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Increasing private funding for startups in Hangzhou

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Fostering Innovation in the Xiasha District, Hangzhou, China.

An Interactive Qualifying Project Report
Submitted to the faculty of the
WORCESTER POLYTECHNIC INSTITUTE

By

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Date: December 17, 2014

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Abstract

To attain its remarkable growth rate, China has been borrowing technologies and organizational methods from the West for the past thirty years. However, as China becomes the world's largest economy, this method is quickly becoming obsolete. Both the central and local governments in China have recognized this as an issue that is vital to sustaining its economic growth. Sponsored by the Hangzhou Dianzi University, this project addressed one of many solutions to this problem, fostering innovation through an increase in private investment for startups in the Xiasha District of Hangzhou, China.

Acknowledgements

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Executive Summary

China's economic growth rate is currently ten percent per year, which is seven times faster than the United States' growth rate. China must find ways to adequately support this economic growth (Yueh, 2014). China's current means of supporting its growth is by copying and adapting technologies and products developed in other countries (F. Hoy, personal communication, September 17, 2014; Harney, 2011). As China moves towards becoming the world's largest economy, this method must be replaced with one that is suitable for a leading economy. Various cities in China are making efforts to increase the rate of innovation and entrepreneurship to obtain this goal.

This report focuses on fostering innovation in the Xiasha District of Hangzhou, China. Hangzhou is a region that has many high-tech enterprises and science and technology parks (China Briefing, 2014; KPMG, 2011; KPMG, 2013a). The Hangzhou Municipal Government established the Xiasha District in 1993 as an industrial and education center to contribute to the growth and development of innovation (Zeng, personal communication, 2014). Although the Xiasha District has developed an impressive education system and many high-tech industries, Dr. Liu Guang of the Hangzhou Dianzi University and a former Xiasha District government official, and we believe that the Xiasha District has the potential to be more innovative (Liu, personal communication, 2014).

The Problem

Fostering innovation covers a wide scope with many possible solutions. The Hangzhou Municipal Government has many policies and programs in the Xiasha District to encourage and promote innovation. However, leaders of startups in the district still struggle to grow their businesses. Once we arrived in the Xiasha District, we quickly identified that one of the main problems startups in the area face is the lack of funding from private investors.

High-tech regions such as Silicon Valley, US and Zhongguancun and Hefei, China, are developing new products, ideas, and methods to foster innovation (Cao, 2004; Pohl, 2002;

China Pictorial, 2002, p. 1; Hefei National High-tech Industrial Development Zone Administration, 2013). The success of these areas is partly due to an emphasis on both private and government funding. In this report, we focus on developing a more successful startup environment in the Xiasha District by recommending methods to increase private funding.

Goal and Objectives

The goal of this project was to provide Dr. Liu Guang, the sponsor of this project, with recommendations to increase private funding for startups and small businesses in the Xiasha District. We believe these recommendations will foster a more successful startup atmosphere in the Xiasha District. We identified three objectives to achieve this goal:

- Identify current privately funded and government funded startup programs in the Xiasha District.
- Analyze current startup programs in the Xiasha District and compare them to successful regions in the United States and China.
- Determine which successful policies and programs could be implemented in the Xiasha District for the growth of private funding.

We first identified policies and programs that currently support startups and small businesses in the Xiasha District. We obtained information about these existing policies and programs through interviews with business leaders and a government official. Dr. Liu Guang previously served as an officer of the Hangzhou Municipal Government in the Human Resource Department of the Communist Party Committee of the Hangzhou Economic Development Area. His connections with the government provided us with the resources necessary for project research. With his introductions, we conducted interviews with nine small business leaders and a government official of the Xiasha District. Using information we collected prior to arriving in China, we developed questions for our interviews to gather details of programs, policies, and other support that small businesses and startups currently receive. We tailored the questions for each interview to the specific individual and their background, but ensured all questions we asked obtained information

concerning two main points. Firstly, the programs that exist to provide financial support for startups and secondly, how the government and private investors assist in the growth of startups and small businesses.

After obtaining this information, we conducted research on successful programs and policies that support startups and small businesses in many regions, focusing on well known high-tech regions in the US and China; Silicon Valley, Zhongguancun Science Park, Hefei High Tech Industrial Development Zone, and Zhejiang Hangzhou Future Sci-Tech City. We then analyzed the programs and policies in these regions and identified successful attributes. These include connections with private investors, government support, collaboration with educational institutions, and collaboration with local companies. Additionally, we examined the structure and benefits of accelerator programs and investment clubs to find additional ways startups and small businesses are supported.

Recommendations

Based on our findings from comparing what currently exists in the Xiasha District and what works in the regions we analyzed, we recommend the following to the Xiasha District Government:

- 1. Provide a structured platform in the Xiasha District that allows startups and small businesses to obtain financing easily and quickly.**

We recommend using Zhongguancun Science Park Finance Platform and Beer & Partners as models for this platform. This platform would include an initial evaluation process of businesses by the management of the platform prior to investor involvement. If a business passes this evaluation process, that business then presents to a group of investors, who individually decide on investment. Additionally we recommend the platform offer assistance to the applying businesses, as seen in the Zhongguancun Science Park Finance Platform.

2. Provide incentives and policies that will help reduce the risk of private investors' investments in startups.

We do not believe our first recommendation will be enough to increase private investment to the desired level. Therefore, we recommend tax reduction and other incentives be offered to private investors. These will encourage investment companies, venture capitalists and angel investors to invest earlier on in a business' growth process.

3. Create Accelerator Programs

We recommend using Microsoft Ventures and Y Combinator as models to create the planned accelerator program in the China-Singapore Industry Park (Hangzhou). This program would offer batch acceptance, followed by a short term mentoring program. This program is centered on transforming an idea into a product and business plan.

4. Invest in educational and research institutions and provide a structured platform to facilitate the collaboration between industry and education.

We recommend using the Zhongguancun Science Park and the Hefei National University Science Park as models for this platform. This platform would provide a formal way to transfer ideas developed at local universities to products for industry, as well as allowing startups and small businesses to use local university facilities to reduce operating costs. Additionally, the platform would provide internship opportunities for local university students.

5. Provide connection opportunities in the Xiasha District for startups, small businesses, and financial resources.

We recommend using the Zhongguancun-Silicon Valley Entrepreneurship Competition and The China Global Investment Summit: Hangzhou as models for these opportunities. These would involve both local and international investors, as well as local startups and businesses.

Authorship

We all contributed in the research, data analysis, and writing. A breakdown of the writing distribution can be seen as follows:

Section – Main Writer(s), Major Editor(s), Reviewer(s)

Executive Summary – Nyoca Davis, Anthony Dresser & Megan Robidas, All

Abstract – Megan Robidas, Anthony Dresser & Megan Robidas, Nyoca Davis & Anthony Dresser & Megan Robidas

Introduction – All, Nyoca Davis & Anthony Dresser & Megan Robidas, All

Background

Xiasha District, Hangzhou, Zhejiang, China- Nyoca Davis, Anthony Dresser & Megan Robidas, All

Definition and Importance of Innovation- Nyoca Davis, Anthony Dresser & Megan Robidas, All

Innovation Development Zones in United States and China- All, All, All

Supporting Startups: Additional Programs- Nyoca Davis & Anthony Dresser & Megan Robidas, All, All

Conclusion- Anthony Dresser, All, All

Methodology- written, edited and reviewed by all

Identify current privately funded and government funded startup programs in the Xiasha District

Analyze current startups programs in the Xiasha District and compare them to those of successful models in the United States and China

Determine which successful policies and programs could be implemented in the Xiasha District for the growth of private funding

Findings

Government policies and funding in the Xiasha District- Nyoca Davis, Anthony Dresser & Megan Robidas, All

Incubator programs in the Xiasha District- Nyoca Davis, Anthony Dresser & Megan Robidas, All

Connection with investors in the Xiasha District- Nyoca Davis, Anthony Dresser & Megan Robidas, All

Distribution of funding and startup culture differences- Nyoca Davis & Anthony Dresser, All, All

Connection with investors differences- Anthony Dresser, All, All

Accelerator and Mentoring Programs- All, All, All

Determining successful policies and programs that could be implemented in the

Xiasha District- All, All, All

Recommendations – written, edited and reviewed by all

Appendices- Compiled by All

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1. Introduction

China's economic growth rate is currently ten percent per year, which is seven times faster than the United States' growth rate. China must therefore find ways to adequately support its economic growth (Yueh, 2014). China's current means of supporting its growth is by copying and adapting technologies and products developed in other countries (F. Hoy, personal communication, September 17, 2014; Harney, 2011). As China moves towards becoming the largest economy in the world, this method must be replaced with a more effective method. Various cities in China are making efforts to increase the rate of innovation and entrepreneurship to solve this problem.

Hangzhou, China has many high-tech enterprises and science and technology parks (China Briefing, 2014; KPMG, 2011; KPMG, 2013a). The Hangzhou Municipal Government established the Xiasha District in 1993 as an industrial and education center to contribute to the growth and development of innovation (Zeng, personal communication, 2014). Although the Xiasha District has developed an impressive education system and many high-tech industries, Dr. Liu Guang of the Hangzhou Dianzi University and a former Xiasha District government official, and we believe that the Xiasha District has the potential to be more innovative (Liu, personal communication, 2014).

High-tech regions such as Silicon Valley, US and Zhongguancun and Hefei, China, are developing new products, ideas, and methods to foster innovation (Cao, 2004; Pohl, 2002; China Pictorial, 2002; Hefei National High-tech Industrial Development Zone Administration, 2013). These regions show that an emphasis on both private and government funding plays a significant role in the success of a high-tech region. Although the methods used by these regions are not directly applicable to the Xiasha District, the concept behind these methods can be used in the Xiasha District.

Many researchers from around the world have done research to address increasing innovation in China through varying methods (Fan, 2006; Dodgson & Xue, 2009; Zhao, 1993; Xiaodong & Yueqian, 2010; Tung & Zhen, 2011). In 2010, Xiaodong Zheng and Yueqian Xu used Hangzhou Platform of Apiculture Technology Innovation as a case study to examine the effects these types of platforms have on regions (Xiaodong & Yueqian, 2010). They found that these platforms accelerate technology transfer and enhance capacity of production and research. In 2011, Zou Xiaopeng, Tung Wei, and Zhen Gunhua examined the impact tax incentive policies have on the technology innovation performance of high-tech enterprises in Hangzhou, China. They found that tax incentive policies, relieves burdens, creates inequality, and the implementation of these policies plays a major role on their effectiveness. However very little has been done to examine or address the source of financial support provided to startups as a means of fostering innovation.

The goal of this project was to provide the sponsor of this project, Dr. Liu Guang, with recommendations to increase private funding for startups and small businesses in the Xiasha District. Dr. Liu Guang is an instructor in the Department of Technology Management at Hangzhou Dianzi University and has previously served as an officer of the Hangzhou Municipal Government in the Human Resource Department of the Communist Party Committee of the Hangzhou Economic Development Area. His connections with the government provided us with the resources necessary to complete this project. With his introductions, we conducted interviews with one government official and nine business leaders to determine the programs for supporting startups that currently exist in the Xiasha District. We combined this information with additional information on the methods used by other high-tech regions in the world, including Silicon Valley, US and Zhongguancun and Hefei, China. By analyzing the similarities and differences of these regions, we made recommendations on policies and programs that could be implemented in the Xiasha District. The recommendations from this project have the potential to increase the success of startups and small businesses in the Xiasha District, which could ultimately contribute to sustainable economic growth and development of this the Xiasha District and China overall.

2. Background

Business leaders and university and government officials in the Xiasha District of Hangzhou, China are interested in addressing the challenges faced by startups to ensure a continuous increase of innovation. This chapter identifies the context of our project, defines innovation and its importance, and discusses concepts related to startups and entrepreneurship as observed in regions of the United States and China.

2.1 Xiasha District, Hangzhou, Zhejiang, China

The Xiasha District, also known as the Hangzhou Economic and Technological Development Area (HEDA), is a sub-district of the Jinjiang District of Hangzhou, Zhejiang, China. The State Council approved HEDA in 1993 as one of the first state-level development zones in China. The district has 14 universities and many high-tech enterprises (Zeng, personal communication, 2014). In 2004, the Japan Trade Vitalization Organization named HEDA as one of the best investing environments of China's 75 city development zones, due to its numerous industries (Zhejiang Province Government, 2012).

2.1.1 Government in the Xiasha District

The Hangzhou Economic Development Area Administration and the Party Work Committee govern the Xiasha District (Hangzhou Government, 2014b). These two entities collaborate to provide the planning, leadership, and administration of Xiasha on behalf of the Hangzhou Municipal Government and the Municipal Party Committee. These entities have four responsibilities that impact the structure of high-tech startups in the Xiasha District.

1. To formulate and implement social and economic development programs for the Xiasha District.
2. To plan and evaluate newly established enterprises and investment projects in the Xiasha District
3. To plan, construct, and manage infrastructures and public facilities

4. To implement the administrative work of civil administration, culture, education, and science and technology.

These responsibilities are split into different departments of the government. Each department is in charge of creating policies that improve the area they are responsible for. However, the leaders of these departments change approximately every 3 years. This ultimately leads to changes, additions and removals of policies, which often affect the support provided to startups (Liu, personal communication, 2014; Gao, personal communication, 2014).

2.1.2 Industries and Investment in the Xiasha District

The Xiasha District has five pillar industries: machinery and electronics, biology and pharmaceutical, high-tech chemistry, textiles and chemical fiber, and food processing (Hangzhou Government, 2014a). These industries consist of large and developed enterprises as well as startups that contribute to the economic growth of the district. In 2012, the Zhejiang Provincial Government noted that large manufacturers such as Motorola and Coca Cola accounted for the many entrepreneurs and investors in the district (Zhejiang Province Government, 2012). In addition to these large companies, there are over 390 foreign-funded enterprises and approximately 248 domestic investors.

2.2 Definition and Importance of Innovation

In Mark Rogers' 1998 publication *The Definition and Measurement of Innovation*, he discusses a variety of ways innovation is defined by economists. One such economist is Joseph Schumpeter, who defines five types of innovation (Rogers, 1998):

- Introduction of a new product or a qualitative change in the existing product
- Process innovation new to an industry
- The opening of a new market
- Development of new sources of supply for raw materials or other inputs
- Changes in industrial organization

Using Schumpeter's definition as a basis, we defined innovation as the implementation of any new or improved goods or services that has been created to add value to a new or existing market. This definition is important when analyzing both successful models and how the Xiasha District could be improved. Many startups and small businesses in the Xiasha District create new or improved goods and services, but face difficulties when integrating them into a market (Gao, personal communication, 2014; Sheng, personal communication, 2014; Wu, personal communication, 2014). One of these difficulties is lack of accessibility to financial support; therefore increasing this access is critical to ensure successful innovation.

2.3 Innovation Development Zones in United States and China

Multiple regions around the world have successfully established platforms and policies, which have led to high levels of innovation and support for startups. However, Dr. Liu Guang is specifically interested in comparing the Xiasha District to Silicon Valley. In this section, we identify and discuss successful innovation development zones in the United States and China, and identify the key components that make these zones successful.

2.3.1 Silicon Valley, CA, United States

Since the late 1990's, Silicon Valley has produced over 7,000 high-tech companies (Wright, 2000, pp. 88-94). Spatial proximity for fast-track coordination between manufacturers, subsystem producers, and university researchers contributes to the success of Silicon Valley. This close proximity enables rapid communication and development of new ideas, thus making innovation a faster process for startup companies in Silicon Valley. Additionally, this region has prestigious universities, ambitious entrepreneurs, and deep pools of risk capital (Ezell, 2014).

Startups in Silicon Valley rely heavily on venture-capital investment for funding (Business Competence, 2014). Due to the vast number of investors in the region, leaders of startups in Silicon Valley not only seek funds but also investors with expertise and connections. This is one of the reasons why venture capital investment is highly competitive in Silicon Valley.

AngelList, a website that records the activity of entrepreneurs and investors, showed that over 3,000 investors were rejected by startups in Silicon Valley in 2011 (Langley, 2011). Companies in Silicon Valley often have a 'line of investors' competing to provide funds.

Private investment moves fast in Silicon Valley because of the competition among private investors. One such example occurred when Travis Kalanick tried startup a car service company, Uber, off the ground (Langley, 2011). At the time, several major venture-capital firms competed to fund Uber. After the span of two days, Benchmark, an investment company, provided nearly 12 million USD in capital for 20% ownership of Uber, valuating Uber at 60 million USD. In Silicon Valley, private investors compete to invest in promising startups, and as a result, startup companies have their pick of resources.

Although private funding is an important characteristic of successful startups and small businesses, the government also plays a fundamental role in the development of innovation in Silicon Valley. The government contributes to the success of the region by investing in universities, as well as offering support for the development of new technologies (Ezell, 2014). The Science Coalition's report *Sparking Economic Growth 2.0* describes that federally funded research at local universities, such as Stanford and the University of California at Berkeley, has resulted in the creation of over a dozen innovative companies located in Silicon Valley.

2.3.2 Zhongguancun Science Park, Zhongguancun, Beijing, China

In 1980, Chunxian Chen, a researcher at the Chinese Academy of Sciences, visited Silicon Valley and was impressed with the region's ability to support startups (China Pictorial, 2002). When he returned to China, he founded a technological-development service department under the Beijing Society of Plasma Physics in Zhongguancun. He adopted practices from Silicon Valley and by the end of 1986, 100 electronic enterprises were established in Zhongguancun, thus creating "China's Silicon Valley." In 1999, the government established the Zhongguancun Science Park (ZSP) as the first state-level high-tech industrial development zone founded in China.

Zhongguancun consists of 206 research institutes and 41 universities, including Tsinghua University, Peking University, and the China Academy of Sciences (Zhongguancun Science Park Administration, 2013). The Zhongguancun Science Park is privately funded and home to 20,00 Chinese and foreign enterprises in the fields of Internet technology, electronic communication, biomedical, and green energy. Successful private enterprises in ZSP include Levono, Baidu, and Founder.

