCs often emphasized on open-access features, such as open licensing of content, structure and learning goals, to promote the reuse and to remix of resources. Some later MOOCs used closed licenses for their course materials while maintaining free access for students (Wikipedia)

Case: Two stages of MOOC's development in China.

Stage 1 : Content Provider

For example, Netease online open course(网易公开课), set up in 2010, is an online learning platform, offering free learning resources to everyone. Learners can get access to a wide range of contents covering Humanities, Education, Arts, Technology, Health, Finance, Entrepreneurship, Social Science and many other fields which are introduced from universities and organizations such as Harvard, Stanford, Oxford, Khan Academy, BBC, TED, Coursera, etc. (quarter-wise) In the following several years, some other platforms have appeared like Tsinghua MOOC（xuetangx.com 学堂在线）. Basically, they are of the same form. They record lectures in universities and other educational institutions and then uploaded it to the Internet. They do not do much editing on it. The only thing they do is adding captions on them. These practices do popularize the online learning scheme and make people more willing to accept e-learning. However, such educational products are very primitive. It does not consider that online education's use, situation and students' needs are very different from that of offline education. In offline classes, students usually pay for the class given by the school. They have direct contact with instructors and classmates. Usually, they need to perform well in these classes to graduate and look for jobs based on the knowledge they have acquired from school. All these help students maintain concentration in the classroom. However, online education does not have any of these conditions. Users usually watch these videos out of interest and can easily give up. Soon after, a few companies realized the problem and developed a new form of online courses.

Stage 2: Content and Service Provider

After stage 1's exploration of online large group courses, some much more refined online courses appeared in the market and started revolutionizing people's learning method. They made the following changes in online courses:

(1) *Live Broadcast*. In order to let students feel more interactive, some companies changed the video course to live-video course. Students could easily interact with the teachers by asking questions from their terminal. The most important thing in the change is that it makes the customer feel that they are buying the teacher's time rather than merely a video clip. This trial enables the price of online course to increase and make this business module profitable.

(2) *Online exercises system*. In the process of education, teacher and learner are all very important. For the learner, corresponding exercises and practices are critical to their understanding. Thus, some platform must be built for testing their knowledge, and an exercise bank could make the learning process more efficient. Instructors can assign homework in the system itself.

(3) *Community in social media*. To mimic the social environment of offline classes, many institutions build Wechat groups and teaching assistants(TA). TAs send messages to Wechat groups every day to invoke students' discussion of their learning progress and discuss their questions, if any.

All these changes have forced the original online education companies to convert from content

providers to service providers. These improvements make e-learning efficient and make this method of study acceptable for more and more people.

2.2.4 Subscription-Based Services

The subscription business model is a business model where a customer must pay a subscription price to have access to particular modules of a product or service. The model was pioneered by magazines and newspapers, but is now used by many businesses and websites. Rather than selling products individually, a subscription sells periodic use (monthly or yearly or seasonal) or access to a product or service. (Wikipedia)

The subscription model has been used in education. This model was first introduced by Ximalaya, a company that offers audio lessons. The model has become extremely popular in China. A popular instructor's audio class would sell tens of thousands of units, and the price for one unit was around RMB 150. This meant, the teacher could have a revenue of more than RMB 15,000,000 per year, while the cost is only the time spent on recording the lesson.

The advantage of this model is:

(1) *The cost and price are very low*. It is easy to implement. Hence, such a product can be sold on a large scale.

(2) *It cumulates a large number of users in short period of time*. This user base can be used to promote upgraded products and more expensive educational products.

The model has its disadvantages as well. The education effectiveness is difficult to measure. Current subscription products are all very simple. Students only spend 10-20 minutes on it daily.

Most people do not treat it as serious education, but see it as an interesting way to be entertained and acquire some knowledge by the way. So customers are easy to lose and hard to keep caught for learning in the long run.

Case: Bohe Reading

Bohe Reading is a product that helps people improving English reading. They separate English novels into small parts: hard words (vocabulary), sentences, paragraphs and corresponding translations, and exercises. They have a Wechat group. TA would answer questions posted in the group every night. This product is so popular that more than 300,000 people have bought it and the price is RMB 150; thus having generated a RMB 45,000,000 revenue for the company.

