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University of Nottingham

**How to Make Innovation Happen in
ASOG Shanghai**

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degree of Master of Business Administration**

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Executive Summary

Public hospitals dominate the healthcare marketplace in China, while private facilities are smaller with more limited service offerings. The physical environment of these public hospitals is often characterized by inadequate hygiene, non-patient friendly design and a lack of privacy. As incomes rise under a predominantly fee-for-service system, patients with income power are able to choose more costly private healthcare facilities. The only way for private hospitals to excel is to develop the capability to offer innovative services to win this niche market.

This paper focuses how to make innovation happen in ASOG shanghai, which studies the innovation target, innovative capacities and innovation implementation. ASOG recruits and develops the professional team with sufficient clinic experience, encourages them to implement innovation through high levels of innovative capacity with the strong government partnership and high employee participation. In the same time, ASOG control the innovation cost and risk effectively based on the strong private-public partnership. After running several years according to this innovation model successfully, ASOG will turn to be a spiritual soother for the patients.

1. Introduction

For decades, there are struggles against seemingly intractable problems in the U.S. healthcare care system: unequal and incomplete access to healthcare system; perverse payment incentives that fail to reward good outcomes; uncoordinated fragmented and highly variable care that leads to safety risks and great waster; a disconnect between quality and price; rising costs; consumer dissatisfactions; and the absence of productivity and efficiency gains common in their industries (Paulus et al. 2008). The phenomenon does not lie exclusively in U.S., but also occurs more seriously in China.

China's current healthcare system is primarily composed of large public non-profit hospitals. These hospitals are supplemented by approximately 4,000 smaller private for-profit hospitals (Blumenthal and Hsiao 2005). China's public healthcare institutions are generally less sophisticated in their management systems and have a weak organizational structure, simple financial management and limited planning and organizational control. This inefficiency and lack of market responsiveness limit the ability of the hospitals to provide access to affordable, quality healthcare.

The physical environment of these public hospitals is often characterized by inadequate hygiene, non-patient friendly design and a lack of privacy. These factors also contribute to the lack of satisfaction among the middle and high class consumer-driven patients. However, public healthcare institutes handle most of

medical resources and government investments, and they become monopolistic designated hospitals under the current medical insurance scheme. In the same time, china's growing urban middle class population is demanding and will soon demand a customer-friendly healthcare environment, higher quality services and the opportunity to receive patient-centered healthcare.

As a result, innovation is a unique way to get competitive advantages for ASOG under the situations of the growing buying power and the competences from public hospitals. However, it is a big challenge for this developing hospital with small scale on "how to make innovation happen", which should understand the innovation target, find the key elements of innovative capacity development (IC) and identify the determinants of successful innovation implementation.

The study targets at exploring the key elements of developing innovation in ASOG. Based on the studies on over 60 literatures from China and Foreign countries, it is understood that most of the foreign scholars from universities paid more attentions to the determinations of implementing innovation in hospitals. Because these researchers are from a non-medical background, the research results are quite conceptual and unfeasible; on the other hand, most of the Chinese researchers are from the front line, they concentrated on how to develop innovative capacity in public hospitals. However, all of them did not mention a clear innovation target, but just pointed out providing the best service to patients or turning a loss into a profit. Those research results are hard to implement practically, therefore, more localizable, practicable, industry-prominent research should be conducted as

soon.

As said by Mr. Duan, who is the chairman of Shanghai First Maternity and Infant Hospital: "It is the first time to hear somebody devotes to research the topic of 'how to make innovation happen' in a private hospital. This is a tough job, but the research results have important directive to the development of private hospitals."

2. Literature Review

2.1 Traditional Theories of Innovation

When we talk about the innovation, Schumpeter A. J. (1934) considers innovation is a radical act which introduces a new element or new solution. As a valuable method of change, innovation makes a company gain competitiveness, and follow by that, a new profit growth is created for the company.

From the historic development perspective, there are roughly three stages in times about innovations. Firstly, in the 1970s and the early 1980s, innovation was influenced by scientific research, technological change was therefore the main innovation at that time. Secondly, after the period of technological innovation, product innovations appeared. It was revealed as the innovation within self-service systems (Huete and Roth 1988; Sundbo, 1991). Thirdly, in 1995, Fincham et al. pointed out that information technology becomes more and more important. Its development has a critical impact on the financial services industry. Being a part of a company's strategies, the importance of innovation in services industry is becoming similar to that of the manufacturing industry.

Different types of innovations have different interpretations. However, the appearance of different interpretations is because of the different determinants. For example, if an innovation is determined by scientific technology, it shall be called technological innovation. If it is determined by individual

entrepreneurship or a company's development strategies, it shall be entrepreneurial innovation or strategic innovation. Sundbo (1992) considers that the above three types of innovations are the basis in the theories of innovation in manufacturing industry. Kuhn (1970) questioned how innovations evolve. This question has a lot of different answers since the above three types of innovations could be interpreted as different models, and each model could be explained in the innovation management and organization. In order to better understand the innovations in hospital, the three types of innovations will be introduced and explained below.