One reason for the success of the zone is its collaboration with other successful high-tech regions such as Silicon Valley (Chen, 2013). Zhongguancun-Silicon Valley Innovation & Entrepreneurship Competition was started in 2013 by the Zhongguancun Administrative Committee and is hosted by Entrepreneur Magazine and Beijing Hanhai Investment Management Group. Co-organizers of the event include Sanford Alumni Association, Harvard University Incubator, Microsoft Accelerator, Tsinghua Entrepreneur & Executive Club (TEEC), and Zhongguancun Hanhai Science Park in Silicon Valley (Chen, 2013; Zhongguancun-Silicon Valley Innovation & Entrepreneurship Competition, 2014). The competition takes place annually in both Zhongguancun and Silicon Valley simultaneously and lasts 7 months. The competition is open to both US and Chinese startups and provides the opportunity for communication among Chinese and US entrepreneurs. Participating startups follow strict criteria:

- Must be from one of the prioritized industries: internet and mobile communication; biotechnology and healthcare; environmental protection; integrated circuit, new material, high-end equipment; and new energy and new energy vehicles
- Must not be established for more than 3 years
- Must have innovative business models on a global scale

The judges of the competition are representatives from venture capitalist firms from both Zhongguancun and Silicon Valley. They award winners of the competition with cash and mentoring.

Another reason for the success of companies in the Zhongguancun Science Park is due to the Zhongguancun Incubation Financial Services Platform (Beijing Zhongguancun Finance Group, 2014). Beijing Zhongguancun Finance Group, a government-owned company, manages the platform and helps startups build connections with banks, insurance companies, venture capitalists, and technology agencies (Beijing Zhongguancun Finance Group). The Beijing Zhongguancun Finance Group also invests in the incubators to reduce the risk for investors and improve the environment for startups (Zhongguancun VC Development Center, 2014).

The Beijing Zhongguancun Finance Group has a standard evaluation system to accelerate the funding application process. In this evaluation system, businesses leaders who want funding provide basic information about their company, finances, past funding, information about core group members, intended use of funds, and enterprise competitiveness. After providing this information, their business plan goes through a three-step evaluation process:

- Evaluation by the Zhongguancun Incubation Financial Services Platform team
- Evaluation from potential investors
- Due diligence from potential investors

Each evaluation level takes a maximum of 10 days. After startups pass these evaluations, they receive funding. If a startup fails at any level of the process, the Beijing Zhongguancun Finance Group assists the startup by providing training to pass the evaluation (Beijing Zhongguancun Finance Group). This platform and evaluation process not only increases opportunities for startups to receive funding, but also reduces risk for investors.

2.3.3 Hefei High-Tech Industrial Development Zone, Hefei, Anhui, China

The government established the Hefei High-Tech Industrial Development Zone (HHIDZ) in 1991, and it is currently the largest high-tech industrial base in Anhui, China (Hong Kong Trade Development Council, 2012; Chnindustry, 2011). 50 universities surround HHIDZ, including the University of Science and Technology of China and over 300 national and provincial science research organizations.

Similarly to the Xiasha District, HHIDZ has several high-tech industries such as electronic information, integrated photonics machinery and electronics, new energy and biomedicine. In addition, there are 12 incubators for scientific and technological enterprises. These include the High-Tech Business Incubator, the University Science Park, the Overseas Student Pioneering Park, the Software Park, and the Biomedicine Park.

HHIDZ provides financial services such as connections with angel investors and venture capitalists, funding for startups, and innovation rewards (Chnindustry, 2011). Within the zone, there are over 20 venture capital enterprises and more than 60 agencies that provide technological and intellectual property consulting and asset appraisal services. The zone is also home to more than 4,000 enterprises that include iFLYTEK, Sun Create Electronics, Anke Biotechnology, and Sungrow Power. These high-tech enterprises attract investment from international corporations such as Maytag, Toyota, Mitsubishi, and 3M. These international corporations account for 400 of the enterprises in HHIDZ.

Hefei National University Science Park (HNUSP) transforms research results into commercial products to foster local economic growth. HNUSP consists of one incubation center, one accelerator, and branch parks on four different university campuses. HNUSP provides support for startups from the initial stages until after the independence of the enterprises. Startups must satisfy certain criteria to be a part of HNUSP (Hefei National University Science Park, 2014a). A startup must be in a prioritized high-tech industry and meet all admission standards of HNUSP (Ministry of Science and Technology of the People's Republic of China, 2014). The startup must also have proof of intellectual property rights and projects that can be commercialized. The leaders of the startup must provide a budget plan, proof of a reliable funding source, and a business and management plan to HNUSP. However, if a startup fails to meet one of more of these requirements, HNUSP provides another program called Virtual Entrepreneurship that trains the startup leaders.

Once a company joins the incubation center in HNUSP, it can remain in the incubator for a maximum of three years. HNUSP helps startups build connections with potential investors.

This includes helping the startups pitch their projects to potential investors and provide credit guarantee if they apply for loans from banks or other financial companies. In addition, HNUSP partners with Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) to provide an entrepreneurship-training program called Competency-based Economies through Formation of Enterprise (Hefei National University Science Park, 2014b). This training program takes place every six months as of 2008.

HNUSP recruits interns from nearby universities and allocates them to companies within the park according to their discipline. The park also has an online human resource information sharing system for employees to post their own information and find jobs of interest. Additionally, HNUSP has a committee of professors, scientists, and other technology experts from universities and research institutes in Hefei. This committee provides assistance to startups when they have difficulties in developing their technology. Lastly, HNUSP helps startups by reducing or waiving the cost of workspace, as well as assisting with advertising products, tax return applications, intellectual property rights, and legal procedures.

After three years, successful startups can choose to leave HNUSP or join a high-tech accelerator. In these accelerators, HNUSP continues to provide workspace in addition to programs common to accelerators (see section 2.4.1).

2.3.4 Zhejiang Hangzhou Future Sci-Tech City, Hangzhou, Zhejiang, China

Zhejiang Hangzhou Future Sci-Tech City is a developing park located in Hangzhou and neighbors Zhejiang University (Zhejiang Hangzhou Sci-Tech City, 2014). The Zhejiang Provincial Organization Department created the park in 2010 as an innovation and venture platform. The park currently utilizes 35 of the planned 113 square kilometers. The provincial government has a platform to provide technological resources, government regulations, public services, and many entrepreneurship and innovation learning opportunities to attract oversea high-tech entrepreneurs and investors.

The park is home to 131 high-tech innovation projects started by 316 overseas entrepreneurs (Ti Zhuan, 2012). Each year, managers of the park attend the Zhejiang Hangzhou International Talent Communication & Corporation Conference to attract high-tech entrepreneurs to the park (Hangzhou Government, 2013). Government leaders of Zhejiang Province and Hangzhou, Chinese high-tech entrepreneurs and venture capitalists all attend this conference. In 2013, over 458 Chinese entrepreneurs studying in 23 countries brought projects to the conference. The projects featured high-tech elements, with 80% of the projects pertaining to the city's ten major industries. Private investors went on to fund 35 of these presented projects. This conference is in its 5th year and has attracted over 1,700 overseas professionals from different regions of the world, who have produced a total of 1,882 projects. Approximately 160 of these projects are now successful companies in China, with a total investment of 3.9 billion RMB (600 million USD). Another conference in the area was hosted in 2013 through partnership between the Hangzhou Municipal government, the China Global Investment Summit, and the 15th West Lake Expo. This conference attracted 600 delegates representing companies from more than 30 countries and connected many startups from the district with multinational corporations, foreign and private investors, and lawyers (Euromoney Conferences, 2014).

The government also provides services to overseas professionals to strengthen ties with local universities (Ti Zhuan, 2012). Chunsheng Xiang, General Manager of S-Evans Biosciences, a biotech company, collaborates with Zhejiang University to serve as a research and technology transfer hub. This partnership was started at the beginning of 2012 and by June, S-Evans Biosciences' revenue increased to 3 million RMB (0.5 million USD) and tripled to 9 million RMB (1.5 million USD) by the end of 2012.

This park is home to many high-profile companies, such as Alibaba, in the fields of information technology, biomedicine, and new energy. Even though the provincial government is the primary source of funding for the park, it makes efforts to ensure that startups receive support from private investors.

2.3.5 Summary of Innovation Development Zones

The primary source of funding, either government or private, has a large influence on the amount of support offered to startups. Regardless of the source of funding, the examples in this section show that successful startups have connections with private investors, Government support through policies or direct investment, collaboration with educational institutions and local companies, and access to incubator programs.

2.4 Supporting Startups: Additional Programs

The greatest struggle that entrepreneurs in high-tech industries face is securing the funds and resources necessary to start and grow their business. Government and private investors in the United States and China provide programs for financing startups. Although government funding is helpful for startups, it is often not sufficient. Startups seek financial assistance through other means, including accelerator programs and investment clubs.

2.4.1 Accelerator Programs

An accelerator program is a short-term mentoring and training program that provides entrepreneurs with the support and connections they need to successfully obtain private investment, as well as grow their business (Plan Projections, 2014). This type of program combines features of incubators with small amounts of funding and short-term mentoring support. In return, coordinators of the accelerator program, in most cases, take a small equity in the startups. Regions in the US and China use these programs to support startups. The programs analyzed in this report are Y Combinator and Microsoft Ventures.

2.4.1.1 Y Combinator

Y Combinator is an accelerator program that currently focuses on helping startups in web and mobile applications (Y Combinator, 2014; Hay, 2014). Y Combinator operates in Silicon Valley and since 2005, has funded over 700 startups. According to *The Boston*

Globes' Kirsner Scott, Y Combinator has the best track record of supporting high-impact companies (Scott, 2012). These companies include Dropbox, Scribd, and Reddit.

The Y Combinator program requires applicants to fill out a simple application and does not require a business plan (Y Combinator, 2014). Twice a year, they interview batches of accepted applicants and choose around 85 to participate in the program. The program requires startups to move to Silicon Valley for 10 weeks, where they undergo training and mentoring to build a prototype and prepare to pitch to investors.

Once a week Y Combinator hosts a dinner for all the participants, to which Y Combinator invites a speaker (Y Combinator, 2014; Levy, 2007). These speakers are typically startup founders, venture capitalists, journalists, or executives from well-known technology companies. The speakers share their experiences around starting businesses and working with large corporations. Additionally, these events provide a connection base between the participants and the speakers. According to Y Combinator, speakers often end up advising or investing in startups they meet during these dinners.

This program takes a “hands off” approach to advising their participants, by offering lots of advice without forcing decisions on the startups. This approach allows them to focus on their products. Additionally, the program assists startups with standard paper work, intellectual property, patents, and recruiting employees.

2.4.1.2 Microsoft Ventures

Microsoft Ventures has accelerator programs in London, Paris, Tel Aviv, Seattle, Berlin, Bangalore, and Beijing; offices in Moscow, Sao Paulo, and Seattle; and partner organizations in 47 locations (Microsoft, 2014). At accelerator locations Microsoft Ventures selects approximately 15 startups every six months to go through a four-month program. The program provides the participating startups with free cloud services, workspace, and direct market exposure (PRNewswire, 2014). It also provides startups with access to capital market, marketing, and human resource management service to support their growth. As

of January 2014, the estimated investment for resources supplied to startups is 1.5 million RMB (200,000 USD) at its location in Beijing. Since 2012, approximately 90% of the startups that graduate from the program receive investment from capital firms within the first 6 months of their graduation.

In 2014, Microsoft collaborated with Cyberport in Hong Kong to start an accelerator program for qualified startups at a government-owned incubator in Pok Fu (Li, 2014). The accelerator program is open to existing participants and graduates of this incubator. Hong Kong Cyberport's Management Chief Executive Herman Lam Heung-yeung states the accelerator program helps prepare startups to present to investors and enter the international market. As a part of the program, all firms receive financial support up to 300,000 HKD (38,709 USD) as well as access to global business mentorship, training, and seed funding initiatives.

Additionally, startups participating in the program have access to BizSpark Plus, which provides startups with access to development tools, resources and cloud services. Startups in the program are also eligible to apply for the Cyberport Creative Micro Fund, which provides the startups 100,000 HKD to develop their prototype within a 6-month period (Leung, 2014). Microsoft's partnership with Cyberport helps startups establish connection with venture capitalists and provides technical training, business mentorship, joint marketing promotion, and technical resources.

2.4.2 Investment Clubs

Investment Clubs consist of a group of individual investors that combine their money and research to make investments in startups and small businesses. An example of an investment club is Beer & Partners. It is based in the United Kingdom and consists of 1,800 private business angels and 300 smaller institutions (Beer and Partners, 2014). Companies seeking funding approach Beer & Partners with a business plan. A board at Beer & Partners evaluates the business plan to determine whether they will be able to raise funding for the company (the client) from their investors (the 1,800 private business angels and the 300

smaller institutions mentioned earlier). These investors then determine whether or not they would like to invest in the company and how much. Beer & Partners boasts a 45% success rate of receiving funding for their clients and an average of 10 – 12 million GBP (15.7 - 20.4 million USD).

2.4.3 Government & Privately Funded Programs

Government and private organizations also collaborate to provide investment to small businesses. The most notable example in the United States is the Small Business Innovation Research (SBIR) program (Lerner, 1999). This is the largest U.S. initiative to support and stimulate innovation among small businesses. This program uses government funding to support and finance small firms by offering awards as incentives. The program increases the rate of commercialization of innovations derived from federal research and enhances the competitiveness of small firms in technological industries. All firms within the program compete for funding through a peer review process. Criteria include the firm's business plan and product model, as well as the degree of innovation and the future marketing potential of the product. These criteria determine the amount of funding a firm receives. Level 1 products are allocated for proof of concept and idea development, while Level 2 products are reserved for technology development and exploring potential. Although the government subsidizes technological development by the firms, it takes no ownership. For this reason, the member companies run the program.

These firms are often more attractive to venture capitalists. Compared to firms that do not participate in SBIR, these firms have faster growth rates on average. However, this high performance is contained within regions where venture capital activity already thrives and where high-tech industries are predominant (Lerner, 1999). Additionally, this program is very selective and is only beneficial to a small number of firms (Hus, 2006).

2.5 Conclusion

In this chapter, we discussed different ways governments and private investors provide support to startups in the United States and China. Programs, such as incubators and

accelerators that provide leaders of startups with the necessary resources and connections to grow their business. A large influence from collaboration between universities and industries leads to an increased amount of innovative ideas becoming products in regions such as Hefei and Zhongguancun. Lastly, the emphasis on private investment in Silicon Valley causes a competitive atmosphere among investors, which creates pressure to invest larger amounts of funding earlier on in the growth of startups.

3. Methodology

The goal of this project was to provide Dr. Liu Guang, the sponsor of this project, with recommendations to increase private funding for startups and small businesses in the Xiasha District. We identified three objectives to achieve this goal:

- Identify current privately funded and government funded startup programs in the Xiasha District.
- Analyze current startup programs in the Xiasha District and compare them to successful models in the United States and China.
- Determine which successful policies and programs could be implemented in the Xiasha District for the growth of private funding.

In this chapter we describe our plan to achieve these objectives.

3.1 Identify current privately funded and government funded startup programs in the Xiasha District

We first identified policies and programs that currently exist in the Xiasha District to support startups to provide us with a better understanding of the kinds of programs that are working and those that are not. We obtained information about these existing policies and programs in the Xiasha District primarily through interviews.

China has a relationship-based culture centered on the concept of *guanxi* (关系). At our initial meeting with Dr. Liu Guang he informed us that, as four foreign students, we would have difficulty contacting business and government personnel without having a social connection. Before arriving in China we had planned to perform multiple surveys in order to obtain a large amount of information representing a large population. However due to the relationship based culture we were limited to performing interviews through Dr. Liu Guang's connections. Therefore, we were limited by Dr. Liu Gaung's time and connections.

With the introduction of Dr. Liu Guang, we conducted interviews with business leaders and a government official in the Xiasha District to collect details of the programs, policies, and other support that small businesses and startups receive. We tailored the questions for each interview to the specific individual and their background, but ensured all questions we asked focused on obtaining information about two main points: firstly, the programs that exist to provide financial support for startups and secondly, how the government and private investors assist in the growth of startups and small businesses.

3.1.1 Business Leaders

Both Dr. Liu Guang and our team visited the Hangzhou Science & Technology Incubator Park and the Hangzhou Oversea Students Pioneering Park in the Xiasha District on November 4th, 2014 and November 18th, 2014. We interviewed a total of nine business leaders from startups and small businesses in these parks. Dr. Liu Guang selected the business leaders we interviewed based on their availability and who he had connections with. We conducted four of the interviews in Chinese and the other five in English, with Liu providing interpretation for the interviews conducted in Chinese. We asked questions from the business leader interview protocol we prepared (see Appendix H), as well as follow up questions based on the official's responses.

We began interviews with the business leaders by asking questions pertaining to their interests in starting their business in the Xiasha District. We then asked questions about their experiences of starting their business in the Xiasha District. We asked these questions in order to collect information on: the sources of initial funding for startups, the structure and quality of the resources, policies, and programs that the government or private entities provide. We concluded the interviews with questions to gather their opinions on the current private and government support that needs to be improved, changed, or added in the Xiasha District.

We interviewed these business leaders in the following order: Suhong Yang (Company Manager of 123 Library), Wayland Lou (CEO and President of NetReach), Yongchang Zhao

(Company Manager of Zhejiang Duoliami Energy-saving Technology Co., Ltd), and Robert Yongxin Zhao (President of Hangzhou DAC Biotech Co. Limited) on November 4th, 2014; Xiaoxia Sheng (President & CEO of SoliPharma LLC), Kevin Gao (Co-founder of LC-Bio), Ge Wei (Manager of Enterprises Services Department of Hangzhou Science and Technology Business Incubation Co.,Ltd), Xindi Wu (Manager and Owner of Nanao), and Yu Haibin (Co-founder of Zhejiang Morui Electronics and Mechanics Company) on November 18th, 2014. The first seven interviews were at the Hangzhou Science & Technology Incubator Park and the last two were at the Hangzhou Oversea Students Pioneering Park.

3.1.2 Government Official

Dr. Liu Guang had connections with seven government officials that could provide information beneficial to this project, however only one was available to meet with our team. Liu, Davis and Robidas conducted an informal interview with He Chongzan, the Assistant Director of the Office of Human Resources at HEDA, on December 4th, 2014, with the presence of Dr. Liu Guang. We conducted the interview in Chinese with Liu providing interpretation. We asked questions from the interview protocol we had prepared (see Appendix I). We began the interview with questions pertaining to his knowledge of government policies, programs, and platforms in the Xiasha District that support startups and promote entrepreneurship. We then asked about his opinion in order to garner an understanding of aspects he believes are most helpful to startups. We concluded the interviews discussion on our recommendations and government support that needs to be improved, changed, or added in the Xiasha District.