2.2.5 Interactive Learning Tools

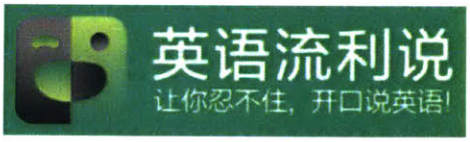
'Interactive learning tools' means using an interactive learning system to mimic the teacher's instruction process. As we discussed on other business models, the bottleneck of education is instructors. High-quality instructors are a precious resource, which cannot be produced nor replicated in a short period of time. The cost of an instructors' salary is one of the biggest expense for an education company. In order to conquer this challenge, some companies tried to

apply interactive systems to replace the instructors' role in education. The bright side of this strategy was that the cost is very low and the limitation of human resources was eliminated. The collected data and feedback could be used to better the system. By applying big data analysis, the system would even overpass human teachers' efficiency in certain subjects in the long run. There are also some challenges for it.

First, the *investment in the early stage* to build the system is not small.

Second, the *learning process and procedure are set* in interactive learning. If the system does not fit some students well, it cannot make adjustments like humans do in such situations. This would largely hamper the users' experience.

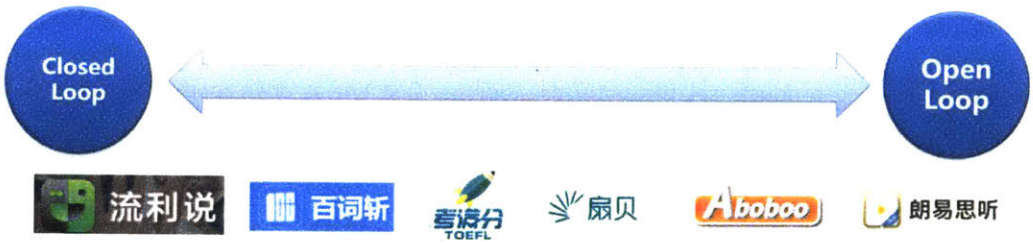
Case: Liulishuo



Liulishuo has said that it is the world's leading AI+ education company. It was founded by several product managers and software engineers from Google. They claimed to have the largest voice bank of Chinese speaking English. Their system could provide a personalized and adaptive learning path for every learner. They claim the effectiveness of AI teacher was higher than human teachers (I keep my concern about this claim intact though!). The price of their course is RMB 100 per month, and they have had more than 600,000 paid users until July in 2017. This means one year after their AI learning product was launched into the market, Liulishuo at least made a revenue of RMB 60 million. The learning process in Liulishuo is like this - first, a student would

take an evaluation test. The test usually takes anything between 5 to 15 mins. Then the student would be assigned to the class according to his/her performance in the test. After completion of all the courses and tests for this level, the students would be allowed to start learning the next level.

2.3 Analysis and Comparisons of Different Models



Based on the analysis we did above, these educational products can be categorized into two general types: Human-instructor-based (HIB) and computer-instructor-based(CIB). For the HIO model, the unit price is relatively higher while a number of customers is smaller. The company usually have better cash flow but will meet challenges if they try to expand. CIB model's operation is more similar to an internet product when compared to an educational product. The most costly is system building and customer acquisition. They are easy to replicate and expand. However, now, most products' life cycles are not very long, and the retention rate is needed to be improved.

There is an interesting phenomenon about the HIQ model, the product's form can be differentiated by their openness. In the learning process, there are two important things such as