2.1.1 Technological innovation

Dosi et al (1988) thinks the technological innovation is the core innovation process. An R&D department of a company will be in charge of scientific research and development. Therefore, the department will usually be responsible for the technological innovation. However, this work cannot be done only by an R&D department. It needs external networks. A recent research shows that specialized groups for the innovation process shall take responsibility for the innovation. External supports from departments, personnel and customers shall be all involved in the innovation process.

2.1.2 Entrepreneurial innovation

In 1982, Kent, Sexton and Vesper consider the entrepreneurial innovation as the core innovation process. Literally, entrepreneurship

means the establishment of new companies. Kanter (1983) and Pinchot (1985) state that the entrepreneurship within organizations is intrapreneurship. Stewart (1989) states that group entrepreneurship also exists in addition to intrapreneurship. As for the entrepreneurial act, whether intrapreneurship or group entrepreneurship, the innovation act is not easy to manage.

2.1.3 Strategic innovation

It is also considered as the core innovation process. It firstly came from Philip Kotler's (1983) marketing theories. Later, it was stated in Teece's, Kanter's, Nystrom's and Porter's (1990) researches. Strategic innovation is largely driven by the market. It is closely related to a company's strategies. All the ideas for innovations shall come from the departments and external networks of a company. The top managers are responsible for deciding to do or not. However, all the innovations shall be done according to the company's strategies.

Nowadays, technological innovations (the first model) are gradually replaced and explained in terms of strategic innovation. Dosi (1982) thinks that technological innovations are for the final aim of providing professional services rather than only creating advanced technologies. And some technological innovations are taking place in the services of a company. So in terms of hospital innovation, technology development is one of the methods for improving medical services. Strategic innovation might be more suitable for

explanation of this model. As for the second model—entrepreneurial innovation, it shall be explained more suitably as the innovation of a new established company. But now most innovations happen in an existing hospital rather than a new hospital, because a new hospital always focus on following the JCI or national medical policies to implement clinic path.

2.2 Hospital Innovation

Damanpour (1987), Damanpour et al. (1989) and Rogers (2003) define innovation as “an idea, practice, or object that is perceived as new by an individual or other unit of adoption”. In all the market areas, innovation is the way of winning competitiveness. However, it may differ in different kinds of sectors. As for hospital innovation, Barney (1991) shares the idea and maintains that hospital innovation can be considered as a valuable resource for gaining competitive advantages according to resource-based view theory.

Different from the for-profit companies, some hospitals are public, some are non-for-profit, and some are private. The innovations in a hospital are not as broad as a for-profit company's innovations for the specific mission, services, technologies and resource constraints of the healthcare sector. An innovation in the healthcare industry is considered as a medical technology, treatment procedure, or administrative system that is new to the sector and newly adopted by a hospital in a particular market area (Goes & Park 1997). Therefore, hospital innovation could be generally cataloged into two aspects: medical

innovations and administrative innovations. Medical innovations are closely related to the treatment of customers, for example, innovations on healthcare services, disease prevention, usage of new equipment and facilities and drugs. However, medical innovations cannot be realized without budget, technical, IT and other support. Without those supports, the technologies will not be developed, the applications of medical record, clinical support system as well as computerized order system will not be available, and the diagnostic errors will therefore easily happen. Therefore, as what Damanpour & Evan (1984) and Kimberly & Evanisko (1981) pointed out, medical innovation can be considered as technology innovations and method innovations.

Administrative innovation is the indirect act of the medical activities within a hospital. It includes changes in organizational structure and internal & external management. There are two kinds of customers in a hospital, patients, and employees. Internally, a hospital shall pay employees for their work, train them to provide better services and allocate resources for them to perform duties. Externally, a hospital shall provide better healthcare services for patients, treat their illnesses and relieve their pains. As mentioned above, administrative innovations cannot be realized without various supports, for example, for internal management, human resources management, process management system, resource storage and finance system as well as a database system, registration & order system etc for external management. In brief, administrative innovations are for the purpose of maintaining as well as

improving high quality services by managing internally and externally.

In summary, innovation is considered as the creation of a better or more effective product, service, process, technology, or an idea that can be adopted within an organization. In a hospital, innovations play a crucial role in the medical activities and its managerial operation. In order to meet more customers' needs (both patients and employees), hospital innovation is an important method, and also helping the hospital to survive within fierce market competitions.

2.3 Innovative Capacity

All above discusses the different general innovation diagrams and different aspects in the hospital innovation. Early experts have gotten the great achievement except the study of the strategic innovation diagram on service industries. The strategic innovation diagram considers the key elements of innovative capacity and the determinants of implementing innovation from the perspective of the strategic thinking.

"Innovative capacity refers to an organization's capability to sustain a series of innovations in a more or less regular manner"(Pelz et al. 1978). Building innovation capacity has a conceptual distinction comparing the innovating process for a single innovation. People usually mention innovation is a single innovation, which means people invent new products with new technologies or generate new administration method with new ideas, and implement them to

the real world and seek a practical solution for issues. Innovative capacity is the lifeblood of innovation and makes innovation happen continually when issues come out.