3.2 Analyze current startup programs in the Xiasha District and compare them to those of successful models in the United States and China

We identified and examined successful programs and policies for supporting startups and small businesses in Silicon Valley, Zhongguancun Science Park, Hefei High-Tech Industrial Development Zone and Zhejiang Hangzhou Future Sci-Tech City. We chose Silicon Valley because Dr. Liu Guang is greatly interested in understanding the reasons for its success (Liu, personal communication, 2014). In addition, it is renowned worldwide and is

recognized as the leading hub for high-tech innovation and development, accounting for approximately one-third of the venture capital investment in the United States (Wright, 2000). In addition to Silicon Valley, we chose three development zones located in China to account for the cultural differences between the US and China. We examined the Zhongguancun Science Park in Beijing because it is one of the most well known development parks in China and has a reputation of being the “Chinese Silicon Valley” (China Pictorial, 2002). We examined the Hefei High-Tech Industrial Development Zone because of its similar industries and policies to the Xiasha District. Additionally, Liu is from the Hefei region, providing us with prior knowledge. Lastly, we examined The Zhejiang Future Sci-Tech City because it is the most successful high-tech development zone in Hangzhou and, like Hefei, has similar industries and policies to the Xiasha District.

Additionally, we examined the structure and benefits of accelerator programs and investment clubs to find additional ways startups and small businesses are supported in high-tech regions. We compared this information to our findings from objective one in order to identify the similarities and differences between startup programs in other areas of the world and those in the Xiasha District. We specifically examined the distribution of government and private funding, as well as the non-financial support that was offered to businesses.

3.3 Determine which successful policies and programs could be implemented in the Xiasha District for the growth of private funding

We first took into account the characteristics of the Xiasha District that make it different from Silicon Valley, Zhongguancun, Hefei, and Zhejiang to understand the impact that the local culture would have on our recommendations. We brought these cultural differences, as well as the differences identified in objective two, to the attention of Dr. Liu Guang, He Chongzan, and some of the business leaders we interviewed. We considered their feedback when determining which programs and policies in other regions would be effective in the Xiasha District. After determining these programs and policies, we brought them to the

attention of Dr. Liu Guang, who provided further feedback on their effectiveness, which ultimately lead to our recommendations.

4. Findings

In this chapter, we present the information we obtained from our interviews and research. The interviews provided a majority of the information about the Xiasha District, while research provided the information about other successful high-tech regions. This chapter is organized by first identifying the current support for startups and small businesses in the Xiasha District, followed by an analysis of other successful regions and a comparison between these and the Xiasha District. Lastly, based on these comparisons, we identify the programs and policies that can be successfully implemented to increase private support in the Xiasha District.

4.1 Government Policies and Funding in the Xiasha District

Leaders of startups in the Xiasha District receive funding through two main sources: government funding and investment from friends, family, and personal connections (Gao, personal communication, 2014; Sheng, personal communication, 2014; Wu, personal communication, 2014; Yang, personal communication, 2014; Zhao, personal communication, 2014). The government provides financial support to startups and small businesses through a tier-based system (G. Liu, personal communication, 2014, He, personal communication, 2014). To qualify for this financial support, startups must first meet three criteria (Wei, personal communication, 2014):

- The company must be in one of the five pillar industries (section 2.1.2)
- The company must have its own Intellectual Property
- The entire value of the company cannot exceed 300K RMB (49K USD)

Once startups meet these criteria, they qualify to receive funding and go through an evaluation process to determine the amount of support they will receive. Startups submit their business plan and prototype to a committee (Liu, personal communication, 2014). The Hangzhou Economic and Technological Development Area Administration and the Party Work Committee (section 2.1.1) appoint experts in business, science, and technology to this committee. The committee reviews the business plan and assigns the startups a tier.

The total funding and workspace each startup receives is dependent on this tier (Liu, personal communication, 2014).

- Tier A companies receive 6 million RMB (982K USD) and 1000 m² of workspace.
- Tier B companies receive 3 million RMB (491K USD) and 400 m² of workspace.
- Tier C companies receive 1 million RMB (163K USD) and 100 m² of workspace.

The government provides this support for a maximum of three years and the financial aid is distributed throughout this time. The ranking of the system is standard across all governments in China, however the Xiasha District government gives 50% of the total funding initially to startups, which is the highest in China (He, personal communication, 2014; Sheng, personal communication, 2014). After three years, the government continues to invest in companies if they maintain a certain level of revenue; 100 million RMB (16 million USD) for manufacturing companies and 50 million RMB (8 million USD) for business related companies (Liu, personal communication, 2014; He, personal communication, 2014).

The local government in the Xiasha District focuses mainly on policies and investment programs that contribute to the growth of startups in the biomedical and clean energy industries (He, personal communication, 2014). Yongchang Zhao's company, Zhejiang Duolaimi Energy-saving Technology Co. Limited, benefits from a government policy that encourages consumers to use less coal, which increases the demand for his company's product. The government also provides equipment for startups, especially for those in the biomedical industry, to reduce the initial costs for the startups (Liu, personal communication, 2014).

The "1000 People Plan" is a partnership between China's central government and the Zhejiang provincial government. China's central government invests 4 million RMB (654K USD) and the Zhejiang provincial government invests 2.6 million RMB (425K USD) in

oversea Chinese returnees and foreigners who wish to start their business in the Xiasha District. They must also have a PhD and patents for their potential business to qualify for this investment. Yang, owner and CEO of Neteach Technology Inc., is a returnee from the US. He receives free rental space and tax breaks for three years, in addition to funding from the government as part of incentives and rewards for starting his business in the Xiasha District (Yang, personal communication, 2014). Sheng, owner of SoliPharma, and Wu, owner of Nanao, also benefit from these incentives and similar policies (Sheng, personal communication, 2014; Wu, personal communication, 2014).

Additionally, the Xiasha District government uses a “funding pool” strategy to attract private investors to invest in startups. The government invests 25% of the total amount needed by startups and private investors invest the remaining 75%. This reduces the risks for private investors, which encourages them to invest in startups. In this strategy, the government has no ownership in the company and will only reclaim the initial amount invested in the business once the company qualifies to be listed on the stock market (He, personal communication, 2014).

4.2 Incubator Programs in the Xiasha District

Enterprise Services Department of the Hangzhou Science and Technology Business Incubation Park is a government-owned company that provides management, financial, and training services for leaders of startups in the business incubator (Wei, personal communication, 2014). Specifically, this company provides help with registering businesses, applying for copyrights, assisting with legal issues, and providing connections with banks for loans. Additionally, this company offers mentoring in the form of lectures from large corporation owners and professors. Before a lecture is scheduled, they survey companies in the incubator to identify the most pressing issues, and then invite a specialized lecturer.

This company provides connections with investment companies and assists startups in becoming involved in stock exchange for long-term support (Wei, personal communication,

2014). This company also plans to contact investment companies outside of the Xiasha District that can provide financial support to startups within the incubator. The remaining steps to achieve this support are to incentivize deals with investors to further reduce risk. In addition, they plan to sign a contract with the Bank of Nanjing to provide special financing for businesses in the park. Despite the relatively high success rate among startups supported by this company (about 50-60%), the director, Wei, attributed the failure of some startups funded by his company to lack of initial funding and inexperienced business owners. Still, many companies turn to privately owned incubators because they support startups on a case-by-case basis.

4.3 Connection with Investors in the Xiasha District

In addition to a funding pool (section 4.1), China's central government and the Xiasha District government provide waived workspace, funds, and tax reductions as incentives to attract private investors from China and the US to invest in startups in the Xiasha District.

Many of the business owners of small companies we interviewed reported that they found it difficult to receive support from private investors and so used personal funding (Gao, K., personal communication, 2014; Wu, X., personal communication, 2014; Zhao, Y., personal communication, 2014). One specific example of this is Suhong Yang's company, 123 Library, which contacted over 100 investment companies but received no help. As a result, his company received private funding mainly from business builders and bank loans, not investment companies (Yang, S., personal communication, 2014).

4.4 Distribution of Funding and Startup Culture Differences

The level and type of government support for startups in the Xiasha District is very different from that in the United States. The government in the Xiasha District usually invests directly in startups while in Silicon Valley, the US federal government invests in universities and programs that provide support to startups in the region (Ezell, 2014). This changes the emphasis of funding for startups from government to private, while allowing

the government to provide support to universities. This ensures there is support for entrepreneurship and innovation in both universities and industries. However, in the Xiasha District, this type of funding is in the developing stage and only exists for the biomedical industry (He, personal communication, 2014). This means that both the government and private investors in the Xiasha District are funding industry, creating a deficit of funding for entrepreneurship and innovation among the universities.

Another issue in the Xiasha District is the government and private investor's attitude towards startup failures. Investment companies and venture capitalists in the Xiasha District are not willing to invest in startups as early as shown in Silicon Valley, due to the high risks involved and the concentration on quick profit (Yang, personal communication, 2014; He, personal communication, 2014; Lou, personal communication, 2014). Yang, Manager of 123 Library, commented on the fact that local investors did not want to invest in Alibaba in its initial stages and therefore Jack Ma, owner of Alibaba, sought funding from private investors in Japan and the US (Yang, personal communication, 2014). This type of mindset alludes to a larger issue, the unwillingness of investors to take risks when it comes to investing in startups (Hoy, personal communication, 2014). As shown in section 2.3.1, risk taking is a large contributing factor to the success of Silicon Valley. This mindset towards failure cannot easily be changed and it makes it difficult for startups in China to receive funding in the initial stages.

4.5 Connection with Investors Differences

Startups in Silicon Valley, Zhongguancun Science Park, Hefei High-Tech Industrial Development Zone and Zhejiang Future Sci-Tech City connect with investors through conferences, competitions, and other platforms organized by the local government and private organizations (sections 2.3 & 2.4.2). These platforms allow for a straightforward and easy way for startups to obtain funding from private investors, increasing the amount of private funding in the region. The initial evaluation offered by many of these platforms reduces the pressure on investors to conduct the evaluations themselves, therefore

increasing their willingness to invest. In addition, these platforms provide startups and small businesses a central hub for access to investors, reducing the search time for funding and increasing the amount of investors they can reach.

Even though the Xiasha District government has a “funding pool” and has many connections with local and international investors, it does not have a platform for startups and small businesses to receive funding from private investors. This type of platform could offer businesses and startups in the Xiasha District with a simpler method to achieve funding that they need to grow.

4.6 Accelerator and Mentoring Programs

Microsoft Ventures accelerator programs in the US and China and the Y Combinator program in Silicon Valley provide leaders of startups in the region with the necessary resources to successfully obtain private investment and speed up their growth process (section 2.4.1). Accelerator programs are concentrated on specific industries; this allows them to offer more in-depth services and mentoring than incubators. Often this includes one on one interaction with venture capitalists, executives from successful companies, and successful entrepreneurs. This provides insight to startups that helps them overcome challenges that they may face when growing their business. Additionally, accelerators provide training for developing a product and business plan, allowing entrepreneurs without a business background to develop their idea into a product. However, due to the fact that they are specific to an industry, a few accelerators cannot support all the industries in a region.

Both the Y Combinator and Microsoft Ventures offer the benefits described above. However, Y Combinator is much smaller and has been around longer. Therefore, they have a larger alumni network, which participants can take advantage of. Microsoft Ventures, on the other hand, has many locations around the world, and thus ensures that they compensate for the cultural differences.

Currently the Xiasha District does not have an accelerator program, however there are plans to establish one near the China-Singapore Industry Park: Hangzhou. There is no other support to help individuals develop an idea into a product and business plan. Therefore the Xiasha District needs an accelerator program.

4.7 Determining successful programs and policies that could be implemented in the Xiasha District

After developing an understanding of the similarities and differences between the models of startup programs in the Xiasha District and other regions we analyzed, these are the successful policies that we have determined feasible for implementation in the Xiasha District:

1. A structured platform provided by the government that facilitates the connection of startups and small business with financial resources.

The Zhongguancun Financial Platform (sections 2.3.2 & 4.5) shows that a government run, private investor connection platform can be very successful in China. Additionally, the Beer & Partners investment club (section 2.4.2) shows that these types of platforms can successfully support a large number of investors, while simultaneously ensuring that businesses are able to receive large amounts of funding. This type of platform in the Xiasha District could be the driving force to increase the influence from private investors earlier on in a business' growth. This platform also allows the government to oversee the investments, which is important to many business leaders (Yang, personal communication, 2014).

2. Accelerator programs offered for multiple industries

The Y Combinator and Microsoft Ventures (sections 2.4.1 & 4.6) show that an accelerator program can significantly speed up growth of businesses. In addition, Microsoft Ventures in Beijing and Hong Kong show that these types of programs can be successfully implemented in China. An accelerator program in the Xiasha District can fill the gap that currently exists for developing ideas into products. This means increasing both the amount and the success

of startups in the Xiasha District. These programs can also serve as a means for businesses to connect with investors and large companies.

3. Government providing a structured platform to facilitate the collaboration between industry and education and investment in research institutions

Zhongguancun, Hefei and Silicon Valley (section 2.3.1, 2.3.2, 2.3.3, & 4.4) show that local government investment in universities and research institutes can increase the amount of technology innovation in a region. Additionally Hefei (section 2.3.3) shows that a formal platform for the transfer of high-tech research and technology from universities to industry can be very successful. Although there currently exists this collaboration in the Xiasha District, an increase in funding for universities and the addition of a formal platform can increase the number of innovations seen in the region.

4. Offering additional conferences and competitions in the Xiasha District.

The China Global Investment Summit: Hangzhou (section 2.3.4) shows that conferences are already successful in Hangzhou. Therefore an increase in the number and frequency of these conferences can increase the connections businesses in the Xiasha District have with investors. Additionally, the Zhongguancun-Silicon Valley Entrepreneurship and Innovation Competition (section 2.3.2) shows that collaboration between high-tech regions can increase the number of connections for businesses and investors in both areas.

5. Recommendations

Based on our findings from comparing what currently exists in the Xiasha District and what works in the regions we analyzed, we recommend the following to the Xiasha District Government:

1. Provide a structured platform in the Xiasha District that allows startups and small businesses to obtain financing easily and quickly.

We recommend using Zhongguancun Science Park Finance Platform and Beer & Partners as models for this platform. This platform would include an initial evaluation process of businesses by the management of the platform prior to investor involvement. If a business passes this evaluation process, that business then presents to a group of investors, who individually decide on investment. Additionally we recommend the platform offer assistance to the applying businesses, as seen in the Zhongguancun Science Park Finance Platform.

2. Provide incentives and policies that will help reduce the risk of private investors' investments in startups.

We do not believe our first recommendation will be enough to increase private investment to the desired level. Therefore, we recommend tax reduction and other incentives be offered to private investors. These will encourage investment companies, venture capitalists and angel investors to invest earlier on in a business' growth process.

3. Create Accelerator Programs

We recommend using Microsoft Ventures and Y Combinator as models to create the planned accelerator program in the China-Singapore Industry Park (Hangzhou). This program would offer batch acceptance, followed by a short term mentoring program. This program is centered on transforming an idea into a product and business plan.

4. Invest in educational and research institutions and provide a structured platform to facilitate the collaboration between industry and education.

We recommend using the Zhongguancun Science Park and the Hefei National University Science Park as models for this platform. This platform would provide a formal way to transfer ideas developed at local universities to products for industry, as well as allowing startups and small businesses to use local university facilities to reduce operating costs. Additionally, the platform would provide internship opportunities for local university students.

5. Provide connection opportunities in the Xiasha District for startups, small businesses, and financial resources.

We recommend using the Zhongguancun-Silicon Valley Entrepreneurship Competition and The China Global Investment Summit: Hangzhou as models for these opportunities. These would involve both local and international investors, as well as local startups and businesses.

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Appendix A – Sponsor Description

Dr. Liu Guang (刘广) is the sponsor for this project “Fostering Innovation in the Xiasha District, Hangzhou, China.” He is currently an instructor in the department of Technology Management at Hangzhou Dianzi University (HDU), and previously served as an officer of the Hangzhou Municipal Government. Now, he teaches Production Planning and Control, Workshop Management, and Statistical Management at the university. His main area of interest in research is Knowledge and Service Management. Dr. Liu has ten publications and has done research funded by the Natural Science Foundation of Zhejiang Province that analyzes the service jobs structure and its influence on production efficiency.

Appendix B – Interview with Frank Hoy

Date: September 17, 2014 **Time:** 2PM- 2:40PM **Location:** 50 Prescott, Room 1319 (Frank Hoy's Office)

Interviewee: Frank Hoy **Interviewer 1:** Anthony Dresser **Interviewer 2:** Nyoca Davis

Recording Allowed? Yes X No _____

Introduction:

We are students working on the IQP project to foster innovation and global perspective in the Xiasha District of Hangzhou, China. Before we travel to Hangzhou, we are doing research on what innovation is, and what types of innovation might be successful in Xiasha specifically.

Interview Questions

How do you define innovation?

Do you think innovation changes depending on the situation?

What are the components that you think are necessary for innovation?

Either socially, educationally, religiously, etc.

How do you think structure influences innovation and entrepreneurship

In your experiences, what have been the most successful ways of cultivating innovation?

Have you done any research, or know much about Silicon Valley

If so, what do you think were the aspects of Silicon Valley that has made it a successful hub for innovation?

In your experiences, what have been the least successful ways of cultivating innovation?

What challenges have you faced in your entrepreneurship career?

What has been your approach to addressing innovation?

Do you believe innovation is a necessary part of modernization and economic development?

Do you have any views of ideas in regards to innovation in China or China as a economic global leader?

Quick Facts

China GDP - \$12.4 Trillion, United States GDP - \$15.7 Trillion

China GDP growth - 7.8%, United States GDP growth - 2.2%

China GDP per capita - \$9,162, United States GDP per capita - \$49,922

China Unemployment - 4.2%, United States Unemployment - 8.1%

Documents Obtained:

No documents obtained, however multiple books and graphs were showed. Refer to transcript.

Additional Topics Covered:

Family entrepreneurship results and cultivations

Post Interview Comments:

No Comments

TRANSCRIPT

A = Nyoca Davis

B = Anthony Dresser

C = Frank Hoy

B = "We are here with Frank Hoy for an interview, Anthony Dresser present."

A = "Nyoca Davis."

B = "We are going to start out with an intro about who we are and what our project is. We are both members of a 4 person group going to Hangzhou, China. Our specific project for

IQP is working with the Xiasha District and finding ways to better cultivate innovation there. The main worry is if China does not find ways of innovating on their own they won't be able to sustain their economy. So they are trying to find new ways of doing this, and Hangzhou is a big tech city, so they are hoping that this city in particular will be able to do that."

C = "You know we have a visiting professor here."

B = "Yes."

C = "Are you talking with her?"

A = "We have an interview set up with her."

C = "Great."

B = "First question, very open ended, what is your definition of innovation and entrepreneurship?"