learning materials; which includes textbooks, exercises, tests, lectures etc., and learning path; which implies the sequence of using learning materials. For example, we have 20 chapters to read, 200 exercises, five tests, and 15 lectures. After studying all the content in these learning materials, the students would have developed a good command of the knowledge. The learning path could be; firstly read chapter 1 and then take lecture 1, once exercise 1 is completed, the student can proceed to read chapter 2. However, the best learning path for different students is different. Students with great ability to understand certain subjects may skip the lecture part. For open loop products, students have more freedom and flexibility to design their own learning path while closed-loop products set the path for students. One end is open loop, which means a customer could plan and take decisions on their own learning path and the other end is the closed loop, which implies that all the learning path is decided by the system and no flexibility is left for the customers. For example, liuishuo is a typical closed loop product. Students are assigned to a certain level after the placement test. Users can not choose or make any changes to the level they are in. For every level of learning, the system would set every single step for the student. All the students need to do is to follow the instructions, this will enable them to complete every step that the system has put in place for the student. Open loop product is obviously much easier to realize because it only needs cumulation of learning materials. A company just need to have enough editors to collect and upload these materials online. Sometimes, such work involves some selection and edition of the learning materials. Nonetheless, it is technologically challenging to realize closed loop products. Choosing and designing the best learning path for different students is not easy. Traditionally, this job is done by human teachers. Even for a human, only experienced teachers could give good suggestions on the best learning

path for certain students. If the learning path set by the system is not appropriate for the users and they are not allowed to make changes by themselves, this would largely deteriorate the user's experience. The advantages of the closed loop are for those intro level students who do not have the ability to design their own learning path or are not willing to spend time on designing learning path. They can easily start to learn without any form of confusion. In contrast, the bright side of the open loop product is that high-level learners could plan their own learning path and make change according to the learning progress. However, the disadvantage is that for the intro level user, they might get confused which makes it difficult for them to get started.

Revenue and existing circumstances seem to accord the closed loop product much more success as a cash flow instrument that can attract and maintain customers. I believe the reasons are:

(1) Most online learners are the intro level; they only need specific instruction(s) with definite subjects that aid comprehension and helps cultivate learning routine in them.

(2) Open loop products are more likely cumulated online learning material, rather than a course. Thus, customers are less willing to pay for it.

Also, customers that get accustomed to the open loop educational tools are more likely to have a better aptitude in certain subjects, they also prefer self-study to spending money on instruction, making the open loop product less profitable.

The other emerging trend with education companies in China is to mix these business models together. Koamanfen.com is an example of a company that offers free online test banks and

learning systems to people preparing for GMAT tests. It started off as an online learning system, and courses were subsequently added to their product line. Smartstudy.com was also originally an online video course provider. Currently, they package offline tutoring as well and no longer sell online video courses exclusively. This is the double-instructor model. In my opinion, the trend of integrating various services and products, both online and offline, offers a better user experience and this is the future of education.

2.4 Conclusion

From the analysis and case study above, we drew some important conclusions of the business models in Chinese online education market. Human-based-instruction model has severe limitations. The instructors' resources are inflexible and difficult to augment. The operation and training cost is prohibitive, if we include the marketing and operational cost as well, especially observed in the one on one model where companies struggle relentlessly to make money through imparting lessons alone. Another problem is the product standardization. The HBI instruction is distinctive, and the quality of education varies significantly and inevitably, as per individual expertise and ability. As an example, New Oriental, the largest education firm in China and my former employer, spent two years and millions of RMB on product standardization in 2014. Prior to that, customers who paid the same amount of money for the similar courses may have had a very different user experience. The courses could be very different since they were taught by different instructors, despite the fact that the name and the price of the courses were the same.

A few online education companies made attempts to address these downsides through structuring uniform syllabus, textbooks, exercises, and texts. However, some instructors ignored the established guidelines. However, companies like the New Oriental define very specific and detailed instructions for each class. For example, the guidelines clearly state the decorum expected from the teachers at every stage, the time they ought to spend on any topic, and the homework for the class. This ensures standardized product offerings for the education company.

Some online education companies have stepped ahead of the curve. As mentioned, VIPKID replaces teachers' instruction in the first 20 and last 5 minutes of class with animations, videos, and interactive games. As with Bohe reading, they do not hire teachers anymore. They use the system to help complete the learning process, offer only TAs that answer questions, and encourage the ones lagging behind. One TA is responsible for over 500 students. So, the cost is very low. If reading is an objective skill that could easily be improved without interacting with teachers, Liulishuo even developed an interactive system for students to improve English speaking and writing practice. This means learning subjective and interactive skills like speaking in a non-human system which is technologically feasible.