Pelz et al. (1978) well explained the whole process of developing innovative capacity from the perspective of the diffusion process. It is of particular importance in diffusing innovation and making innovation successful continually when firms develop their innovative capacity. To make this happen, an innovation diffusion program office should be developed. The executive department organizes scattered ideas into the systematical innovation approach, prepares the training profiles and designs the monitoring mechanism for the diffusion process. The diffusion plan should start to preach for making people understand why they need this innovation approach, where their issues are and how to solve the issues. Moreover, those initiatives motivate people to participate the innovation process. The systematical surveys are collected from the front line; next, the innovation office judges those feedbacks; finally, redesigns and finalizes the innovation diffusion plan. Now, it is time to diffuse innovation to different branches or different department. The diffusion office always monitors the diffusion process and collects feedbacks to the managing department. The diffusion office rectifies the innovation approach according to the feedback after analyzing feedbacks. Thus, the innovation diffusion process forms an implementing circle to develop innovative capacity.

Goes et al. (1997) thought organizational structure, institutional alignments

and resources of hospitals strongly link innovative capacity development after studying over 400 California hospitals over ten years. Among which, the institutional alignment is one reason for the special importance of developing innovative capacity. Especially in public hospitals, they cannot align and do medical researches when they are in lack of resources or investments. In 1981, Kimberly et al. studied this topic from the organization perspective as well. The educational level of the hospital administrator, the size of the organization, and the complicated business context are significant determinants of hospitals' innovation. In the same report, they argued the age of the hospital determinate the technological innovation and the cosmopolitanisms of the hospital administrator predict the administrative innovation. After studying Metropolitan Hospital and Medical Center in 2007, Akram Boutros documented the key successful factors of developing innovative capacity when this hospital successfully overcome dampened volume, unfettered cost increases, and flattening revenues. There are a trusted and exceedingly communicative leader, an ambidextrous organization, information-gathering system (including competitive intelligence), and educational programs guarantee the primary mover of innovative capacity (Boutros 2007). The study by Boutros is one of few articles that researched by physicians in western countries.

Comparing with experiences of the foreign academic researchers, Chinese authors are from the front line of hospitals. Corporate innovation grew from the support and development of corporate innovative force. The innovation reflects

to corporate lifecycle management and long-term plan. About how to support and develop innovative force, Mr. Shaodong Zhang completely and symmetrically presents this topic into ten ideas: 1) improving the spiritual state of corporate culture; 2) making innovative capacity penetrate into the business process; 3) developing innovative capacity in practice; 4) building the democratic team relationship; 5) create corporate management policy; 6) continually training new employees; 7) employee motivation mechanism; 8) meeting customers' needs with the efficient operation; 9) effective and efficient communication through the whole organization; 10) Promoting intellectual property protection and brand. Corporate force will strengthen innovative capacity continually through effective inspiration and innovative resources management, which not only manages innovative knowledge effectively and efficiently, but also converts those knowledge into corporate development force.

Dr. Zhang and Dr. Han (2008) found the key factors of innovative capacity after his research from healthcare perspective: the healthcare institute should strengthen the material basis of innovative initiatives, such as, the research and development center construction, which offers an advance technological platform and attract talent to join. Next, choose and develop the suitable innovative project that is based on establishing innovation funds, attaching importance to the ways of interdisciplinary research, and actively supporting and aiding financially. As follow, lay stress on developing innovative talents through building a desirable innovative environment. Then, align technological

partners to do research or study. In addition, effective innovation diffusion is the root of developing innovative capacity. Last but not the least, systematically establishing new technological innovation scheme is an important guarantee for construct of innovation ability. On the whole, the approaches of developing innovative capacity are manifold, among which, the most essential is the development of innovative talents under the mechanism of motivation, the construction of the innovation basis, and the choice and development of innovative projects.

Additionally, the CEO of Wuxi 2nd People Hospital, Dr. Lihua Yi (2007) thinks the role of leadership is one of the most crucial and points out the leadership should develop innovative mind, build up advance innovative ideas, and be an innovative leader.

2.4 Major Determinants for Hospital Innovation Success

It is unprecedented to require changes that hospitals should create an urgent and powerful worldwide need to diffuse alternative approaches for re-designing and to manage their hospital (Raths 2007; Rauner and Heidenberger 2002; Kam-Shim 1999). The development of hospital innovation is particularly slow, relative to other developing industries, practitioners therefore understanding the barrier is important. *NHS* (2011) well documented the reasons for slow spread of innovation. There are "poor access to evidence, data and metrics, insufficient recognition and celebration of innovation and

innovators, financial levers do not reward innovators and can act as a disincentive to adoption and diffusion, commissioners lack the tools or capability to drive innovation, leadership culture to support innovation is inconsistent or lacking, and lack of effective and systematic innovation architecture” (NHS 2011).