C = "It's interesting that you should ask because right now I'm working with James Madison University to help them expand entrepreneurship across campus. And so the first thing we had to do was define innovation and entrepreneurship. And that meant essentially bringing deans together from business, engineering, science, visual arts, liberal arts and sociology. All these different disciplines and try and compromise some kind of definition. My preferred definition for entrepreneurship is one that was coined by a professor over at Harvard, Howard Stevenson, and that the pursuit of opportunity without regard for resources currently under control. So in other words you are going after...you've made up your mind, you're going after, you don't have what's necessary. If you think about anyone starting a business you never have enough. You've got to get going so that you can bring in the resources that you need. And so entrepreneurship doesn't have to result in the creation of a business. But that's the normal thought, but I like this definition because it doesn't narrow it down to business creation.

B = "So that is an overarching definition, but do you feel that it will change depending on the situation. So the definition for entrepreneurship and innovation in a developing country won't be the same as in a first world country?"

C = "Well I think if you think about that definition that I just gave you, I think you are hard put to figure out a context in which it couldn't apply, in a meaningful way. In other words it's not so broad it doesn't mean anything, but the answer to your question is yes there are

other definitions that you might use under other circumstances. And again, for people representing different disciplines at a university, they definitely don't want it to be restricted to a business view. And there are some people who just don't like the word entrepreneurship. You will find in some disciplines, when Wake Forest University decided to have entrepreneurship education across campus, they found out that it wasn't acceptable in liberal art, so they did in fact use the word innovation rather than entrepreneurship, as a substitute for entrepreneurship.

A = "Do you believe there is a difference between them?"

C = "Oh yes, if you look at, again if you're saying that entrepreneurship, if you create a business you are an entrepreneur, so if you want narrowly define it entrepreneurship is creating a business. Not all businesses are innovative, so on the other hand there are people who have been doing this as long as I have, teaching and who have been studying entrepreneurship, who say if it isn't innovative it is not entrepreneurship. It's got to be more than just another mom and pop, to be an entrepreneurial venture. But the way I see it, innovation and entrepreneurship overlap. But you can be innovative without creating something and you can be an entrepreneur without being innovative. But we are most interested in where they come together.

B = "So with that as a context, what are the most important aspects to a society or an environment in general that is going to best cultivate innovation and entrepreneurship. So either socially or economically or even religiously. Do you think there are parts of a society that will help cultivate innovation more than others?"

C = "That is something that we are finding does vary globally. and so different cultures do have a different environment. The biggest thing that triggers innovation and entrepreneurial behaviour is the reduction of regulation. So if you look at China, if you look at the former soviet union and the satellite countries, essentially just reducing the laws that prohibit entrepreneurial behaviour suddenly result in an explosion of entrepreneurship. But having them out of the way doesn't mean, that you are still going to have it everywhere, because there are societies, there are tribal and communal societies that don't necessarily value individual entrepreneurial behaviour, they might do something as a community, but usually that's going to transpire more slowly. And then there are cultures that essentially don't foster a risk taking approach. Look at the country Finland, it

has been rated number one in the world in innovation, but has a below average rate of entrepreneurship. So they are very good at coming up with new products and technologies and just new approaches to things, new organizational forms. But it is a very risk averse society, in terms of people actually starting companies. Again some of that might be regulatory, because high task rates. If you look across Europe, Europe has viewed itself as losing global market share, particularly to Asian. And they really identified this about 15 years ago when they started developing an agenda for entrepreneurship. And the key thing is attitudes, and they just find that there is a strong attitude in the countries in Europe that opposes entrepreneurship. If you start a new venture and fail, you are risking your future. Whereas in the United States, if you start a new venture and you fail, people are going to think you learned something and are more likely to succeed the next time. There is real evidence in the US that you are more likely to get more money if you've failed once than if you haven't failed the first time you try. There are definitely some societal differences in terms of what that environment is.

A = "So we are aware that you deal with family innovation, what have been some of the successes you have used, meaning how to foster innovation within the area you are studying?"

C = "There's all these books telling you how to make a family business work better, and how to ensure that the family business with progress between the family generations. WPI belongs to a global network of universities. There are 40 sum universities involved doing in depth case studies of family own businesses, multi generational family businesses, specifically to find out how they have been entrepreneurial across generations. If you look at family businesses, usually the second generation of the third generation that takes over just tries to keep things going, the way the parents did, or they just want to take all the money out and they don't run the business very well. But there are a lot of businesses that have been around for literally centuries, so someone has figured out how to keep them going, how to respond to changes in the global environment and make them successful, and who's doing that? The oldest family business in the United States is here in Massachusetts. Zildjian cymbal company. It's currently run by the 14th generations, started in the 1600s and the 15th generation has joined the company, but the mother and aunt of the 14th generation are the ones running the company right now. Here's a company that makes

cymbals for drum sets, they have a trade secret, somehow they do that, and they have 60% of the global market share. So you can look through generations and say well they've stayed the same, and yet when you look particularly to generations in the last 100 years, they've really had to adjust to a lot of things. Technological changes, demands of the marketplace, changing in the music scene. Its just really fascinating to see some of the things they've had to do to keep this company alive and prospering and transferring from one generation to another. Every family business is going to be unique in some way, but we are doing this research to find out what keeps them unique. And some just have the next generation as educated and experienced. If the children are actually made in the business while they are still kids, which may be illegal, but even if they are, sweeping out the back rooms, stocking shelves, what ever. They have a better idea of sacrifice went into making this what it is. It's not just something I'm entitled to but something that people have worked hard for and it's my job to take it to the next level. Kind of conveying that spirits that this is not just a business where you punch a timecard, this is an epic story, that you are taking responsibility for. There are also lots of governance mechanism that have been developed over the years that seem to help family businesses stay innovative and healthy. Good long term successful businesses often have a family counsel that separate from the business, with family members, some of whom are active in the business some of whom are not, some of whom may have ownership, some of whom don't, but they represent the whole family and they discuss how the business is operating and what the role of the family is. Does something have an automatic right to be hired into the company, or do they have to meet certain qualifications. And having that counsel may lead to a whole family constitution. in terms of how the family and the business will relate. So there have been a bunch of these kinds of things that have been developed to keep these companies healthy.

A = "Have you done any research on Silicon Valley, or know anything about how they foster innovation there?"

C = "Well, if you look at Stanford website, there are several key people there. It's mostly in the engineering school rather than in the business school there. There's an adjunct professor, named Steve Blank, thats probably become the best known person and he's written a couple of books, all about how to use what is the business model canvas, created

by Osterwalder. Entrepreneur's use this to develop their business model. Steve Blank is the guy who really popularized this and it's now used by the national science foundation in their iCore training. So that came out of Stanford, Tom Byres wrote an entrepreneurship textbook, but focusing on technology ventures. And then Tina (last name) is the creativity guru, she's written a whole book on how to generate creative ideas leading to entrepreneurship. There's a whole bunch of videos, if you google Steve Blank, you get his videos explaining how to use this canvas. The TED talk equivalents, again all focused on entrepreneurship. So a whole bunch of stuff.

A = "If you were to approach the issue we are having now about fostering innovation in Xiasha District, what approach would you take and how would you go about doing it?"

C = "When you talk to Prof. Xu, she's a marketing professor, she is Chinese and she really grasps it, and she will let you know...for example if you're having a business meeting, you really bring a government official to the table. We wouldn't do that. Unless it was someone from the small business development center or something and you want them as an advisor or you are trying to get the SBA to guarantee a loan. For the most part you aren't bringing in a government regulator to the table to talk about your business. But in China that would be normal behavior. So getting her insight, and of course there has been lots written on this. I was just pulling this book off the shelf because I'm going to be speaking in China in November about family business. So i'm just looking stuff up. What I want to make sure I am doing is i'm using Chinese examples, I don't say something like "do this" and find out it's illegal in China. I want to make sure that when I talk to the Chinese audience, that I have done my homework. They'll give you some real insights (referring to professor Xu and professor Ma) as to some of the differences there that will prevent you from doing something that just doesn't make sense for the Chinese.

A = "Do you have any idea to what industry may need innovation/entrepreneurship?"

C = "What China is becoming known for is a real good ability to copy and adapt. What they are trying to figure out how do they take it to the next level, how do they do innovation. The key factor there is are they going to take intellectual property protection seriously. Because they will be developing more intellectual property, so it will be in their interest to do so. How are they going to do that? Therefore what doing to start stimulating intellectual development now other than just trying to acquire from western countries.

They are in the invention process. Going back to the family business comparison they'll only had a free enterprise system for a generation, so that means those that created the first businesses are now in a position to pass it on to their children. So now they are going through that experience for the first time. They are having to invent all of this. In other words it isn't something that necessarily be imposed by the outside, they may have to create whole new models. What do you do if you have the one child policy. Interview the Chinese students that are here. If I took you into my entrepreneurship and innovation class, and I've got 25 chinese students in there, at least half of them, probably 15/20 come out of family businesses and they are the only child. Of that 15 probably, 7 of them are seriously thinking about taking over the family business, and the other 8 don't want to. They want to start a business of their own, they want to start something higher tech than what their parents have, even though their parents made enough money to send them here to go to school. That's the only child, what are the parents going to do? Again we don't have a model for that over here. How are they going to handle all of the things that are completely different from everybody else's experiences in the world. So you may be inventing some things for them."

A = "So what challenges have you personally faced in your entrepreneurship career?"

C = "I used to teach with a material scientist. Back at the university that I was at before I came here, we taught a technology entrepreneurship course. And while we were doing that, he was starting a new business every year. He was doing things that he was developing in the laboratory, he was sort of CTO of the companies, but he wasn't leaving the university to go run them. At one point in time, he started a company on paint pigments, he started one on crude oil upgrader, one on algae production as an energy source and his comment to me at the time was, 'engineers are a dime a dozen, its a CEO I can't find.' The interesting thing to me when I came up here, I was like, this is Massachusetts, I'm going to find CEOs all over the place, and they are still hard to find. We are getting a lot of stuff coming out of engineering and science here, great stuff, but generally the faculty are the PI's of this intellectual property and again they are not going to leave the university to pursue it, and even if they did they probably wouldn't be the right person to run the business. Where is that person? Who's going to really make companies that have high growth potential, really take them off the ground? Essentially putting the

right team together, and you were all the time in entrepreneurship, from investors, 'I'd rather fund an A team with a B idea, than a B team with an A idea.' That A team is hard to put together.

B = "Just going off of that, particullary in Hangzhou a lot of the schools are very technology based, they do have a few economic schools, but most are technology based. So would you say that engineers and scientists are important for innovation but at the end of the day you are going to need that business perspective from a CEO or a business school to actually implement this."

C = "Somebody's gotta run the company. Guy Kawasaki, one of my favorite gurus in entrepreneurship , he was part of the mac start up team, then he went on to found Garage.com, a venture capital company, he's written book after book that have been bestsellers on entrepreneurship. Just a phenomenal guy, if you google Guy Kawasaki and go to his website, incredible stuff there. If you want to know how to make a PowerPoint presentation follow his rules, it's all freely available on his website. And if you were to email him with a question, Guy Kawasaki, who gets thousands of dollars on all his speaking tours, he'll answer your email, just incredible. Anyway, the way he expressed it in terms of making his venture capital investments was that he adds \$100,000 for every engineer that a start up has, and he deducts \$100,000 for every MBA. His view is that, an MBA might know how to be a manager in a large corporation but they don't get it from the entrepreneur. But still the issue is, we don't train the engineers to be salespeople. Who's going to figure out how to sell this product. ICOR brings in teams of three, it's usually a graduate student, maybe a post doc., the post doc's senior professor or major professor and an entrepreneurship mentor. Then they work them through a very intensive 7 week period. They have to go out and interview 100 customers and fill in everything on the chart. What they are trying to get through to the engineer and the scientist, you know the technology in and out, but that doesn't sell it. You've got to talk to the customers and found out why they would buy the product you've developed. What problem is it going to solve? What's the value to them? You know all the features, they want to know the benefits. We tend to train in the laboratories, features. Do you have someone on that team that can make sure the customer will actually buy the product or the service."

B = "A lot of what we have been talking about is entrepreneurship and business level stuff. But in terms of on a macroeconomic level, do you believe innovation and entrepreneurship is important for a country to become modern and become a world leader?"

C = "You are asking the solution to all the world's problems. The short answer is of course yes. Then it gets into a lot more complicated situations of all these others. If you look at how China has developed initially. You can say well look at how Mexico and the Caribbean created jobs, before that lets look at how the southern United States created jobs versus the north. If you look back at the 1930s and started to see textile from New England to the Carolinas. It was wage rates, they were not doing anything innovative down there, they were just figuring out what kind of production was needed, and we can do it cheaper than in the north, so move your business down here. When the North American Free Trade Agreement went through all of a sudden you have hundreds of maquiladoras on the Mexico, US border. Foreign owned plants, mostly US owned, doing assembly in Mexico because the labor was cheaper, so all the jobs that had done in the rest belt, moved south of the border. As China become more efficient than Mexico, so all that low level, non-innovative, goes to China, and that begins their economic development. And now they are losing the jobs to Vietnam, Thailand, and Indonesia because the wage rates are cheaper there. So then the next stage becomes focusing on a knowledge economy and innovation."

B = *Read off facts about China in Questions* "According to The Economist, at current inflation and appreciation rates, China's economy would actually surpass the United States by 2018/2019. In terms of China as a global reader, do you know Jennifer Rudolph?"

C = "Yes"

B = "They don't consider themselves a first world country, they are still a developing country, however if their GDP is passing ours, they will quickly become one of those global leaders. Do you have any views on this, or on how they might affect the world situation overall?"

C = "Of course there is GDP and then there is per capita GDP. Theres still tremendous poverty, and the free enterprise economy has not reached the majority of China by any means. A book was written back in the 1980s, "The Art of Japanese Management", in the 70s and 80s, everyone was saying the same exact things about Japan. Japan's growth rate was triple the US, so the whole issue was what is Japan doing right, what are we doing

wrong? They are going to pass us. These economies were a long way behind the US, therefore it's just like a small business, if you start out your small business and it's just you and next year you hire another person, well you've had a 100% increase. Does that mean you will compete with GM? When your economy is so far behind, having that kind of jump is not so surprising. Let's suppose they do, maybe its just because I've spent my whole academic career teaching entrepreneurship, but I think it's the answer to world peace. If these economies are prosperous because of international trade, therefore they are able to have stable governments and stable lives at home and security, I don't think they are going to be interested in engaging in war. So it would seem to be that having a strong, healthy economy is good for everybody.

B = "I just have one more question, going back to Silicon Valley. We started going over apple a little bit, but in terms of really popular tech companies huge like Microsoft and Apple, what do you think about them on an innovation and entrepreneurship point of view allowed them to succeed where others might have failed?"

C = "They were lucky, really take a look at all the ones that may have started at around the same time. They were all full of really smart people, doing really exciting things. Some of the ones that had the best ideas were not the ones that survived. Sometimes you looked at the Bill Gates case, and they attributed a lot of it to his parents, and their actions. The whole Apple case has had it's ups and down and could have gone in a whole lot of different directions. One of the things I try to get across to students is that it isn't your idea only it isn't the plan that you've formulated, it's how you execute. Essentially being effective at adjusting to all the changes. Even with Darwin, Darwin's research, it wasn't the strongest that survived it wasn't the most intelligent, it was the ones that could adapt. You see that over and over again in entrepreneurial behaviour. You look around at the conditions in which someone prospered, and you take a step back, you can reconstruct a rationale for it. But a lot of it is just being at the right place at the right time and how things fell into place.

B = "Unless you have any additional comments."

C = "Nope, if you have any additional questions feel free to send me an email."

B = "Well that concludes the interview and thank you for spending your time."

Appendix C – Interview with Xu Xiaobing

Date: September 19, 2014 **Time:** 2PM- 2:45PM

Location: Library

Interviewee: Xu Xiaobing **Interviewer 1:** Megan Robidas **Interviewer 2:** BinXin Liu

Recording Allowed? Yes ___ No X

TRANSCRIPT

(*note: since recording was not used in the interview, this transcript has been written from notes taken during the interview)

Introduction: We are students working on the IQP project to foster innovation and global perspective in the Xiasha District of Hangzhou, China. Before we travel to Hangzhou, we are doing research on what innovation is, and what types of innovation might be successful in Xiasha specifically.

Question: in your opinion, what part of the city government in the Xiasha District (or Hangzhou) is most interested in fostering innovation?

Xiaobing: There are about 30,000 people attending HDU. The government highly encourages innovation. Hangzhou wants: tourism, hi-tech innovation, IT, outsourcing, water protection and treatment, air purification, and energy saving, so these are the main industries that Hangzhou is most interested in supporting and funding for innovation.

Question: Ok. How are these innovative efforts funded or supported by the government and the university?

Xiaobing: The Chinese government is very interested in encouraging innovation. The government encourages student travel: to learn overseas, then come back and innovate. When they come back they can apply for startup funds and companies.

Question: Does the government help fund these efforts?

Xiaobing: An agency will approve students based on a set of standards; and monetary grants are given based on technology. The government helps subsidize student efforts, but it is really hard to receive funds from the university. However, most universities are public, so the government gives a budget to these schools. The government's goal is to help educate its people to better the economy.

Question: That makes sense. And are there specific examples of how students have been funded in the past?

Xiaobing: Statistics of student competitions, alumni and teacher startups, as well as the progress of the science & technology and management programs at HDU can be found online. Graduate students can also apply for projects. There are also patent competitions for startups involved with IT.

Some tech students join businesses during their studies.

Question: That's helpful information, thank you. And are you acquainted with Prof. Guang Liu at all?

Xiaobing: Yes! He's nice, humorous. He likes ping pong a lot. And he's in the Management Engineering department. He has a lot of company experience and is involved in trade and production. Currently, he's teaching project management and logistics. He is involved with an innovation incubator used by graduate students as well as professors. He's very humorous.

Question: Is there anything else about Hangzhou you think we should know before we get there?

Xiaobing: The Xiasha District has over 700 companies, many are specialty and well-known, like Coca Cola. It's a big city, but very nice. I think you'll like it!

Ending remarks: Thank you for your time! It was very helpful.

Xiaobing: Thank you. If you have other questions, please email!

Documents Obtained:

No documents obtained, however she suggested to look online for statistics regarding student research and startups initiated by alumni of HDU.

Additional Topics Covered:

N/A

Post Interview Comments:

No Comments

Appendix D – Interview with Mark Rice

Date: September 29,
2014

Time: N/A

Location: N/A

Interviewee: Mark Rice

Interviewer 1: Anthony
Dresser

Interviewer 2: Megan
Robidas

Recording Allowed? N/A

Introduction:

We are students working on the IQP project to foster innovation and global perspective in the Xiasha District of Hangzhou, China. Before we travel to Hangzhou, we are conducting research on what innovation is, and what types of innovation might be successful in Xiasha specifically.