So, we can see that in a future with digitized learning material, Big Data and AI could configure the learning path, and interactive systems could assist students in their learning process. The human teacher will impart social and emotional skills.

Chapter 3 Roadmap and Strategy for an Educational Venture in China

3.1 Analysis of Chinese Education History and Big Players

Education has significant value, and it is central to Chinese culture for thousands of years. In the Chinese tradition, parents lay exceptional emphasis on a child's education. The earliest education institutions can be traced back to 3500 years ago; with schools for aristocracy that taught about priestly etiquette and astronomy calendars, and imparted arch-shooting and riding skills. The Shang Dynasty (1046 BC–256 BC) records cite several educational institutions all over the country. Guoxue was for aristocracy and Xiangxue for ordinary civilians. The Tang dynasty extensively used "Keju," a Chinese imperial examination for ordinary civilians; qualifying was the only approach to the elite class status, other than of course, exceptional achievement in the battlefield. For over ten centuries, excellence in "Keju" served as a social ladder for ordinary citizens to realize their dreams and intellectuals to make a name and be noticed in the society. Thus, in the Chinese culture, education has been accorded the first priority to the extent that people are almost religious in their beliefs about good performance in examinations.

After the establishment of People's Republic of China in 1949, we did not see real education firms, or even a private company in China until 1978. The first wave of education company re-emergence was in the early 1990s. "Gaokao," Chinese university entrance examination changed millions of lives. The long historical culture was revived, people got to understand the importance of education again. Meanwhile, many students from top universities in Shanghai and Beijing chose to go to the US to pursue their graduate degrees. This trend coincided with the

Chinese government policy and was hugely popular.

Prompted by this demand, many educational startups were established at the time. Senior educators recall one could receive fliers of several education companies in a stroll from Peking University to Tsinghua University (a 15-minute walk). A Peking University lecturer established New Oriental around then, and today, it is currently one of the top two education firms. Following the surge in Chinese students going abroad, the company achieved exponential growth and went public in NYSE in 2006.

New Oriental went public in NYSE in 2006

In 2003, a Peking University graduate registered in a company called "Tomorrow Advancing Life" (TAL) in Beijing, for high school mathematics, physics, and chemistry tutoring. Their core business

is helping students prepare for competitions like National Mathematics competition, Physics competition, etc.. In 2005, the Chinese government prohibited public institution teachers from taking private classes for students after school. This policy forced thousands of students to take classes in private companies like TAL, giving their business a massive push. In 2010, TAL was listed in NYSE.

TAL went public in NYSE in 2006

These two companies are definitely the top two players in China today. It is interesting to note that K-12 is contributing towards half of the New Oriental's business at variance from its original business structure. For TAL, the K-12 percentage is higher at 90%. There is still ample opportunity in the education market. If we combine New Oriental and TAL's market share, it is not more than 5%.

3.2 Choose the Right Business Model and Segment

3.2.1 Choose the Right Segment

Reviewing Chinese education history offers an important perspective to the education venture. Firstly, the market is indeed segmented. The top two players capture less than 5% of the market share. There is a huge space for startups. Secondly, K-12 is the largest and most profitable segment of the education market in China. 90% of TAL's and 50% of New Oriental's revenue is from the K-12 business. Thus, K-12 is the most important segment.

In my opinion, targeting the younger user is more appropriate for the K-12 segment of business startups. The K-12 sequential learning model ensures yearly retention of students, once they enroll in a class on time with the start-up. If the company acquires students from Grade 1, they are likely to continue for the next 12 years. This saves huge marketing expenses and cumulates good word of mouth. If the company were to invest their resources in attracting grade 12 students, they would be gone in a year, and that entails a new round of marketing investment for the next year.

3.2.2 Online or Offline

Online or offline? That is a big question for a startup. The answer, however, is not simple. We divide the development into three stages, and each stage has its own suitable models:

Stage 1: Educational Product Design

During this stage, the company needs to focus on the educational product design, namely, courses and exercises design. Traditionally, most online courses are derived from offline courses. That is because: (1) In offline courses, instructors could have direct interaction with students, which help instructors have a better understanding about the students' needs and problems; (2) Instructor could have a practical sense of students' feedback with face to face communication. Hence, with this perspective, it is better to have offline courses in the beginning. However, having a physical classroom would involve high operation costs. Therefore, the best solution for a startup would be to collaborate with an offline Education Company and launch trial courses. Based on these courses, we can develop online educational products.