“How hospitals and policymakers respond to these emerging technologies will help determine whether hospitals remain at the center of the US health system” (Goldsmith 2004). For example, electronic health record (EHR) also accelerates medical services innovations such as e-visit and online prescribing (Williams and Whittier 2007). Caccia-Bava et al. (2008) found the four major areas of strategic leadership, competitive intelligence, management of technology, and specific characteristics of the organization’s change process determine the success of implementing innovation after researching 1000 hospitals in U.S. Pelz et al. (1978) not only pointed out the importance of technological change, but also presented a new concept: ensuring continuation that requires both an effective diffusion process and diffusion capacity. Besides building a good leadership style for innovation (Caccia-Bava 2008) and creating a system for delivery of innovation (Pelz et al., 1978), “reducing variation and strengthening compliance, developing and publishing an innovation scorecard to track compliance, aligning financial, operational and performance incentives to support the adoption and diffusion of innovation, conducting highly efficient procurement strategy, developing physicians and followers, and high impact

innovations”, all of those are summary of actions for successfully implementing innovation in *NHS* (NHS 2011). Similar to this, a few scholars also present new ideas about this topic from the clinical perspective: successful innovation depends on highly collaborative, a diverse group, such as financial, operational department, works together (Paulus et al. 2008). Aside from this, hospital can target specific care model for redesign by using various criteria. As the beginning of this process, hospitals may design a new business case model to build up an implementing mechanism (Paulus et al. 2008). Moreover, they made a special note of a particular improvement methodology, such as Six Sigma, Lean Reengineering, or Continuous Quality Improve, which improves operation efficient and reduce costs to support innovation. In the same time, “senior finance leaders and their teams have an essential role in driving innovation” (Sanford 2011), while business planning plays a more dominant role in higher degrees of innovativeness (Schultz 2011).

When hospital implements innovation, the executive team makes for both incremental and strategic (non-incremental) innovation (Boutros 2007). Boutros stated some key factors through analyzing people and organization, except those well known factors of leadership skills, an ambidextrous organization. The executive team should manage the organizational mood and preserve a receptive climate for change. Furthermore, the leadership must focus on personally modeling the behavior he expects of others. As well as above, the executive team should design the review mechanism and monitor

the innovation process (Boutros 2007).

2.5 Critical Analysis Historical Literatures

Traditional innovation theories mainly start to their researches from three different ways that are new technology, individual entrepreneurship, and strategic innovation. When those theories are applied into OB/GYN/Pediatrics hospital industry, the traditional technological innovation can be thought as medical technology innovation; the strategic innovation covers the whole hospital innovation, both medical innovations, treatment procedure, and administrative innovation; Intrapreneurship or corporate entrepreneurship can help hospitals develop self-innovative capacity based on self-recognition and self-development.

Hospital Innovation: It has to be decided firstly what the innovation directions and goals are and what the customers' needs are. In this respect, different academic researchers have different ideas. No standard answers have been found yet because of the strong regional and local cultural characteristics of customers' needs. Generally speaking, the method of getting the kind of information is marketing research.

After having directions or goals of hospital innovation, how to develop innovative capacity shall be considered. Innovative capacity is the motivation to drive the goal forward. Pelz et al. (1978), as one of the earliest researchers of the area, put forward the idea of Innovation Diffusion Office, which is designed

and developed to promote innovation results. Also, it makes all the staff of the organization believes that in the prospective future the innovation will bring and encourage them to get involved. Meanwhile, Pelz and his partners maintain the belief that perfect communication mechanism is the most important factor for the conversion from promoting innovative success to having innovation capacity. The finding is one of great discoveries in innovation research. It fundamentally shows the forming process of innovative capacity and the key influential factors.

In 1981, Kimberly et al. pointed out that the education level of the leaders, the scale of hospital and complex business environment play the most important roles on innovative capacity. Perhaps those elements are very representative in his research, however, their point is unpractical in reality. The hospital leaders do not know how to implement according to his point. As for improving education, "Oh, God, I do not have that time" – this is what about 90% managers think. Talking of hospital scale, they will give excuses that it is no way to expand the hospital. When it goes to business environment, they feel frustrated about the changes of customers' demands, market competition and government policies.

Soon afterwards, researchers start to conduct the real practical research. Goes et al. (1997) pointed out the idea of considering the elements for innovation group. He took the organization structure, resources and alignment & communication between organizations into consideration. The alignment and communication between organizations are the most important method for

enhancing hospital scientific and technological creativities and innovative capacities. Also, mutual exchanges and interaction provide a new method for hospital management innovation. Through the study on metropolitan hospital innovation management, Akram Boutros (2007) found that in addition to a reliable leader, an effective information gathering and sharing system is of great importance for innovation cultivation. His statement is much similar to that of Chairman Yi (2007) of The Second People's Hospital, Wuxi, China. In the studies of Zhang (2011) and Zhang & Han (2008), it is in the first time that staff is considered as one of the factors. They think that recruiting and training those staffs with innovative capacities and setting up effective and practical rewards and punishment policies are the two important factors. In this way, we can draw out the practical innovation cultivation model as below:

+ Innovative Capacity Model

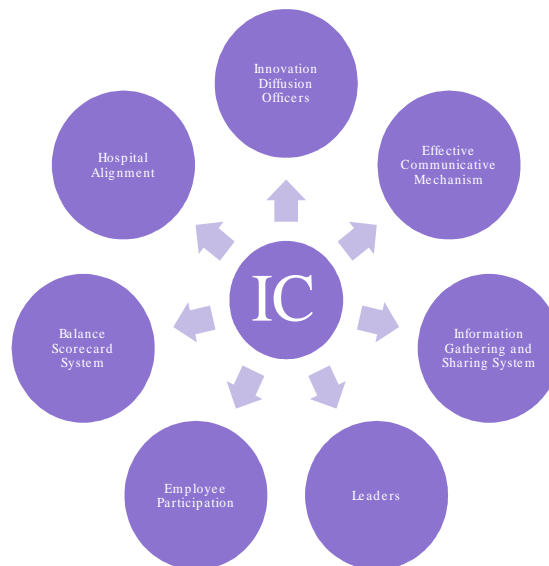


Diagram 1. the elements of developing IC

From the Diagram 1 (Designed by the Author), it can be seen that the roles of government departments or other relevant functional departments have been ignored in the previous academic researches of innovative capacity. Besides, the investigation system of innovation failure and responsibilities accordingly are also ignored. This is Innovation Crisis Management that we normally name.

After having the innovation goals and cultivating innovative capacity, how to conduct innovation and how to ensure the success of innovation are of the great importance. In the first research on over 1000 American organizations, Caccia Bava et al. (2008) successfully found that leadership, competitive intelligence,

information technology, and specific characteristics of the organization's change process are the four key elements for innovation success. The four elements are included in the worldwide hospital innovation theory and universally recognized. In addition, NHS (2011) emphasized the role of resource integration in the process of innovation. Sound resource integration is the guarantee of innovation continuity and in-fighting elimination. NHS specified the fourth element of Caccia BAVA's research into the innovation process measurement system, which is easier to learn and share. From the angle of operation management, Sanford (2011) put forward that how to take use of effective operation tools, such as, six sigma. However, that is what we shall consider in the process not the determinants of results.

However, the uniqueness of medical area has not been taken consideration in the past academic researches. The empirical science and medical ethics are crucial in hospital innovation.

In general, most of the academic researchers' studies are based on the empirical studies of innovation principle, and few consider the particularities of the industry and the region. This paper will focus on those points. Firstly, researches on innovation target will be conducted. Then, through questionnaire surveys and interviews, we could understand the successful experience and difficulties of innovative capacity and innovation implementation between Shanghai public and private women's and children's hospital. After that, by means of questionnaire surveys, we could hear the advices and opinions on IC

cultivation and innovation implementation from the staff of ASOG. In conclusion, it can be sorted out that how to conduct innovation and realize the success of innovation in ASOG by using current resources.

3. Research Methodology

3.1 Mixed Method Design

The objective of the present paper is to identify what the features/characteristics are within an ideal hospital and find how to make innovation happen in ASOG Shanghai to achieve the “ideal” innovative hospital.

In the past decades, there are the quantitative and qualitative research methods for the academic research, which largely roots in contrastive positivist and constructivist research paradigms ((Morgan & Smircich 1980; Sandelowski 2003).

“Qualitative research has generally been typified by a focus on induction, exploration, discovery, theory/hypothesis development, the researcher as the primary data collection ‘instrument’ and qualitative data analysis. In contrast, quantitative research is mostly marked by deduction, confirmation, explanation, prediction, theory/hypothesis testing, standardized data collection and statistical analysis” (Berghman 2006). The study of this paper mixes method studies are “those that combine the qualitative and quantitative approaches into the research methodology of a single study or multiphased study” (Tashakkori & Teddlie 1998).

Therefore, quantitative research is used for finding the results of what are the features/characteristics identified in an ideal hospital. The research topic of how to make innovation happened in ASOG Shanghai should be investigated by

the mix method research.

3.2 The Feature/ Characteristics of an Ideal Hospital

When people start to research the innovation, the ideal hospital building is a prime consideration. To understand the trends of middle and high class Chinese attitude towards the ideal hospital, a poll was conducted in the Shanghai by ASOG in which more than 100 urban middle and high class residents were investigated. Given study parameters, the trends of customers' requirements rather than absolute figures are indicated. Middle and high class Chinese were targeted for surveys through the selection such as bankers, proprietors, senior employees of foreign-funded enterprises in Shanghai. To facilitate a high response rate, the survey was conducted in person. The questionnaires took approximately five minutes to complete, and respondents were guaranteed confidentiality.