TRANSCRIPT (*note, this was done via email)

3. What are your past achievements?

MPR: Most important — building an entrepreneurship ecosystem at RPI and expanding the alumni network; launching the Fast Track MBA Program at Babson and expanding the alumni network; beginning to build an entrepreneurship ecosystem at WPI and expanding the alumni network; producing IP related to incubation of startups and corporate ventures; teaching a lot of students across three universities; playing a leadership role in NBIA, AACSB, National Consortium of Entrepreneurship Centers, Center for Women's Leadership.

4. What do you think are the key factors/elements for innovation?

MPR: Depends on the type of innovation. With respect to radical innovation, see attached file RI Intro 36 slides.

5. What have you observed, are the main components of startups?

MPR: Team, team, team; Opportunity recognition (Market need and entrepreneur's differentiated offering that meets that need); Micro market (first customers); Macro market (size and growth rate); Macro Industry (Porter's Five Forces); Micro-Industry (sources of competitiveness); Business Model; Financing and Financial Management

6. What additional people/resources were involved in the startup of the solar energy company?

MPR: Four founders with different skillsets. Experience with prototypes developed via funded research.

7. What are the components that are necessary for a company to move beyond the startup stage?

MPR: Effective Team; Getting customers; Having a differentiated offering; Sources of financing.

8. What has been your approach to cultivating entrepreneurship?

MPR: Primarily building and engaging a network of experienced innovators / entrepreneurs; building a pipeline of nascent innovators / entrepreneurs through networking and through teaching.

9. What structures/system do you believe are best to encourage innovation and entrepreneurship?

MPR: Entrepreneurship ecosystem. See attached article.

10. What aspects of the models that you have observed can be applied in a district that has approximately 14 Universities?

MPR: See above. In addition either the universities need to establish a structure for coordination and communication; or more likely a governmental unit or economic development agency in the district needs to do so.

1. What kinds of questions do you think are important to ask in trying to foster innovation in a local district of China (we are going to the Xiasha District in Hangzhou, China)? Specifically, what questions would be useful to ask in interviews with students of the university?

MPR: What do they want to do professionally? If they are interested in innovation / entrepreneurship, what capabilities do they already have that they think will help them be successful; and what capabilities are they lacking that need to be developed — or that need to be provided by another member of their team?

If they are interested in innovation / entrepreneurship, what would they like the university to do to help them pursue their interest?

What currently exists; have they accessed it; has it been effective?

What doesn't currently exist that they would like to see established?

2. Prof. Rudolph, our advisor, suggested that we look into the Perry Theory for our background research. It is a theory that analyzes thought processes and how they typically progress in an individual. In order to foster innovation, what aspects of thinking/learning processes should we focus on? This would be particularly important for our evaluations of the university and how it is helping/hindering students in innovative and creative thinking.

MPR: I'm not familiar with the Perry Theory. See slides 12 — 28 in the attached ppt file entitled Assessing E Opptys to give you an idea of how we approach Creative Thinking in the classes we teach. FYI, in one of our flagship classes, we teach three interconnected modules: Creativity, Innovation and Entrepreneurship.

Documents Obtained:

Attached to the email was 3 documents. One paper written by Professor Rice in conjunction with other professors and two power points from Professor Rice's lectures

Additional Topics Covered:

N/A

Post Interview Comments:

No Comments

Appendix E – Interview with Todd Keiller

Date: October 2, 2014

Time: 2PM-2:30PM

Location: 50 Prescott, Room
1303

Interviewee: Todd
Keiller

Interviewer 1: Anthony
D.

Interviewer 2: Megan R.

Recording Allowed? Yes X No _____

Introduction:

We are students working on the IQP project to foster innovation and global perspective in the Xiasha District of Hangzhou, China. Before we travel to Hangzhou, we are conducting research on what innovation is, and what types of innovation might be successful in Xiasha specifically.

Interview Questions:

3. Can you speak briefly on what you do in the Office of Intellectual Property and what purpose the Office of Intellectual Property serves?
4. How does the department aim to maintain innovation as a business as well as an avenue to explore scientific and technological solutions?
5. What are your opinions on why protecting Intellectual Property is important?
 1. Do you believe lack of protection of Intellectual Property can be a deterrent for someone to start to be innovative?

2. Do you have any views on China when it comes to Intellectual Property and the protection of Intellectual Property?
 1. What do you believe China should do in the future when it comes to Intellectual Property?
2. Are there suggestions you might have for a team of students that are going into China to try to help foster innovation in the local district, which similarly to Massachusetts is a large higher educational area.?
3. What is the ideal way of protecting an original work of innovation? What process does this entail?

Documents N/A

Obtained:

Additional University of Edinburgh shallowly

Topics covered:

Post Interview No significant things to mention. Did refer us to look into University of
Comments: Glasgow in Scotland, similar situation to Xiasha. Informed us he would
 like to meet and talk about our experience when we return.

Reference

Persons:

Transcript:

A = Todd Keiller

B = Anthony Dresser

C = Megan Robidas

A = "The national center for entrepreneurial technology transfer. They try to marry mostly start up companies with fortune 500 companies, he's calls it the fortune 1000 companies, so there's more medium sized and angel groups venture groups and so forth. And one of the speakers was an angel investor from Scotland. Scotland has 5 million people and 15 universities pretty close to what this has [referring to Xiasha] and they have taken a totally innovative approach towards getting technology transfer out there. Very successful University of Edinburgh is just phenomenal, one of the things you might want to do is just do some research about Scotland's tech transfer program or if you go to University of Edinburgh is kind of a lead one, but Glasgow, Dundee those are the three major ones. Talk about off the chart, China and Scotland are about as far apart as you can think, but Scotland probably ten years ago was doing...but the schools weren't generating very much and about ten years ago there was a lot of coordination among the schools and they are even talking about forming one major tech transfer, which the egos around here wouldn't allow that. Think Harvard and MIT wanting to band together. So thats just an aside."

B = "Can you briefly talk about what the Office of Intellectual Property and Innovation does and what your role in the officer is?"

A = "So the really the mission is manage any intellectual property that comes out of WPI in a manner that's consistent with the mission of the institution and really just facilitate getting it out on the marketplace or into the hands of someone that can get it into the marketplace. So kind of the facilitator between the idea and the commercial potential.

B = "So you're the leader?"

A = "Director, yes."

B = "What kind of techniques does the department use to interact with the school? How does that communication work? And then what kind of techniques when you are trying to get it on to the market, could you go a little bit more indepth with that process."

A = "I have a whole lecture on this, it's an hour long, in fact next week there is a delegation from Chile, coming into Boston. I'm on a co-panel with MIT, as the big gorilla, me as the little chimp or little goat. So it's kind of fresh on my mind. So there is the mission of the institution, there the educational mission, but we are also a research institution. And if we take any, this will be a little different than China, and when we get to asking for

recommendations in China we'll talk about this. There are rules, when taking federal funding you have to report invention to the government and you have to do something with those inventions. Now I can turn my back to the inventor and let them go their way, but it's very expensive for inventors, so I will fund the patent expense. Then I will be kind of the marketing arm for that, and then we really have two options. One is either license it to an existing company or we can create a spin off company. So we're very active compared to an average institution, in the nature of a polytechnic. So if you went to RPI or RIT you'll see us all being above average in terms of new ideas that come and the number of spin out companies that we will do. Stanford was speaking at this conference and they did 20 spin off companies last year, with a billion dollars worth of research, we did 4. Not too shabby considering we are 20 million dollars, a small fraction. So in the last three years, we've done about 18 license, about a third of them have been spin out companies. Which is good, its great, you want them to stay here in the local area so the economic development is a big piece of it. So it is a business, thats why the institution doesn't know what to do with people like us. I used to be in boyton, if you came 6 months ago, you would have to go between the president and the provost office. Being down here in the business school is good because we have a very strong, whats called a tech advisory network, its group of alumni and friends of WPI, which once a month descend on this building, from interacting with the alumni who have all the contacts to try and network and then for the start up companies, they mentor the start up companies. So its a very powerful thing that Mark Rice formed and closely aligns with me, because I'm the pipeline for projects for them to look at. Most faculty really embrace the fact that you shouldn't just get a patent for the sake of a patent, patents should be for the purpose of licensing it and moving it on commercially."

B = "So if they come up with a new product, they come to you and you facilitate that?"

A = "They come to me with what's called a disclosure form, this is the start of the process, and what we do, is we give this to, often they have a publication or a MQP or something, and we give this to a patent attorney which will then file the patent, to protect the idea, before we disclose it publicly then we disclose it publicly, else you lose all rights to it. Filing of the patent can be very expensive so thats why theres always a balancing act between

fostering a lot of disclosure but I have to triage to pick the best. And its hard to tell some senior faculty member that we are not going to go anymore with this.

B = "Why do you think its important for intellectual property to be protected?"

A = "Well sometimes you can have, especially in software, you can have open source, and everybody uses it. [provides example of wpi open source software] But at least they are acknowledging WPI. So you can put a copyright on that, and say Worcester Polytechnic Institute all rights reserved and not charge anything for it, but the fact that you see WPI adds value there. But most of the time we have to protect it, especially if its a drug or something that will take quick a bit of an investment by a company to get it to the market. Nobody is going to invest in it if you can just copy it when you are done. This will be a sensitive topic when you are in China, because this has been our big problem. They'll just copy it, not that the Chinese government doesn't want to stop it, but people have just been doing it."

B = "Do you think it's a deterrent if intellectual property is not able to be protected?"

A = "Yes, because just think if you came up with a great compound that reduces a tumor on your skin and you spent 15 years getting it to work and without the intellectual property to work, once it comes out, someone else analyzes it, copies it and sell it for half the price. That's why the intellectual property is there. But one of the challenges for our office is to balance, you don't want to create a monopoly per-say, but you want the best chance for a product to get to the most amount of people. I can license it exclusively or I can also do it none-exclusively. There's been a controversial breast cancer gene thats been licensed exclusively, but to get that test it costs \$1,200. And so people say 'O well you filed it exclusively so now they can jack up the price.' Well I personally, before coming here had a license for a colon cancer gene, same genetic method but for colon cancer, and we licensed it to everybody, to like 10 different companies. Guess what? The price is like \$1,100, so it didn't make that much of a difference."

C = "Bringing it back to China, do you have any views on China when it comes to intellectual property and protection thereof."

A = "There was a delegation that came through two years ago, I remember giving a big talk to a group at the Higgins House and they pretty much understood our style of trying to protect and license things. We have the *bi-doyle act* which sets the rules for us for our we

have supposed to behave in tech transfer. I would think China would have to have some sort of, pick what ever rules they want, but you have to have something that is consistent, that the whole country will play under. Europe evolved that way, Germany for the longest time didn't have any rules, so sometimes an inventor would go off by themselves, sometimes they would go through the university. There wasn't a lot of innovation there, until they put these rules in and now it's really starting to crank out. For China I would think they would need to establish some basic guidelines that all the institutions know they should work under. When you come up with an invention, should it be assigned to the institution. Prior to the bi-doyle act, it all went to the central government and nothing happened, the central government didn't know what to do with it. So China might want to go that route. But if you have individual charged universities and judge them on what they are doing with intellectual property. Even in the states I have some counterparts that are so thrilled that they got new invention disclosures, and I say well thats useless, how many licenses did you do. That doesn't even really exists consistently here. So if you wanted to make them think out of the box, tell them about the intellectual part, how good are your licenses at getting something on the market, because o by the way how much money you make on them as an institutions isn't nearly as important as the jobs that you've created. Because we will lose money, typically it will take 10 years to make even on what we spend. We spend 400,000 or hopefully less on patent expenses. That's an awful lot of royalties to cover that. People think of gatorade as the big hit for University of Florida making millions, but thats one out of hundreds and thousands that didn't make it. But if you start focusing the 14 universities in that regions on starting from the end. Start from jobs, because you need good jobs. What's going to cause that, technologies that are creating those jobs are the results of solid licenses that have intellectual property as the backbone. That mind be a more creative way to talk to them, rather than how do I protect the intellectual property, o lets start up here, a lot of intellectual property might not be worth protecting if it doesn't have commercial. The other thing is that here in the United States our professors get judge on how many publications that they do. So you get 10 year, I don't think that productive, a way that if people are not performing there's nothing you can do about it. But what some universities here in the United States are beginning to do is not do it on the amount of publications but on the number of patents that they get. And I would

go even further than that and go with the number of licenses that came about. Especially in a polytech, you can get away with that. In a regular university the english department would squawk, so you would have to modify it department by department, you can't expect an english professor to be getting licenses, but maybe there's some other parameter that you can judge it on."

C = "Do you have any suggestions for us as we approach our problem in China?"

A = "If possible, I don't know politics on this, but will the government official [referring to Dr. Liu] to some businesses, and ask them how the university can help them, which we do a lot of there, a whole corporate engagement type of thing. Thinking from the end and working backwards not too many people do that. If theres an employer there, saying "O what would innovation do for me, boy if you could solve this problem for me and I would reward that universtiy with some royalties," thats a very western way, but I can tell you I've had Russian delegations come through here begging, 'How do we do this?'. Armenia and Georgia, so the rest of the world is looking. If you can dig around on Scotland, I'm just a fan on the performances there, they put their money where their mouth is and it's working there."

B = "There is a good amount of University Industry collaboration, however the issue is the university tends not to get fair credit when it comes to products."

A = "So thats the key here. If they develop something that is patentable, it sounds like they might just give it for free. But if you want to give the university inventor incentive, give the university and inventor [royalties]. So here we license it out to some company, they will agree to pay a royalty back based on the sales they are having and when we get a dollar, 50 cents goes to the inventor and 50 cents goes to WPI. So if you could convince them that they should do that, well you'll see people paying attention, because there is more of a western view now, maybe an entrepreneurial view of 'I want to make money.' When the bi-doyle act when in, we could keep any money that came in but we had to split it with the inventor. WPI chose to be very generous and split it 50/50 which is the highest in the country. I agree with that. Why not give the inventor a big chunk of it. You can see the statistics of when it really started, all of a sudden the number of inventions went like that [gesturing up]. Because there was the incentive. Quickly understand what's the current rules with, 'if I invent something at the current institution what happens there.' If that

company can have it for free, if you want to improve that, you have to give the incentive to the institution.

C = "What is the ideal way in your opinion to protect an original work of innovation?"

A = "It depends on what sort of invention it is. Typically it's a widget or something tangible that you want to file a patent on, again prior to any public disclosure, because if you publicly disclose it, it's now open to anybody. I'm getting more and more copyright kind of things, software, and US patent office just isn't getting claims on that anymore so they are putting the copyright symbol and you keep the code as a trade secret which is pretty easy for people to do. Filing in the Chinese patent office, which we do if it's a big blockbuster we'll file it. Once that's filed, that's when you really start looking for the commercial partner. So the patents are typically the bulk of the way we do it."

B = "Unless you had any other comments, that was the extent of the questions."

A = "If you have any question feel free to email me even while you are over there."

Appendix F – Interview with Martin Burt

Date: September 29, 2014 **Time:** 2PM- 2:45PM **Location:** IGSD Conference Room

Interviewee: Martin Burt **Interviewer 1:** Nyoca Davis **Interviewer 2:** BinXin Liu

Recording Allowed? Yes X No _____

Introduction: We are students working on the IQP project to foster innovation and global perspective in the Xiasha District of Hangzhou, China. Before we travel to Hangzhou, we are doing research on what innovation is, and what types of innovation might be successful in Xiasha specifically.

Interview Questions:

5. What do you think are the key factors/elements for innovation?
6. What have you observed, are the main components of startups?
7. What are the components that are necessary for a company to move beyond the startup stage?
8. What has been your approach to cultivating innovation?
9. What has been your approach to cultivating entrepreneurship?
10. What structures/system do you believe are best to encourage innovation and entrepreneurship?
11. What aspects of the models that you have observed can be applied in a district that has approximately 14 Universities?

Documents Obtained:

A powerpoint and documents were sent to us after the interview of some of the information that was discussed (see transcript0

Additional Topics Covered:

How to start a business

Post Interview Comments:

N/A

TRANSCRIPT:

A= Nyoca Davis

B=BinXin Liu

C=Martin Burt

D= Dorothy Wolf

A; To introduce ourselves. We are students working on our IQP to foster innovation in the Xiasha District of Hangzhou China, and before we go away we want to touch base with a few people to see their insight on innovation and also what it means to be successful in the innovation and entrepreneurship world. I am Nyoca Davis

B: And I am Binxin

A: And we are here interviewing Martin Burt. Our first question to you is, What do you think are the key factors and components of innovation?

C: Well, Thank you very much for this opportunity to be with you, I am so impressed with WPI students and am so happy to be here. The first element of innovation, we have to make sure we separate it from creativity. Creativity is the process of coming up with new ideas, and innovation is the idea of putting them into practice. So there are creative people and they are innovators, and that's a basic distinction. On the other hand, in the field of innovation there are ... innovation comes from new, and usually not a discovery, usually innovations are recombination of existing resources in a new way. So what you have for example is a technological innovation, is the Ford T-model. Henry Ford did not invent the

assembly line, he did not invent the car, he did not invent the black paint, he just used the people to finalize it. And people were not asking for a car, the market was not asking for a car. He always joked that if Henry Ford had asked people what they wanted, they would have said a faster horse. So what you have here is an industrialist who sees the car that was already being manufactured in Europe, but it was like the cellphone in its first version, it was a luxury item for the rich. So he said, how can we make it profitable, only if we sell many cars, at a lower price to many people, that means we are not going to have to build one car at a time and then build car number one, and then build car number two. You have an assembly line, where some people do the chassis other people do the body, other people do the windshield and things like that. the assembly line that was already existing, and he broke it down into a way that was cheap with interchangeable parts and then of course he didn't give people too many options. So this is an innovation, so when they disruptive, it destroyed a previous technology, the horse and cart. there were no good roads, it was hard to get gasoline, so many people of course saw the obstacles and said it was not worth it and very difficult. And Henry Ford saw the opportunities and knew that industries were going to be born, so the gas station, road construction, auto parts industry was born. So that is innovation. Because of technology, there are millions of innovation happening at the same time, and now a person in China can find out in minutes what someone is coming up on a new way to refine oil, in Venezuela, in the Ukraine. the internet has made the flow of internet a lot easier. You can just search in google. so that is my thing on innovation.