Stage 2: Rapid Growth Stage

After all the initial preparation in offline courses, the company can choose to go online, as the major approach to achieve company's rapid growth. There are several reasons for this. First, it is easy for a business to go from online to offline, but difficult the other way around. The reason being that online products usually impact a large number of customers lightly, while offline products deeply impact a small number of people. An online company can easily launch an offline business if it has a good impression on customers with its high-quality products. However, for companies with offline products as their core business, it is much harder to expand online. First, operating offline classes is tedious, and requires complete focus and resources from a company, with no distraction or disruption. Second, an offline company can only influence and build a brand name amongst a small group of customers. Online courses' unit price is much lower and selling to a larger number of people is the only way to maintain revenue. When expanding

into a new market, an offline education firm with only a local brand name, cannot capitalize its previous experiences to boost the new businesses. Two big examples here are New Oriental and Smartstudy.com. New Oriental was an offline class business model at first, and then developed its online courses. Since the company exhausted much of its resources on the offline business, its online business developed very slowly. Until 2017, the online revenue only accounted for around 5%. Smartstudy's case is even more remarkable. With the sale of video recorded classes of prestigious instructors, it grossed around RMB50 million in 2016. Moreover, to generate more revenue, they started their offline business in early 2017 and made over RMB50 million in the first quarter itself.

Mature Stage: Build Entry Barrier

After initial fast growth, the company can enter into a steady growth stage. During this stage, the main challenge is building entry barriers. Neither offline nor online courses in solo, is a safe business. Offline is difficult to increase while online courses are easy to copy. A blend of both modules of education should be applied. Online and offline education could be complimentary to each other. Online courses could bring in big data analysis, and offline courses could help to solve the students' problems.

3.2.3 Political Influence

By reviewing the success of these two conglomerates in the education market, New Oriental, and TAL, we observe that the impetus for the phenomenal growth of TAL and New Oriental was government policy. The emergence of New Oriental coincides with the government encouraging

young people to study abroad, and good rapport with the US at the time. Meanwhile, TAL exploited the huge gap left in the market space by the policy that prevented public teachers from taking private classes. Therefore, we can see that education as a sector is very sensitive to policy. It is a big factor when evaluating the roadmap for educational ventures.

According to the latest Chinese education document, it is compulsory for high schools to have a programming course, and a high school graduate should have good command over at least one programming language. Beijing's point is really obvious: In future, CS and Programming will become the most important subjects in China. However, the supply side of the market is far from ready. Several high schools in a metropolis like Beijing and Shanghai currently do not have good programming teachers for their students, not forgetting the innumerable small towns and rural areas, and the huge number of students there.

2003 版课标			2017 版课标		
类型	模块	主要技术内容	类型	模块	主要技术内容
必修	信息技术基础	获取、加工、管理、表达与交流的基本方法。	必修	1 数据与计算	1. 了解数据编码；2. 学会采集、分析、可视化数据；3. 学会一种程序语言，并使用程序语言完成简单算法；4. 了解人工智能的重要性。
				2 信息系统与社会	1. 知道信息系统基本工作原理；2. 可以开发简单的信息系统；3. 预判安全风险，了解安全防范技术；4. 学会遵守相关法律与伦理道德规范。

The newly issue requirement for high school students to learn AI and coding

3.3 Product Definition Recommendation

Based on the analysis above, I believe we can draw the obvious business framework for any new venture as one that manages the online segment, young kids, and programming. I believe that the programming market holds maximum promise in China. Thus, my teammates and I intend to start up an online education venture with courses and products for K-12 students. Our base market would be students from grade 3 to grade 6. As discussed earlier, we would develop online intelligent learning systems to improve learning efficiency and lower cost. The course would be based on interactive systems, video records, and online practice modules.