This field investigation used a questionnaire (as shown in Appendix 1) to collect data from China Merchant Bank shanghai branch, Suzhou Bank shanghai branch, Cisco Shanghai Office, and walk in patients of ASOG shanghai. The questionnaire includes questions and a cover letter in which explained the purpose of the study, offered a coupon to enjoy 5% discount when respondents will make health examinations in ASOG shanghai. A total of 100% responded questionnaires were returned in time, but 12% questionnaires were not completed by respondents. Thus, the response rate was 88%, which implies 88%

questionnaires were available.

Populations surveyed represented the target urban middle and high class Chinese demographic: young, well-educated and generating significant income. Of the effective surveyed Shanghai population, 73.86% are women and 26.14% are men. 79.54% of the effective surveyed population is between the ages of 20 to 39. About 10.2% of the population is older at the age group of 40 to 49. Shanghai's overall surveyed population is at a higher income over 15,000 RMB per month, and 100% are educated to a graduate level.

In the main question of "what are the features/characteristics you identify with in an ideal hospital", there are fifteen choices for respondents. According to surveys, respondents of each feature/characteristic were counted and analyzed. The features/ characteristics that got the most votes will be the new pursuit of ASOG Shanghai through innovation.

3.3 How to Make Innovation Happen in ASOG Shanghai

After understanding the goals of innovation initiatives, many interviews were conducted for the innovation situations of the local public and private hospitals and a research that can find the options from the front-line about this innovation topic was run by the leadership of ASOG Healthcare Group.

General speaking, services of a hospital have significant regional characteristics. Most people choose medical services based on geographical

proximity. Especially for infants and children, parents always hope their children get effective treatment quickly; a pregnant woman is encumbered with a pregnant body. The main competitors and ASOG are located in the city center; they only cover patients who live in urban and offer service to few people who live in rural. In Shanghai, there are 5 public OB/GYN hospitals and 3 private OB/GYN hospitals (including ASOG) dominating this market. The objects of investigation are concentrated in those 7 hospitals, which are Shanghai 1st Woman and Infant Hospital, Shanghai 6th People's Hospital, International Peace Maternity and Child Health Hospital (Shanghai), Shanghai Red House Hospital of Obstetrics & Gynecology, Shanghai Oriental Hospital, United Family Healthcare (Shanghai), and Parkway Health China. Understanding the competitors is the best way to make right decisions and innovate.

The study used an interview by face to face to collect information from CEOs or equivalent title for each hospital. CEOs were chosen as respondents for this study because, from a corporate perspective, they were most aware of the problems and activities throughout the hospital. Furthermore, the group is relatively homogeneous, a characteristic that strengthens internal validity of the information collection instrument used in this study. For preparing interviews, the invitation letters that signed by John Colley from University of Nottingham Business School MBA office was sent to each hospital. The letter explained the purpose of the study and requested participation by the hospital

administration office, offered to share the study results, and assured that only summary information from all participants would be published (Appendix 2).

Effectiveness implementing business changes represents the hospital's ability to alter its business practices in the desired manners. Therefore, the main question of investigation is 'how to develop the innovative capacity in your hospital? ', 'how to leverage resource to support this change', and 'how to implement this change' The answers will be categorized into many aspects, such as leadership, technical creation. After that, the mechanisms of developing innovative ability of major players will be shown. The paper will critically analyze and compare innovative ways between public hospitals and private hospitals.

Apart from learning the competitors, the aim of the research was also to listen to the internal voice. Participants include the CEO of ASOG Healthcare group, Chairman of ASOG Shanghai, Vice Chairman, managers of finance, human resource, administration, marketing, IT, customer services, and the director of the medical department and head nurses of inpatient and outpatient. In addition, a pediatrician and an obstetrician volunteered as respondents for this investigation. Unlike the preceding investigation, all respondents suggested their ideas to share with all colleagues.

This field research used a questionnaire shown in Appendix 3 to generate the result from each respondent. Because this case is internal investigation, the

response rate was 100%. The investigation reflects two aspects of innovation, which are the determinants of developing innovative capacity and the determinants of implementing innovation successfully. The respondents can tick the options they feel most appropriate/valid to each question. After counting the times that the options were ticked, the research would posit the top 4 votes ranking are the final finding.

4. Results

4.1 The Ideal Hospital in the Patient's Sight

As the most internationalized city of China, Shanghai has long embraced global market principles and adapted to a keen sense of consumerism compared to other cities. According to surveys, participants responded with the highest degree of dissatisfaction (48%) with their current hospital choice. With China's consistent leadership in GDP production, wealth trickles down to the population through higher disposable income and strong social benefits. As a result, Shanghai consists of one of China's most diverse healthcare market driven by market demands.