A: So you have touched on another topic, because a part of our project is how to increase the global perspective of students and resident workers in the Xiasha District. And you sorta touched on that in order for you to be innovative, you have to know what is going on elsewhere in the World, so how would you necessarily encourage global perspective for the students so that they can be more innovative?

C: So firstly, students have to really understand(enters Dorothy Wolf). People have to be aware, have an integral approach, I always use a framework that consists of four parts, and I am going to give you this. Basically, four quadrants, you have people behaviour, then you

have the system, but this is all external. But you also have to consider people's culture and people's intention

D: Personal intentions

C: ...which is personal. And this is individual, and this is collective, so people in China, in Jamaica, in South America, you have people's personal behaviour and the system where they live, some people want to change the system, some people want to change behaviour, but you have to think of people's culture and personality

A: Hmmhmm, I have come to realize that

C: You can understand the culture of China but every Chinese have a personality, individual, not all Chinese are the same, no they are unique so you need to take into consideration all these factors and of course there is system theory, so you can combine all these subsystems, this is something you do not see, this is invisible and people who only see this go and have big problems.

D: Could you give them an example

C: When you are going to introduce a new way of cooking, you have to be very careful, because it may be more fuel efficient but may be counter the culture because, they like to cook with smoke

D: Maybe they like the taste of smoke

C: You can't just say forget about your way of cooking and adopt this. People are afraid. So this is called the integral theory by Ken Wilbourn- you can check him out. So what specifically are you looking at?

A: So what are the key components of actually having a start up?

C: Well, for any business you will need a business plan, so in a business plan, you always need to know, what is my product or service?

D: It sounds easier than it is, to actually to define that.

C: So, who is my market?

D: And what problem am i trying to solve? is probably actually number 1

C: So where is my market? I put who here because it is who are the people who want to buy this. The more you can say this person, you know,.So three, who is my competition?

D: and sometimes the competition is not obvious, let's say your business is weekend recreational sailing school and you may think you competition is the other sailing school, but when start to dig further we realize that it is the same time of the year there is little league baseball and all the parents are involved in that.

C: So then you have the equipment necessary, then you have financials, human resources, statements, balance sheet and cash flow

D: this are called pro forma,and these are basically an estimate of what your cash flow is going to look like

C: that is why so many startups fails, because you have to get all these things done

D: you may not need to build anything, maybe it is already built and you can do a drop ship, it may already being produced but all you need to do is introduce it to a new market. So you get the order and let the factory deliver it. It is where you leverage infrastructure that already exists. The product is there, the market is there, you just put them together.

C: But nothing is free, you always need money, that's why you have angel investors. You can get money from the bank or you can get it from an angel and an angel investor is someone who will say okay i am going to give you \$100,000, if we lose we lose, but if we win , i want 35% of the profit.

D: Martin, i think a step by step would be.. You have a something on it right?

C: Yea. I'll just send you an email.

A: So you kinda touched on it, but how do you move from the startup stage to existing probably existing 50 years down the road?

C: Well you need to create an organisation-established an organization. You will need to know the legal structure, the management, the office location. What will it be, will it be a limited liability company. Because you are going to start a company, you are going to start borrowing and you are going to be borrowing money from a bank, from investors, you are also going to promise that you are going to buy this thing, rent an office space and you are going to sign a lease for a year, and what happens in 9 months if you are dead, you are bankrupt, who pays the rent, if you are a limited liability company, once you declare bankruptcy, the people that lent you money, lose their money. But you will have debts for more than that. That's how you start something, you put in a manager and have an organizational chart, which is going to be a board, then the CEO, and then you will have someone taking from the past (accounting), the present (operations) and for the future (planning).

D: You folks also need an exit strategy. And have some sale targets, for example, in 6 months we need to have sold x amount of laptop covers, if we don't what's our plan B? and then ultimately, it's like this Western song, you have to know when to fold them , and walk away. Some people don't know when to walk away. You'll find that successful entrepreneurs have many failed business in the past, but they know when to walk away, and say so we have tried for 18 months, our assumptions didn't work out, our exit strategy

was we'll give ourselves 18 months and if not working it's not working, it's not the end of the world, we are going to cut our losses and move on

C: It's good to also not, and say, the business was a failure and not I was a failure

D: You are only a failure if you do not have an exit strategy. Cross that one idea off your list and go on to you other 99 ideas

B: Okay, like when you find that when we start a company, and we make the startup very successful but during the development we need to cultivate the innovation, what do you suggest, what's your approach for cultivating innovation?

C: This is where the role of the entrepreneur comes in. You, are you the innovator, are you the manager, are you the person that gets all the parts together, for example, it was really interesting with Steve Jobs, and the Apple computer, and with Bill Gates, they were the innovators, they hired the president of pepsi cola to run the business, because to work in factories, to hire and fire people, to look for spaces for office space. There is this guy who is really understanding. So the question is, what am I good at? If you are the innovator, do not get trapped in office work, hire someone to do that. and if you are office managers, hire innovators. Because a typical organisation has someone that works with the past, someone that works with the present and someone that works with the future, are you that? (pointing at the future) or do you have to hire a group of engineers to find out what else people want. So that is how you keep innovation coming.

D: Getting back to your question, there are actually exercises you can do as a team, to jump start innovation and thinking in your group, and I can send you a few of them, because one of the classes we teach about innovation, we actually do some of the exercises with our students, that go beyond brainstorming, and they are on the internet, I will send you.

C: ... Have you heard about design thinking? and also an organisation called IDEO, just launched a free tool kit on how to do innovation thinking- Human-centered design. It is a tool kit of how to think in a systematic way.

D: A very helpful resource on how to write a business plan, is from the small administration from the United States. They are written for ordinary people, who may not have high level of education.

B: So the next question, what do you believe is the structure or system that may be best to encourage innovation or entrepreneurship?

C: So now I am going to show you this thing about IDEO, that you are going to love. This is beautiful. This is called design, it came out two days ago. This is how you do it, you have to hear, you have to create and you have to deliver. It has all the steps, why do you want human centered design? this is to solve people's problems, there are other innovations that are not to solve people's problems. Here is identify the design challenge, recognize existing knowledge , identify people to speak with and choose research methods. Do you want me to send this to you?

A: Yes. We can send it to our entire team.

C: So give me the next questions.

A: So our last question is, how do you think we can apply some models that you have seen in a district that has 14 universities?

C: There are two types of activities university students do. Firstly, university students have limited time. So you really can't give them a very ... it has to be a difficult learning process, critical thinking processes, so the deliverable has to be 14 weeks maximum. Second, you can do it in the classroom or you can do it in the field and so basically, you have to make an inventory of what kind of human resources, what you have and people like to do. Because if

you have a project that no one is interested in... you see what I am saying? Is there a problem of contaminated water that you can come up with a water-purification filter, or is there a problem that the power goes on and off, so you need a current stabilizer, or is it a problem in this part, there is no internet. So you have to be very careful how you do things. You have to also think about culture and religion, Maybe in some parts of the world, women can't do certain things or boys and girls can't work until 3 o'clock in the library, you know what I mean. So if you are going to working in a project with 14 universities, so what projects have been done before? and that will give you an idea of what works and doesn't work.

A: So that's pretty much all our questions. We would really like to say thank you a lot, both of you, we appreciate you taking time out of your business schedule to come and talk with us.

Appendix G – Interview with Amy Zeng

Date: September 29, 2014 **Time:** 2PM-3PM

Location: Library Tech Suite

Interviewee: Amy Zeng **Interviewer 1:** Nyoca Davis **Interviewer 2:** BinXin Liu

Recording Allowed? Yes X No _____

Introduction:

We are students working on the IQP project to foster innovation and global perspective in the Xiasha District of Hangzhou, China. Before we travel to Hangzhou, we are conducting research on what innovation is, and what types of innovation might be successful in Xiasha specifically.

Interview Questions:

What industries in the Xiasha district do you believe will benefit most from innovation?

During your experiences, while working with the MQP group, what has been the challenges you have faced, if any, when collaborating with firms?

Has the practices of combining theory and practice been applied to Universities in the Xiasha District? If so what methods have been used?

What ways have firms and universities used to cultivate innovation?

What is the university-industry relationship like in the Xiasha District?

What are the current methods used to promote global perspective of students, residents and workers in the Xiasha district?

Documents Obtained: None

Additional Topics Covered: None

Post Interview Comments: None

TRANSCRIPT:

Binxin Liu: Today is October 1, Wednesday, 2014. We are interviewing Professor Amy Zeng about our project “Fostering Innovation of Residents and Workers in Xiasha District. Thank you for your coming, Professor.

Binxin Liu: First question is that, what industries in the Xiasha district do you believe will benefit most from innovation?

Professor Amy Zeng: Well, based on my knowledge, Xiasha District is located within a Technology-Economic Zone. An ETZ (Economy-Technology Development Zone) In general, these zone are developed for economic and technology development and transfer it into international business. So the ETZ in Hangzhou is very similar with others in China. As far as I know, the major industries such as Electronics, Mechanics, Software development and other primary components of residents in Xiasha District. As you can see these industries are innovative in nature. They always try to develop new products or become a contractor of a bigger company to help the development of local economy. So I would say, for a better understanding of Hangzhou, I think you should look at Hangzhou in particular. One of the reason for why we put our IQP center in Hangzhou is Hangzhou is the home of Chinese Family-owned enterprises. And 80% even 90% of private companies have found Hangzhou to be the home! So Hangzhou itself is very innovative in nature. Hangzhou is the capital city of Zhejiang Province. And Zhejiang is the fourth largest GDP contributor in China. So it is considered as a very wealthy and developed province in China. And the major character of Zhejiang Province is Family owned business. Because of the location, almost every industries, every sectors are very innovative. But, of course, there are many ways to achieve the innovation. Some are very high-tech very sophisticate. Some are just very low-tech pop model shops. They do thing, they find product, they find new market, and they are able to survive. So in Hangzhou I have seen the mix of low-tech and High-tech companies. But just you look at local people. They are very innovative. They have new ideas, they have courage to try new ideas and they are very hard-working. There is another city in Zhejiang

Province, Wenzhou. Wenzhou model is considered very unique in China. And Wenzhou model is characterized by low-tech. Manufacturing. Because people there are very hard-working. They are willing to work 24 hours a day. One of the reasons they became rich is that they work very hard. They also took the very first step on trying business market. So they were the initial entrance. China is such a rapidly changing country. Hangzhou has several great universities. And people are rich in terms of their income levels. So I would like to say for industries which work with universities. Their history of universities is important. Xiasha District is only 20 years old.

Binxin Liu: So, Professor, during your experiences, while working with the MQP group, what has been the challenges you have faced, if any, when collaborating with firms?

Professor Amy Zeng: The challenges can be technical, financial, it can be anything so do you have anything specific?

Nyoca: Well we understand that when we are in China, there are going to be obstacles we are going to face, and we want to have somewhat of an idea

Professor Amy Zeng: You are not going to have a mixed team right?

Nyoca: No we will be working on our own, I think

Professor Amy Zeng: I think IGSD don't want our IQP group mixed with HDU students this year. We had mixed MQP group which language was the most challenging thing we need to overcome. When we have MQP, we need to interview some starters, then the language becomes the most obstacle of communications. The interviewees provide a lot of information but our students cannot understand. And it really depends on what you are going to do. The challenge may vary.

Binxin Liu: Professor, Has the practices of combining theory and practice been applied to Universities in the Xiasha District? If so what methods have been used?

Professor Amy Zeng: That I really don't know, but for MQP, I can tell, yes. Our major project sponsor was Omnipay. They are a software development company for bike sharing. So they develop software for renting and sharing and other reservation systems online. So when we did the project, they were very interested because they were also looking at the possibility of expanding their business and wanting to know whether car sharing was popular. They eventually took a suggestion from the MQP team that they should use Xiasha district as a pilot of car sharing service. Because the district is mostly students and professional. But HDU have a lot of collaboration with industries.

Nyoca: So you mentioned that many of the business there are family owned and operated, are family operated, do you believe there are any collaborations with universities and industry?

Professor Amy Zeng: I have to say university-industry collaboration in china is still in its infancy. Unlike US companies are very weak in collaborating with universities. Many state-owned enterprises and other domestic enterprises are still suspicious about students capabilities and university research. They have the triple helix model, when is very good theoretically but is not being done in China. Many places provide incubator, to give opportunities to commercialize research. So they provide resource, space and money for the business.

Nyoca: So what are they ways that you think we can encourage university-industry collaboration?

Professor Amy Zeng: In china, I think it's true, with everywhere, you try your best, show your work and they can recognize you. So like a competition. At the beginning it may be difficult to really convince them that you can do the work, you have to do a really good job, but if you keep on doing that, and show your best effort. For HDU, I did not really get that feeling because Omnipay is a very young company and the manager had been educated in the US and China. So he is very open minded. So the suspicion is usually from older

generation or people who are educated in China, they have never really interacted with undergraduates before. Usually they do not trust the Chinese undergraduates, because the undergraduate education in China is very theory driven. But HDU, I think is more open minded university

Nyoca: Our final question, could you describe the degree of global perspective in the Xiasha District

Professor Amy Zeng: In China overall, the undergraduate students are knowledgeable about western countries. Through all kind of media. Every university's trying their best to establish global collaboration. Well, you can see, that at least at the university level China is very aggressive on having global education. At HDU, I know their school of business has had collaboration with university in Germany and Singapore. Now Xiasha District have over 30 universities, I would have to say most of the universities there are small (regional) and very specialized. So it is very similar to the US. But in Xiasha, environment is different from Beijing

Binxin: One more question. I know many students from small village and many many small colleges in China, what is your opinion on how we can help them know the world better?

Professor Amy Zeng: That's a very big task, but it is important. I think it's possible but will require a lot of people's effort. I know my daughter is in a program, United Planet. They send students from US to rural, poor areas of China to teach them English. And that's really helpful. But I think it's best to talk to the district government official about this issue. Talking with each individual university would be effective. Top down approach is way better

Nyoca: We just want to thank you again for your time

Professor Amy Zeng: I hope my answers are helpful. Feel free to let me know if you need anymore information.

Appendix H – Interviews with Business Leaders

Date: November 4, 2014, November 18, 2014

Time: N/A

Location: Hangzhou
Science and Technology
Business Incubator

Interviewees:

Suhong Yang
Lou Weiran
Yongchang Zhao
Robert Yongxin
Xiaoxia Sheng
Kevin Gao
Ge Wei
Xindi Wu
Yu Haibin

Interviewers:

Binxin Liu
Anthony Dresser
Nyoca Davis
Megan Robidas

Secretary: Nyoca Davis

Additional Attendees:

Guang Liu

Recording Allowed? Yes ___ No X ___

Introduction:

We are representatives from Worcester Polytechnic Institute in the United States who are working on a project to foster innovation and global perspective in the Xiasha District of Hangzhou, China. My name is _____ and I am _____. We are grateful to you for taking time to speak with us and greatly appreciate it

Interview Questions

1. During your startup progress, do you think the education which you have been received helps you a lot? Could please tell us more about you education experience? (Highest degree, major, location, etc.)
2. What is/was your primary source of funding? Have you tried to contact any investment companies? If so how many, and what were he outcomes? (Investment Company name, the way they operate. What the business builder opinion about these investment companies)
3. Do you provide internships for students at your company? If so, what are their roles? What are the requirements?
4. What do you feel about the outcome of these student interns? (qualified ability to work, is their education useful to them?)
5. Does your company participate in any collaboration/interactions with universities in the Xiasha District? If so, in what way? (Cooperation mode, what do you think about the collaboration? Benefit or not, is the benefit significant?)
6. Is your company looking for funding outside of China? Do you know how to look for funding outside China? Is there any policy restrict funding outside China invest Chinese company directly? Or limitation of ownership? And what ways are you planning on doing so?
7. Do you have any ideas on how to promote local businesses to the international market that does not solely rely on the individual owners efforts (plan for hiring a management group or team, need of a platform for start international business,etc)
8. Does the company participate in the global market? Is it involved in the export sector of China? If so, in what way? And in which countries?
9. Is your business seeking ways to grow internationally?
10. If so what help do you think the government can provide?
11. Do you think (training program? Business startup programs and technology development programs) for University students would be beneficial to foster innovation in your industry
12. Do you think a training program for startup companies would beneficial for helping new business owners (What aspect do you think is most important in training

programs for startup? Fund raising, technology knowledge, management knowledge, marketing,etc)

Closing

We appreciate you taking time out of your day to speak with us. Would it be okay to quote you in our final report?

Thank you again, and have a nice day.

TRANSCRIPT: (* notes from the interview were organized based on topic)

Business Official 1: Suhong Yang (Company Manager of 123 图书馆)

**note- interview was conducted in Chinese*

- About: Is a government funded park
 - The government provide support through rental space, and for the resources but not assist with starting up
- But the company is still interested in being funded by the Government
 - Why: because government support is much stronger
 - Problem: It is not enough
 - So they still want help from private funding
- Company started a program in 2011- started primarily funded by private funding and then sought government funding afterwards
 - Consist of 8 Ph. D from HDU
 - Program goal: To build a platform for the sharing of the book and exchange of information (across cities/ different locations for a little amount of money)
 - Focus on exchanging books and not buying books
 - To avoid having a physical book (get rid of having waste)

- Why the government was interested: Right now government is not only focusing on economic growth but is also getting more focused on development of the people, for them to read more books
 - Similar to Chegg.com and Bookrental.com
 - Currently 500 universities in China are using this system
 - Problems:
 - It is a non- profit company so the government cannot fund it for very long. So they need some people to step up and take charge of this system
 - Prices in China rental books are less than those in US but may become expensive due to shipment
 - So the plan is to build a platform (online system for the exchange of the book) to avoid this shipment fee
 - What we can do: They would like help in contacting Chegg and bookrental to have a relationship with them, similar to that of Amazon and Alibaba
- Private Funding: 123 图书馆 has tried over 100 investment company but none agreed, so Private-funding is mainly from the business builders and from bank loans, not investment company
 - Why: Because investment companies are interested in short term investment (internet company is too risky)
 - So they wont provide funding for first stage startups but established startups
 - Solution: Seek funding outside of China
 - Eg. Alibaba- the founder got funding from Japan and US
- Creating International Contact: Government fund them to go international but not help them with getting in contact with them
- Assistance for the start up
 - Business models are developed with universities

- The Company have corporation with university students (not like an internship)
- Private- funding will definitely give you advice

Key Points

1. Not much programs to help Chinese business get on the international market
2. What we should do: Conduct research on how US high-tech incubators work (the structure) and compare with those in China, to provide the government with advice on how to run the high-tech incubators in China.
 - a. Policies
 - b. Incentives
3. Things to consider: We need to find out what attracts the biomedical firms near Worcester
 - a. How can the market attract firms to a particular area? And how it can be applied to Xiasha?