3.4 Long-term Development Strategy

As mentioned, two key aspects of learning are the material and the path, or the sequence that the learning material is used in. It is easy to digitize learning materials. A learning path can also be designed by a computer. Based on students' response to videos and questions, the system can also adjust the level of difficulty for the next learning module. If the computer has big data, I believe the accuracy will be better than any human teacher, and it will definitely be able to achieve stronger functionality. By applying such a self-adaptive learning method, the system could recommend the most suitable learning material for the user.

In the long run, system and data would be extremely powerful, as they set entry barriers and revolutionize the education market. We have already established that the education market is very segmented. The companies today occupy an insignificant portion of the market. This is peculiar because we can infer from several highly competitive and mature markets that it is

common for the 10 top players of any sector to have a majority stake in their market. The current situation in the education market seems to imply that the education market is still very primitive and has great potential to improve.

Let's analyze it and find the reason behind it. In most industries, the economy of scale is reasonable, as mass production can ultimately improve efficiency and lower cost. However, this does not apply to education, since the main product here is sustained by human instructors. Such a resource is hard to assemble or transfer on a large-scale basis. Hence several small-scale local education companies can have a small share of the market and survive for a long time. At the same time, the switch and the multi-platform cost is very low. Customers can easily drop-out from one institution or take different courses from several different companies at the same time.

The solutions I suggest that will address these issues and monopolize the market are as follows. The first is to apply active learning systems and standardized products to minimize the instructors' impact. The second uses big data to build an intelligent predictive system that fosters customer loyalty. By the time a student completes Grade 3 programming, the system constructs a good data set of his learning curve and can custom-design a learning path for the student. A competitor lacks the data to build a similar instruction tool for that particular student. Once the student completes programming and seeks to enroll in advanced courses such as Mathematics and Physics, the system will analyze the data collected in the programming stage of learning and recommend an improved learning path for the student. As the course progresses, the constructive feedback continues within the system that becomes smarter and understands the student better. The switch to another system that does not have such data would preclude any of

such assistance regarding the user experienced in the original system. This raises the switch and multi-homing cost to build customers loyalty.

There is another interesting hypothesis as well. People enjoy video games immensely because it serves instant feedback and a direct and measurable stock of user performance. It is difficult to establish an equivalent simple cause-effect relationship in learning. However, by cumulating sufficient data, the system could possibly analyze everything a user does, and how it impacts the learning process to offer instant feedback and direction. This would be a revolutionary product for the education industry.

3.5 Risks and Challenges

Additionally, there are some conceivable challenges.

1) Policy threat: The Chinese government encourages education programming, yet, this policy is unlikely to change in the near future. If it changes, it would pose a big challenge.

2) User acquisition: The model's advantages critically depend on the number of customers. Thus, the marketing pressure is immense in the early stages.

3) Technological feasibility: The accuracy of the system is very hard to determine at present. Also, the extent to which data collected from one subject that can be used in another is still unclear.

Conclusion

The analysis of the business model and its backdrop offers us four (4) valuable lessons. First, human-based-instruction hinders expansion owing to huge costs, while computer-based-instruction can overcome this challenge. Secondly, online education is the future, as it can easily cumulate data on a large scale. With its established advantages, an online business can supplement an offline expansion model significantly. Thirdly, using data to build intelligent systems that prohibitively raise switch and multi-homing costs would terminate the disjointed market saga, improve the entire education market's efficiency, and initiate monopoly/oligopoly in the education sector.

Will online education wipe out many educational institutions? I think the answer is yes. Now, the education market is much segmented. The market share of New Oriental and TAL is only less than 3%. In the future, Internet technology and AI would empower instructors to cover more students. Now, an instructor in TAL teaches more than thousands of students without significant loss of instruction quality. With the fast development of top education firms, the market share would consolidate more. A good teacher in big cities like Beijing and Shanghai could teach students from all over the country. The offline educational supervision and services could be provided by local teachers.

Having designed a strategy and roadmap, we can see great potential in the Chinese education ventures. Since the sector still in its infancy stage in China, and people are emphasizing the need, I do believe business prospects, especially in the rural areas and small towns are yet to be

realized and catered for. Hence, this market holds great promise and could help transform millions of lives.

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