Based on survey results (Table 1), shanghai's "ideal hospital" should consist of the following components:

Number	Features/Characteristics (Table 1)	Respondents
1	Specialize in one medical specialty, specifically in severe, complex disease conditions requiring specialty care and children healthcare market	82
2	Superior customer service to maximize patient experience	80
3	Superior operations management to reduce	78

	patient wait time and throughput	
4	Emphasis on patient-centered care and allow patient and family engagement in the decision-making process	66
5	Feature person physician or family physician services	55
6	Located in residential	48
7	Feature cafe or restaurant services within hospital as well as rehabilitation centres	47
8	Superior physical plant design and maintenance	42
9	Advertise cautiously, specifically on the perception of medical staff qualification and hospital credibility	42
10	Physicians with international experience and with training in patient friendly attitude, patient confidentiality and communication	36
11	High availability of private hospital rooms	28
12	Feature programs to engage patient's family and friends and maximize experience	28
13	Price transparency	25
14	Technical support affiliation with strong tertiary	22

	level hospital to establish credibility	
15	Social insurance network inclusion	17

Among above, top five features/characteristics are major elements of the concept of Shanghai's ideal hospital. Most of the respondents believe the essential quality or characteristic of a hospital is the capacity of "curing the sickness to save a patient" with the service attitude of "humanism". Moreover, people cannot suffer their woes of queuing anymore and craving for quick and convenient treatment in a hospital. The ideal hospital is characterized by adequate hygiene, patient friendly design and privacy protection. There is a concept that is still a dream for most of the respondents, which is the concept of personal physician or family physician services. The subsequent chapter will point out the current situation and analyze challenges of ASOG's innovation by considering the essential features of Shanghai ideal hospital.

4.2 The Current Situation and Innovation challenges of ASOG Shanghai

For completing the "American-Sino OB/GYN/Pediatrics Services (ASOG), Shanghai Business Plan 2012-16", a complete and systematic interview was conducted throughout ASOG Shanghai, over ten employees participated this interview from the management board to the front line. This paper will introduce the current situation and innovation challenges of ASOG Shanghai

that were described in greater details in the “Business Plan” section in the present paper.

ASOG Shanghai is led by a harmonious leadership with a focus on persistent learning and offers professional and convenient medical service to middle and high class of this city. This hospital aims to be “Mayo Clinic of China” and seeks to spread spirits of excellent patient care, education and research still further. After nine years of steady development, already has accumulated rich experience in medical practice and gained an excellent reputation.

However, ASOG Shanghai has to overcome following challenges through innovation. From the external perspective, Chinese government always puts all resource into public institutes and supports the private hospital development in words. The private hospital is hard to get all operational licenses even if this institute has enough capacity. Additionally, the current national physician management policy limits the movement of talents. From internal perspectives, fuzzy internal implementation strategies and lack of tactics in improving operational efficiency are the most difficult problems for this hospital. Even if the friendly service is the most salient characteristic of ASOG Shanghai, but most of the patients think the treatment experiences and skills as the first priority. When ASOG wants to bridge this gap through high medical experts, new conflicts are arising between the entrepreneurial team and veterans. The

mediocre middle-level executives also are another challenge for this growing hospital.

4.3 The Finding from Interviews with Major Player in Shanghai OB/ GYN Market

4.3.1 The Views of Innovation in Public Hospitals (Shanghai)

Represented by Shanghai No. 1 Maternity and Child Health Hospital, International Maternity & Child Health Hospital and Shanghai Red House Hospital of Obstetrics & Gynecology, the public hospitals are leading Shanghai's market of perinatal and neonatal health care. The interviews made separately with the three heads of the hospitals are about how to cultivate innovation, how to implement innovation, and what the key factors of success are by innovation. The main content of the interviews is concluded as follows.

The three public hospitals provided the perinatal and neonatal health care services to all kinds of social classes. They serve for the general public by the ordinary wards and clinic, and their specialized VIP centers are used for the rich and the privileged people. Compared with Shanghai No. 1 Maternity and Child Health Hospital and Shanghai Red House Hospital of Obstetrics & Gynecology, International Maternity & Child Health Hospital also provides newborn emergency services in addition to perinatal and neonatal health care.

The main competitive pressure of the public women's and children's hospital is not from the customers but comes *from the other public hospitals* (with Ob/Gyn/Pediatrics services), which are protected by the government as well. To the public women's and children's hospital, innovation is a kind of passive, forced behavior. On the other hand, due to the increasing serious doctor-patient conflicts, the first priority and policy strictly guided by the government to the public hospital is to provide fair, quality health care service, create harmonious doctor-patient relationship and assist the government in creating a stable social environment. Therefore, the public women's and children's hospital has been careful in implementing innovation.

In order to develop and provide innovation, public women's and children's hospitals implement in the four main aspects: rule, system, talent and resource. As a saying goes, Rome was not built in a day. The public hospital has had the management rules of international standardization, such as JCI, DNV, for developing the hospital's health care services and the basic management work of sustainable development. Based on the management, it also needs to help to cultivate innovation by establishing the rewards and punishment policy for encouraging innovation and performance evaluation system with reference of innovative ability. In addition, through internal training or external employment etc., the public hospital can bring in talents of all subjects to be the leaders for preparing the innovative talents reserve. Furthermore, the resources allocation

of human beings, finance and materials will guarantee the development of the innovative group.