Business Official 2: Lou Weiran, General Manager (NetReach Technology Inc.)

- About Him: Returnee from the US
 - BS and MS in Electrical Engineering (EE) in jiejannng university
 - Received a Ph.D in EE Maryland and then 7 years in national lab Cornell University- EE
 - Had No prior business knowledge all obtained will working at HP
 - Worked at HP for 10 years
- About the Company: was started with government funding (3 years ago)
 - Goal
 - Current: Appliances for the smart home
 - Has patents
 - Future: Smart industry
 - Funding source:
 1. Investment Company-very little

2. Government promised if he came back they will provide funding for him (city, local and province)

- Have criteria for funding
 - Qualifications
 - Ph. D (in another country)
 - Number years of experience
 - Some Patents approved
- Have attractive policies
 - If you set up in Hangzhou you receive funding
 - 3 year free rental for office
 - If you fail they will often time help you and provide more funding
 - But: Your fail history can affect how much you get funded in the future
 - Solution: Go somewhere else to get funding
 - Tax break for several years
 - Refund the tax
- Problems: Was difficult to get in to the market that already had state-owned companies
 - His strategy
 - Went into another market which would attract those from the market he was trying to get into
- Private-investment company (they just really want quick money)
 - criteria/requirement
 - The future of your company
 - Stage of the company
 - If at the first stage then not good idea to approach investment company

- How much shares they can have
 - Incentives/Conditions: If you make X amount of money this year we will invest Y amount of money in the company
- International business
 - In the first stage of it
 - Through his personal connections
- Have student interns - doing technical work
- Additional help-in US: Mentors
 - Government- is a lot more easier to have a start up (more policies for it)
 - Private investors also have people who provide support
- Example:
 - Austin, Texas- Government Funding policy
 - Non-profit organization in US:
 - Retired CEO as mentors for startups
 - Help with writing a business plan & model etc.
 - Provide connections through expos
- Things to consider: Advice when comparing US models to China
 - Differences with China
 - Gov. have less conditions for lending money
 - Easier to get more funding from government
 - The difference in culture
 - Example: E-bay
 - Model failed in China
 - Because it is difficult to track payment
 - Difference in Education system
 - US- test your understanding
 - Professors have a lot of experiences
 - China- exam oriented (test how talented it)

- Professors are mostly good for writing research papers

Key Points

- Once you can get Government support the more likely for your success
- International experience gave him a leading edge
- Training programs should be considered
- Connection Programs should be considered
- Angel investors are not very popular

Business Official 3: Yongchang Zhao (Company Manager of Zhejiang Duolaimi Energy-saving Technology Co., Ltd)

**note- interview was conducted in Chinese*

- Started a software company prior to 2011
 - Have 2 systems
 - Internet platform
 - Online to verify authenticity of the vitamins (projected to be completed by 2015)
 - In 2017 ??
- In 2011 started another company- focused on saving energy
 - Startup was funded individually-no government funding
 - Difficulties:
 - Government have a strict policies to choose to support the business
 - Are supported now by the government because they are helping the environment
 - About: After harvest of rice the trash is left
 - They want to collect these and produce energy (biodiesel) from it instead of
 - Instead of using coal (to reduce CO2 emission)

- Plan to compress and then produce as cube or a liquid fuel
 - Difficulties: costly to collect it
 - Plan to create factory in the area and other infrastructures to reduce need for transportation
- Thing to consider: China wishes to copy (business) models from Northern Europe and Denmark
- About: How they created their business model
 - They took advantage of the policy made by the government to increase green energy
 - Under this policy the government forced people to give up using coal
 - So they use previous technology (no innovation)
 - Problems:
 - Collect plant directly then it has a lot of water (approx. 60% of water in weight-→ not good) therefore they have to wait until the plant is dry to produce the product
 - Have to purchase equipment from Europe
 - Hired a group to help them with their business model from personal funding
 - Hire groups for marketing and also for technology making from personal funding
 - He prefers to hire groups and build the company rather than having the technology and seek investment
 - Government's support: Get support from government (as a reward for accomplishment not funding) and the government is in support of green energy
 - International experience:
 - He is responsible for the international trade for the clothing
 - But he gave it up for this current business because the clothing industry doesn't have much growth

- The company already has documents for import and export
 - They have copyright for their method
 - Main market is South East Asia
- Internship
 - That have student internships
 - Asked by government to build a research institute for collaborating with university students
- Where the government is lacking
 - Currently they have a lot of co-operation with investment companies and research institutes and so they do not have much need for the government

Business Official 4: Robert Yongxin Zhao (President of Hangzhou DAC Biotech Co. Limited)

- About: Company focused on creating products for cancer patients
- Funding: Startup funding was done primary on their own, even now, it is solely funded privately
- Has 2 student interns in their program
- International Market
 - Has international connections
 - Because the number of programs across the world that focus on this kind of research is so small everyone knows each other
 - His company sends two representatives to a conference in the states to present on their findings
 - It is the hope that if they are successful, the other companies will collaborate with them and buy the program
 - Don't collaborate with places in china because there is not much protection of intellectual property
 - Sometime the local government does not follow through on their promises

Key Points

- Smaller companies are more suitable for the start up stages because there is less operating cost
- The process of getting a patent in China is more difficult and more strict than the process in the US
- We need to find a way to promote local companies to the international market that is not solely reliant on the individual owners

One major problem is that local firms do not think they can compete on the international market and so don't aim to get their products on the international market

PROTOCOL**Date:** November 18,2014**Time:** N/A**Location:** Hangzhou
Science and
Technology Business
Incubator *and*
Hangzhou Oversea
Returnee Pioneering
Park**Interviewees:**

Xiaoxia Sheng

Kevin Gao

Ge, Wei

Zhao Xindi Wu

Yu Haibin

Interviewers:

Binxin Liu

Anthony Dresser

Nyoca Davis

Megan Robidas

Secretary: Megan

Robidas

Additional Attendees:

Guang Liu

Recording Allowed? Yes ___ No ___X___

Introduction:

We are representatives from Worcester Polytechnic Institute in the United States who are working on a project to foster innovation and global perspective in the Xiasha District of

Hangzhou, China. My name is _____ and I am _____. We are grateful to you for taking time to speak with us and greatly appreciate it

Interview Questions

1. During your startup progress, do you think the education which you have been received helps you a lot? Could please tell us more about you education experience? (Highest degree, major, location, etc.)
2. What is/was your primary source of funding? Have you tried to contact any investment companies? If so how many, and what were he outcomes? (Investment Company name, the way they operate. What the business builder opinion about these investment companies)
3. Do you provide internships for students at your company? If so, what are their roles? What are the requirements?
4. What do you feel about the outcome of these student interns? (qualified ability to work, is their education useful to them?)
5. Does your company participate in any collaboration/interactions with universities in the Xiasha District? If so, in what way? (Cooperation mode, what do you think about the collaboration? Benefit or not, is the benefit significant?)
6. Is your company looking for funding outside of China? Do you know how to look for funding outside China? Is there any policy restrict funding outside China invest Chinese company directly? Or limitation of ownership? And what ways are you planning on doing so?
7. Do you have any ideas on how to promote local businesses to the international market that does not solely rely on the individual owners efforts (plan for hiring a management group or team, need of a platform for start international business,etc)
8. Does the company participate in the global market? Is it involved in the export sector of China? If so, in what way? And in which countries?
9. Is your business seeking ways to grow internationally?
10. If so what help do you think the government can provide?

11. Do you think (training program? Business startup programs and technology development programs) for University students would be beneficial to foster innovation in your industry
12. Do you think a training program for startup companies would be beneficial for helping new business owners (What aspect do you think is most important in training programs for startup? Fund raising, technology knowledge, management knowledge, marketing, etc)

Closing

We appreciate you taking time out of your day to speak with us. Would it be okay to quote you in our final report?

Thank you again, and have a nice day.

TRANSCRIPT: (* notes from the interview were organized based on topic)

Business Official 5: Xiaoxia Sheng, Ph.D. President & CEO of SoliPharma LLC

Education:

- PhD at the university of Minnesota; 2 years in Boston at MIT
- very helpful to have education and work experience
- formulation of pharmaceutical products, for registration of US FDA.
- Company is 4 years old

Funding:

- from friends and government
- most significant fund from the interfund
- there were mentoring programs offered to people new to the area trying to startup a company
 - has someone to call if they need help any step of the way
 - its up to the company manager to call to reach out for help
- working on communicating with venture capitalists

- so far, it has been going well
- having achievements and results makes this process easier
- has not decided if funding would be in USD or rmb
- major focus is the US market (partner focuses on Chinese market)
- already providing a platform to provide connections with venture capitalists in Xiasha
 - happens quite often for VC

Internships

- they do provide internships for students (outcomes are based on individuals)
- there are 14 colleges in the area
- undergrad and masters students
- “training programs” are called entrepreneur programs
 - HDU definitely offers this; helps students learn about domestic policies

Challenges

- Hiring motivated people
- Really understanding the need of your customers and the market

Things that would help

- Building connections with people in your area (believes collaboration is very important)
- Rely on government for maintaining a good city environment
 - If the city is attractive, should maintain good schools, hospitals, etc

Markets

- US market is more open, China: 95% is the generic drug
- US market is huge, but the Chinese market grows fast

Startups

- Small-business friendly (Mass and Xiasha)
- China provides more funding especially for those with degrees from the US
- Research with RTP (?): already set up in the US, but China needs more work

Incubators

- Not wise to try to get profit from the central lab
 - Should get tax return from small business, rather than profit from central lab
 - Government should adjust their expectations for the incubators
 - Not a good idea to commercialize the incubator
 - The money is given to small companies to have them grow (therefore not wise to expect a profit)
-

Business Official 6: Kevin Gao (Co-founder of LC-Bio)

Education

- 6 month internship (at Rhino) and Masters in Material Engineering and Supply Management in France
- Worked in Beijing before coming to Hangzhou
- Has been at company for 4 years
 - Most employees are very young and ambitious

Funding:

- They fund companies using their own money: 99% on their own
- Started from a very small company (3 people)
- Invested 50K USD
- During the 1st 3 years, they didn't need to pay for rental space
 - After that, not much help from the government
- Applied for innovation funding 3-4 years ago, received 200K from govt
- Don't think they need additional funding for the time being – they provide assistance to research hospitals, and are mostly research students for clinical products
 - Will try to look into private investors later

Market:

- Not looking to introduce to the international market (only sell services within China market)

- Last 8 years, they have provided to research hospitals and universities
 - Data analysis through bioinformatics
 - Will tell you about health condition

Internships:

- Offer 6 month internships for both undergrads and masters
- Quality depends on the individual; most are molecular biology majors
- Research collaboration with Jiudang University (?)
- Many relations and projects with HDU
- Training programs: mostly use technology training

Challenges:

- To know about the market and understand customer needs/wants
 - funders of most companies all have technical backgrounds, but they lack sales/marketing experience

How they overcame challenges:

- go to universities and hospitals, and tell potential customers about products
 - don't think it would be that beneficial for there to be an expo or connection program between customers and companies
- communication is really important

What would help:

- government policies for startups exist, but there aren't many for biomed/pharmaceutical companies.
 - hard to say, because leaders of departments change very frequently: the policy will be changed every ~3 years
 - for example, the leader of the economic and development department had a very good policy in place, but it changed the next year
-

Business Official 7: Ge Wei, manager of enterprises services department of Hangzhou Science and Technology Business Incubation Co.,Ltd

**note- interview was conducted in Chinese*

Company:

- Government owned company, like incubators, providing service to startup programs
 - Has different offices: for finance, attracting business, and service
- They also run the park for concept design and industrial design
- Training base for accepted orders to manufacture (ex, like iPhones)
- 3 types of service to startups
 - offers professional help to their business area
 - professional service platform: helps build connections with university
 - basic service
 - free working space; invest technology research
 - helps them improve the value of the company
 - provide registration for company; help with legal issues and paperwork; applying for copyrights
- how they help a biomedical company: build disposal system, provide facility for some, and provide technology support

Funding & Investors:

- currently planning to contact investment companies, in order to bring them here
 - making deals with investors: providing special investments will be more beneficial
 - signing contract with the Bank of Nanjing: ask sponsor to apply for this loan
- making contact with bank to solve more urgent financial problems
- short term: provide funding to investment companies
- long term: get involved in stock exchange
- Investors: can bring projects outside of incubator if it is successful, and everyone benefits from this collaboration

Help & Services Provided:

- Provide service to new business builders
 - Necessary courses and lectures
 - Most are technical people, but not as familiar with marketing
 - May invite company managers to introduce their experience and advice, and offer help for new businesses
 - Like personal mentors
 - Invite professors or owners of big companies to help new business owners through lectures
 - Before the lecture is scheduled, they survey companies in the incubator to understand most pressing issues, and the lecture giver will then present accordingly
 - This is a version of a mentoring program
 - Can help new business owners with personal contact and connections
 - May get investment directly from these contacts
 - A company will first help contact their primary contact, but if they cant solve the problem, then they go to a mentor for help

Standards for receiving aid:

- 1. You must be within the industry that the local government is supporting
- 2. Must have your own intellectual property
- 3. Registration: the entire value of your company cannot exceed 300K; cannot stay within the incubator longer than 2 years
 - Different local governments support different industries
 - Will be supported for 3 years, at the maximum
 - Lectures outside of China are not yet given (mentoring is focused on within China)
- How a company goes about receiving aid
 - 1. They can contact the government, and the govt will recommend certain companies to help fund them
 - 2. They can have a business plan and apply directly to this company

- This company will send out recruiters to search for startups and have them apply here
 - This mainly occurs within China
- Success rate of this specific company for startups
 - **Not successful survival rate: 50-60%**
- Reasons for failure
 - Lacking initial funding
 - Lacking experience (business owner)
- Biomed/pharmaceutical companies
 - 3 steps of support
 - 1. Idea: help provide free working room to project (small group of people), can they move to the incubator
 - 2. Incubator: still working on
 - 3. Accelerator (for instance, like the biomed. Company we previously interviewed): this provides assistance for companies after they have started their company
- Facilities for shipping
 - Company here mainly provides concepts, ideas, design. After, other factories will manufacture and ship the products.
 - Similar to Apple, they don't manufacture the iPhone in California
 - Each incubator has its own brands
- Private-owned incubators
 - Focused mostly on investing in companies
- Government-owned incubators
 - Focused mostly on tax returns after companies mature
 - Already encourage a transition from government-funded to private-funded for companies that are established
- Companies tend to turn to privately-owned incubators because everything is based case by case

- There are more incubators in Germany that have copied
 - They may not necessarily be interested in copying the structure of US incubators, because Germany has the best manufacturing industry

***look more into how Germany structures their incubators**

Business Official 8: Xindi Wu, Ph.D. Manager/Owner of Nanao

Company Product:

Oxygen sensor

- privately funded (majority is supported with their own money)
- did most things to start up the company himself (ex, renovations, website design, etc)
- will not hire interns (at least not at first)
 - wants experienced workers to get the company up and running
- most of the machines have been imported (a lot from Germany), because China can't/doesn't produce them
- receive government help in the form of space, mentoring programs, and policies to promote startups

Business Official 9: Yu Haibin, co-founder of Zhejiang Morui Electronics and Mechanics Company

**note- interview was conducted in Chinese*

Company Product:

Underwater sensor for submarines

- customized product

Still in the transition from a lab to a full company; focuses on product development and making it become commercial.

- Still a part of the research lab of HDU
- Most of the research is related to the students' courses; they all get paid
- Then, they will look for funding, interns, mentors, etc.

- They can get support from the School of Business at HDU
 - This is sort of like mentoring
- Receive the order and specific requirement from the customer in order to meet the requirement.
 - Will become a product line in the US (in China, they don't have a huge demand for these products)
 - International market is a long term goal
 - One standard for most countries; but some countries will require customized elements
 - Use personal connections to advertize

Funding:

- Funder of the company graduated from a Chinese university, worked in oil fill for over 10 years, has also been a Chinese teacher
- Funder came to HDU in 2001, joint program with National Ocean Science Research Institute: design devices
 - Electro-monitor system for crane
- Underground detective devices
- Funder used his own money as initial funding
 - Afterwards, Xiasha used funding assistant program for high-tech talent: received this talent since last November
- Will seek private investors in and outside of China, but right now, their main focus is to improve their product
- When they have their own way to develop their product, they will seek additional funding

Current problems:

- Tight working space
- Difficulty in hiring professional hi-tech personnel
 - Planning on hiring graduate students from HDU
- Trying to find ways to commercialize their products
 - This is a work in progress

- Hoping the government can provide more work space and some investment funding to the company in addition to tax breaks

What would help:

- They mostly need working space
- Currently searching for rental space

Interns & University Collaboration:

- Will not hire interns in fixed time, but if a person is qualified enough, they will hire them
- Collaboration with the university is not a problem, since the company owner is a professor at HDU

Overseas Returnees:

- One employee has his PhD from Japan in ocean engineering; HDU professor did exchange program in Canada for one years

What attracted them to Hangzhou:

- Staying close to HDU campus, since a lot of them work there
- Makes it easier to get undergrads and grad students to work there

Appendix I – Interview with Government Official

Date: December 4, 2014

Time: 1:00PM-3:00PM

Location: Shujianh
Hotel

Interviewee: Chongzan He

Interviewers:

Binxin Liu

Nyoca Davis

Megan Robidas

Introduction:

We are representatives from Worcester Polytechnic Institute in the United States who are working on a project to foster innovation and global perspective in the Xiasha District of Hangzhou, China. My name is _____ and I am _____. We are grateful to you for taking time to speak with us and greatly appreciate it

Questions:

1. What work are you currently involved with in the university and the government?
2. Which policies do you think are the most beneficial to startups? What about them were beneficial for startups?
3. Are you familiar with policies, programs, or platforms among other governments that help promote startups and entrepreneurship?
4. What other resources or elements have you observed that impact the success of startups?
5. How has your department provided financial aid for companies? Through what resources?
6. Does your department provide any resources for companies to connect with other financial resources? (Venture Capitalists, angel investors, etc.)
7. Is there anything else that the Xiasha District is currently doing in order to

better promote startups and entrepreneurship?

8. Are there any incubators that collaborate with your university? If so, how?
9. Do you know of any incubators that collaborate with companies? If so, how?
10. Where do you think Hangzhou and Xiasha is lacking in terms of supporting startup companies?
11. In your opinion what do you think is the extent that the Xiasha District is willing to go to in order to increase innovation?
12. Hinting at different recommendations, and his opinions on them.

Closing Interview

We appreciate you taking time out of your day to speak with us. Would it be okay to quote you in our final report?

Thank you again, and have a nice day.

Post Interview Comments: None

TRANSCRIPT

Have a funding pool- local government invest RMB 50 million to attract private investors. Their goal is RMB 200 000 million

Have another plan where they will invest more to do the same thing

The government has no ownership in it. Before the startups gets listed on the stock market the government will take out the exact amount they invested in the startup

Current steps for support by the government

Provide equipment to the startups

After develop the product they give ***

Help with finding connections wit VC, banks etc.

Commented on Zhongguancun having a “Café Culture” – where leaders of startups can make a deal with investors over coffee

Problems in Xiasha

Anti-corruption

Intellectual Property rights (when collaboration when universities, then schools normally get 40% and leave startups with just a 30% of the rights from the IP)

Limited human resources

Students who graduate from universities don't have technical skills

He thinks this is something that the central government can easily tackle

Most high schools aren't technical so the plan is to give more funding to them

Entrepreneurship education is lacking

Policies that have been helpful for startups

Evaluation of startups and ranking using the ABC

Only Xiasha gives the highest percentage for initial amount (eg. If startup should get a total of 6M, Xiasha government gives them 3M at beginning and the rest later- this does not happen in other places in China)

Xiasha is the only place that has a platform for collaboration- so that biomedical firms can do testing (*see other interview notes*)

Government support research institution where startups can collaborate, so that the startups don't spend a lot of money on technology (*in its developing stage*)

Give private investors incentives- waive workspace, tax reduction

Eg A US VC- Xiasha government gave 200 million then the US VC gave 800million and also had 4 startup programs

This resulted in 3 successful startups

2 in class A, 1 in class B

Collaboration with universities -very difficult because of the policies in Xiasha

Government plans

To help startups be listed on the stock exchange

Provide equipment for startups

To use money and give to program to initiate investment, by providing a credit guarantee as a means to attract investors

To build an accelerator program to focus on the biomedical and electronic industries

The government is trying to attract investors to Xiasha but he commented on the fact that it takes time

Xiasha government has a “1000 people plan”

Both the Central (4.**million) and Zhejiang (2.6million) government invest in oversea returnee and foreigners with PhD

Also give groups of people 100 million to help build their group

Focused on supporting only startups that are valuable but not all startups

Criteria for government to continues support in:

Manufacturing- must have an annual production of 100 million

Business- must have an annual production of 50 million

Xiasha government plan to invest USD 100 million into research in the US, so that they can eventually return to Xiasha and commercialize the products

Foreign help

Have facilities/work stations in Silicon Valley, New York, Chicago and Miami- they partner with universities

University of Toronto plans to set up research institute in Xiasha

Comparison with Xiasha and places around the world

In China, in order to get a loan from the bank, startups must have a guarantee while in Silicon Valley when you get funding from VC, that reduces the requirement for startups but not in China

Have supported 80 startups in the last 2 years

Eg. Zhong tai- a bio company worth 10 million

Government is in the process of building a platform for connecting the investors to startups

Has connections with investors but not very organized (plan to put it in the Singapore park near the incubator)

Government gives RMB 2 million every year to university startup competition

China is focuses on BME and so that is why a lot of the investment is in this industry

Appendix J – Minutes from Sponsor Meetings

Minutes

DATE: Oct 27, 2014 **TIME:** 3:00PM **LOCATION:** HDU Industrial
Engineering Lab

FACILITATOR: **SECRETARY:** **ATTENDEES:** Davis, N.
None (Introductory Nyoca Davis Dresser, A.
Meeting) Liu, B.
Liu, G.
Robidas, M.

DISCUSSION:

Will set up opportunities for us city officials to see how it is run and what they are
Currently doing

Need to visit start up park. There will be many start up parks. Go there in person
and interview business owners

Binxin will select parts of our project and translates in the final project

Work in government for 1 year and is familiar with the

Originally wanted to build a mathematical model to simulate improving innovation
because insufficient data, hard to get information from that data, we are not
professional scholar. We need to get familiar with how this works

Our proposed methods of interviewing professors and officials will work

He thinks it is different for Silicon Valley and start ups in china because they have
are not like silicion valley because they don't have the idea of how to have a start up.

Locals here, knowledge of policies of start up are insufficient. Even though gov. Set
up programs, but it does not have as much effect as expected .

There is a small focus of the impact of those who have been

Main focus is to get someone who has the skills and knowledge of a start up that will choose xiasha to do the start up. The government will compensate this will funding for housing, food, living, school for children for 3 years etc. division for one program it is about 6 million yuan. They will provide a room 1000, no interest up to 10 million . Class b 1-, working zone 400 Sqr ft, class c 1 million yuan. This program limited to high tech personnel and have good relationship with the government official. They go through procedure of application process -have business plan, build demo model, send to government, who will have a meeting with a reputable business officials to review the business proposal, and they will grade the business plans a,b,c. If your plan works they will invest more . The funding is flexible, they will give you the funding in parts.

When he was in the xiasha government-eg professor, brain wave use to control the flying of a helicopter. They already have the device for brain wave to control

The government is in charge of evaluating the business plan and see whether or not it is worth investing in

Department in charge of this, is the combination of communists party and government and have taken charge of the resources, there main focus is on innovation and start up.

Another innovation type- the enterprise already exists but do a new product-economic development department

They have department of society resources-they want to find valued personnels.

They will evaluate the persons of city, province and national level . City -They give them 1.4million yuan. National given 4 zillion yuan. This is the structure of their department. This is the basic structure of the xiasha district, but other cities have similar support but hey provide diff entry based on their economic condition.

There will be a government building is started and realigned in the park and is managed by an individual or government. This mode is called innovation platform (remember interview with xiao bin Xu). They provide course, to reach them about start up and also have provide ways for them to communicate with each other-this currently does not exist in xiasha. One good example bing jiang district, their focus

on BME and they are very successful. They get all BME together and build a waste disposal to make it easier to manage . Every new medicine they usually have 2.5 years before they have it liscened but with this help of this professor it only takes 1.5years. Some place in Shang hai they provide free test for the medicine.-xiasha also does this. In Shang hai, the area is supported by the Shang hai medical school. after they invent and then test, then they will give it to the university and they will provide professional feedback about the business. The government role is to fund the procedure for university's evaluation. So it saves the enterprise money.

The other mode is government and university co roper rate and provide services. In Beijing, there is a corporation, of the china science academic, physical, chemistry institute, to help the related enterprise on the national level. The government helps to build all needed equipment and they will also fund you. After they recruit a set of people, to use the equipment they will allow them to use

Corporation with research institute and government where when if the institutes have a technology the goverNment will bring it to the enterprises.

Ocean engineering center- after all the technology is built they put it in the center and is building 600sqr meters. They use policy to attract people. Then they will build the innovation platforms to attract high tech enterprise personal. Then innovation collaboration with research institutes and high enterprises. Fourth is University . student start ups-least importance. Have an economic development zone where you have existing start ups and if they need help they will provid it.

With knowledge if demographics we should note that they have good manufacturing industry but have poor social service. The service provide to the industry is not good.

electron industry, food manufacturing, and BME. All these enterprise are traditional, eg. Coke and pencil make, they do not innovate a lot. The company that builds phone cases and screen protectors build their factory in xiasha.

Our job is VITAL TO CHINA And is important, for economy, people and environment.

Think about if you were the president how you would think of solving the Great Depression

Now we have a background of the structure, which help us when talking to government official

He has knowledge of the management of the enterprises and the innovation, and the process of making the idea be implemented, the policies within enterprises and how the sale operations is. Difficulty is enterprises will not care about us. Also what innovation is in xiasha. He believe the most important to see how government can provide support. Easier for us to contact and get information from the government. We need to know how contribution of government in other locations

In china, once the company grows, the government will leave the company, and sell their share of the company to the owners. Because of the application for start up their are many people who do not receive funding and so are seeking private investors. And there are also rich people who don't know where and how to invest. We can probably fill this gap. There is a probably solution for his in shanghai.

The xiasha district sends two officials to the US to..... So they may have more innovation procedure int the US because that is their focus.

30. Our main project is to find one way to improve the environment of the start up companies.

Chinese government have a negative reactions to investing people who have failed because it looks bad in them.

Anthony's idea of transitioning funding from government to private, but don't have the policy

We need to look at America for ideas, analyze advantages and disadvantages and how it I'll fit for china

Minutes

DATE: Nov 11,2014**TIME:** 10:00 AM**LOCATION:** HDU Industrial
Engineering Lab**FACILITATOR:**

Binxin Liu

SECRETARY:

Anthony Dresser

ATTENDEES: Davis, N.

Dresser, A.

Liu, B.

Liu, G.

Robidas, M.

Rudolph, J.

DISCUSSION:**REF. POINTS**

- 1.1 Dr. Liu has been to the Zhejiang Hangzhou Future Sci-Tech City once, but was not able to see the details
The science city is doing very well for funding; they attract a lot of investors
Government and private investors pool their money to support startups; they then pull their money out of the companies once they are stable
The Zhejiang Hangzhou Future Sci-Tech City is managed by the Zhejiang and Hangzhou governments
They provide necessary living and education for the business's children
They also foster communication between the enterprises in the city
Xiasha wants to copy this type of set up
- 1.2 Policies change every 3 years, but once initially implemented, the only changes possible are for details of the policies like execution
However, we do not need to worry about this because we are simply making recommendations for what they can consider

- 1.3/2.1.1 There is still a lack of initial funding for companies, making them depend on their own personal funds
- The government sends officials for spans of 6 months to the States to attempt to attract high tech Chinese back to China to start their business there
- Currently, attracting innovators through connections is a main focus of the government
- There is a conference held in our hotel which is a talent conference, where the government identifies individuals who could be successful and provides them with the necessary funds and incentives to get them started
- Through this conference the government builds connections with their talents which allows them to feel confident with the government
- Perhaps the funding policies could be more flexible than it is now
- When the talent makes friends with the government officials, the funding becomes much more flexible, arriving when they ask for it.
- There exists an overseas incubator park that is privately owned, which the owners determine if companies or programs are worth investing in.
- 2.1.2 There will be another attempt at getting an interview with a government official
- When this happens, we will receive a message for the time and place
- 2.2.1 Before China entered WTO there were limitations on international funding in China
- However there may not be these limitations anymore
- Marc Chandler for Brown Brothers Harrington, foreign currency analyst,

marc.chandler@bbh.com, Professor Rudolph's brother in law

United States investment in China would be a very good thing to look into

GE is interesting in buying 3-d biochemical printing

Looking into McKenzie consultant group, they make a report on investment in China

There are a lot of rich people in China that want to invest in American companies coming to China, but United States has restrictions on certain technologies leaving the United States.

Need to look into protection of intellectual property between the US and China

2.2.3

In Xiasha there is a program for college graduates to start up their company

In the university they foster communication between the school of marketing and school of engineering to help communication between the two

They don't have communication between the government and the university

2.2.4

It is difficult for companies in China to do business overseas

There is a high rate of failure for small businesses therefore they have to concentrate on getting established first

2.3

Need to provide follow up questions to the yes/no questions

Need to quickly get to interesting points, need to follow their questions

Need to be more specific on our questions

Number 6 needs to be rephrased, sounds like a rephrase of 4

Number 5 needs to be more tailored towards the individual

Ask about specific examples

- 2.4 Don't need to worry about if we ask about their experience over seas
We can ask what country they stayed in

TASKS TO BE COMPLETED:

Rephrased objectives to state we are only making recommendations

Research on evaluation process of company's need for money

Contact Marc Chandler about international funding in China

Research on policies for international funding in China

Research restrictions on investment from the United States to China

Minutes

DATE: Nov 25,2014

TIME: 1 PM

LOCATION: HDU Industrial
Engineering Lab

FACILITATOR:

Liu, B.

SECRETARY:

Robidas, M.

ATTENDEES: Davis, N.

Liu, B.

Liu, G.

Robidas, M.

Rudolph, J.

DISCUSSION:

Meeting with government official: scheduled for week of 12/1

Accomplishments from last week

Background sections: setting up links from information we have with Xiasha District
Hefei looking specifically at the German incubator, and other areas looking
specifically at Silicon Valley in order to set up their versions

Did they choose the best elements to replicate?

Avoid what didn't work in those areas

Competitions or conferences in Xiasha to attract investors?

They attract talent, but there is no official conference

Silan Investment Company: oversea returnee park. Rather than having programs like
Microsoft

Is there any data in showing that Microsoft is successful? If so, would they want to
use it here?

Government of Xiasha District

Investment in incubators: the Government will give money as award, not as
investment

Clothing factory space: will be used for a new incubator (will be privately funded)

Already have 2 established incubators (one is for oversea returnees), will be building

2 more (one that is government funded and one that is privately funded)

VC giving money makes a company more attractive, because the investors have already given their support

Dr. Wei, the Manager of the Enterprise Services Department of Hangzhou Science and Technology Business Incubation Co.,Ltd, says his company has already provided loan to get money from the Bank of Nanjing

Want to attract Microsoft venture

Leader in Hangzhou development area: will not give money to startup company and leave it independently, as they do in Hefei

TASKS TO BE COMPLETED:

Look at different cases outside of Silicon Valley and Germany

Research the success of Microsoft: contact Microsoft in Seattle; ask for information on the program ASAP!

WPI alum working for Microsoft in Beijing

All models must be explicitly explained: especially the structure

Hefei and other park

Send Prof. Liu and Prof. Rudolph a document with our preliminary findings and recommendations; Synthesize results and send to sponsor and advisor

Prepare for interview with government official

Have background info ready to discuss

Minutes

DATE: Dec 2,2014

TIME: 10 AM

LOCATION: HDU Industrial
Engineering Lab

FACILITATOR:

Davis, N.

SECRETARY:

Robidas, M.

ATTENDEES: Davis, N.

Dresser, A.

Liu, B.

Liu, G.

Robidas, M.

Rudolph, J.

DISCUSSION:

Information sent regarding Microsoft

Waiting on contact info

Another phone call will be made around noon for interview

Preliminary recommendations

Need further explanations; currently too vague

1. Provide platform: Government already provides this; our goal is to find ways to improve. Currently: government invests, once a venture capitalist invests, the government will invest more. This policy started last year; currently the government has a lot of connections with VCs, various conferences and fairs; VCs have expertise to determine whether a startup has potential. Currently, do not have a formal platform provided to all startups for connections (so, the system really relies on connections). *Has previously been attempted to recommend this.

2. Clear criteria: want transparent criteria that the government require for a startup to receive funding. Prof Liu: this should be secret; startups shouldn't know how much everyone else is receiving; if a company had criteria, they would write to those

criteria when applying for funding. Currently, have an expert look over criteria in order to determine how much funding they should receive. Experts include government officials, successful startup people, venture capitalists. Would be beneficial for the government to follow investment companies, this way the investors wouldn't be faced with as much risk because they wouldn't need to invest all the money that is needed. Prof Liu says that part of the problem: experts have specific fields, but they may be responsible for a much larger scope (room for improvement here). Could show how other places, with transparent criteria, are more successful (provide counterexample). Example from previous interview: people making decisions may have experience, but not expertise. Companies aren't aware of the highest priority products.

4 areas of priority: electronics, pharmaceuticals, material/electricity, 4th. As long as you're in one of these categories you can submit your product; assess the person and their background; receive critique.

3. Provide incentives. Prof Liu: says no way to encourage/promote the VCs to invest. Has been done: government brings together experienced and inexperienced investors to invest in a company. This idea is born on the idea that companies often rely on family and friends to get their company started; but it would be beneficial for them to receive investments from VCs earlier on. Can be through tax incentives, government support of investment companies. There currently is a pool of money that the government has. Startups will have a lot of confidence early on: don't want help/to share in the beginning. If the government doesn't invest early, the VCs and angel investors aren't willing to invest early. But: can get money from the bank, no interest (up to 10,000,000 rmb), the government pays the interest.

4. Industry-education collaboration: having investment for research institutions within universities and research labs is uncommon here. Allowing use of equipment and sponsoring projects; use of the intellectual property: they do have this. Deep-sea research facility: an example of the government bringing together the startup and the university. No set pathway for this; occurs when people come together with ideas. Get support from branch of government that supports their branch of

education (no support from local govt). HDU professor very talented with 3D imaging; GE contacted him. Outside investors: occurs often.

5. Resource sharing: sharing services among the physical facilities (paperwork, waste management, etc). Prof Liu: wouldn't work. May be invested completely by a single company; conflict of interest.

6. Incentives: tax incentives; don't currently exist. Starting to think about doing this; tough because the companies aren't familiar with each other. Large companies wouldn't be interested in mentoring companies unless something would benefit them. Conferences could bring the companies together; currently, there are not many. Only way of finding out about some information is through personal connections. Prof Liu has experience with bringing investors and companies together: yearly, can make resource book to email out to companies.

7. Mentoring program: government providing mentoring

8. Accelerator program: CyberPort, Microsoft. Need a place; real estate is expensive in Xiasha. Mass produce a product. There is a plan to build an accelerator, in a business that has gone bankrupt.

9. Entrepreneurship education programs: some exist in the incubators; from the government perspective, they don't do enough of it. Government provided procedure of a step-by-step process that gets them set up. Scientists without business background can bring someone else on board. Long process of taking a new drug to the market.

Revising and organizing interview questions for government official

Minutes

DATE: Dec 9,2014

TIME: 10:00 AM

LOCATION: HDU Industrial
Engineering Lab

FACILITATOR:

Binxin Liu

SECRETARY:

Megan Robidas

ATTENDEES: Davis N.

Dresser A.

Guang, L.

Liu B.

Robidas M.

Rudolph, J.

DISCUSSION:

Going over changes made to recommendations

Need more details in recommendations: but should be very succinct. Logic should be simply stated. In Chinese, should be shorter (recommendation, with points underneath)

Reducing risk for private investors

Government provides 25% investment

Final presentation time: Tuesday afternoon

Will have English presentation with text; 20 minutes

Nothing sensitive we need to worry about

Translate recommendations into Chinese

More details in Silicon Valley and other models

Wants entire blueprint of Silicon Valley: how people invest, etc.

American government

Spends a lot to foster innovation; our sponsor wants to know the policies and tendencies. US government has much more power; different places have different policies. What we need: more detail for how Silicon Valley runs.

Must sufficiently understand how it runs. Specific reasons for how something in Silicon Valley would work in Xiasha (currently, not many of our recommendations are coming from Silicon Valley)

University startups in the States: research that transitions into startup companies