There are two aspects of work the public women's and children's hospital shall pay attention to, one is resources allocation and the other is innovation on the work processes, involving technology, service and management. Restricted by the government policies and market factors, the innovation of the public hospital is mainly shown on the technology, especially reflected by the doctors' pursuits of research and study on overseas technologies. The main motivation of this kind of innovation is from the pursuit of excellence; however almost no staff in the public women's and children's hospital has this kind of motivation. They are overwhelmed by huge work load, over times and repeated work, and thus, they almost have no time on innovation and in providing outstanding services in addition to being careful of the doctor-patient conflict issues.

The management of the public hospital is subject to the management of the party and the government, so their managing innovation is realized followed by JCI and DNV, the management standard authentications of the international medical practice. As for the reform on organizational structure and human resource planning, they have no actions to make the change according to the actual situation because that is managed by the party not by the hospital management team.

Based on the above, under the existing public hospital system, targeted development on technology and innovation is demanded. With no interference in the party's area of control, advanced foreign management standards of medical processes and sustainable developing standards shall be efficiently studied and used for improvement. It must be pointed out that it is not easy for technological innovation, because the public hospital must apply for innovation to the functional departments of the government including Health Bureau and Price Bureau. Generally speaking, the management of the public hospital mainly focuses on providing a large number of customers with healthcare treatment and avoiding and solving these conflicts rather than promoting innovation.

4.3.2 The Views of Innovation in Private Hospitals (Shanghai)

Represented by United Family Healthcare and Parkway Health, the foreign-invested hospitals have created their businesses from the industry of women' and children's healthcare services. Now they are providing healthcare services in all kinds of medical departments in China. Together with American-Sino OB/GYN/Pediatrics, they are the only three chain medical institutions in China, providing healthcare services for the local high-end market and expatriates. However, they are only providing the basic healthcare services now and exclude complicated case diagnosis, treatment and

emergency services. In addition, they are also not involved in academic research and cooperation with medical schools for medical staff cultivation.

The private hospitals that have been visited and researched are clearly aware of the importance of innovation. They realize that innovation is the powerful tool for them to compete with the public hospitals and other competitions. Also, it is a crucial strategy for enhancing core competitiveness. The innovative motivation of the private hospital management committee is from four aspects. They are vision, passion, techniques & skills and supporting teams. The four factors have laid the foundation for innovation development. The private hospital needs a very clear and realizable vision, making it known to the staff and forming it to the core values. With this in mind, the management and executives will be motivated for innovation and will work for it. Due to the recognition of the common values, it can inspire the staff's work and passion for innovation, being active to do work rather than passive. In doing so, the operation of the hospital can be focused on its process management rather than team morale training which shall be done at the very beginning operation phase. Technique and knowledge, as the fundamental elements of private hospitals' services, are the sources of innovation, and two of the most crucial factors customers will trust. Moreover, strong financial backup and team support will make frontline staff provide high-quality services to patients with full support.

As for the issues about how to ensure the execution for success of the innovation, the high-end women's and children's hospitals prefer two points of views. First is to have an experienced team. Second is hard working with a high sense of medical ethics. Healthcare institution, as a very special services provider, belongs to the knowledge-and talents-intensive industry. However, knowledge accumulation and talents cultivation are obtained by clinical practices. In executing innovation, an experienced clinical team can guarantee the success of innovation. Medical treatment is taking patients as center as Chinese idiom states "patients teach us with their blood and lives." As the healthcare provider for the whole life of a patient, the doctor shall have medical ethics, which will be good for doctor-patient relationships and will get patients' trust. Last, the success of innovation will be more easily realized with the control of each work link, hardworking and resources allocation.

4.4 Ideas from employees for innovating in ASOG

Even if this research is only a small-scale survey of 20 people, but the result represents a popular mandate. As shown in the following the table 2, staff delivered a unique feature.

The Sample Demographics (Table 2)		
Number	Determinant	Respondents
<u>Innovative capacity</u>		

	Building a partnership with the competent government department fits into existing rules, regulations, and legislation	100%
	A trusted and exceedingly communicative leader	100%
	Employee motivation mechanism	100%
	The ability of risk management	100%
<u>Innovation Implement</u>		
	Leadership	100%
	employee participation	100%
	Important characteristics of the change process	100%

Except those notorious factors, such as talents, funding, all of the respondents thought that a partnership with the competent government department fitting into existing rules, regulations, and legislation, a trusted and exceedingly communicative leader, employee motivation mechanism, and the ability of risk management are essential for developing innovative capacity. They believe the support from Chinese government is the most important element for corporate success and innovative capacity. Furthermore, the clear incentive mechanism is implemented by a friendly competitive team that motivates people to innovate proactively. According to the feedbacks from the

innovation implementation, “the human factor” was given unprecedented attention. The leadership style and middle level managers’ executive ability are conditions of a successful innovation.

5. Finding (the Successful Innovation Model)

Innovation model is revealed like a bow and arrow model (shown in Diagram 2: Designed by the Author). In order to hit the target, how to draw the string back to get enough tensile force, how to control and adjust shooting posture and how to evaluate the surrounding environment (wind...) shall be considered while aiming the target.

+ The Innovation Model of the Bow and Arrow

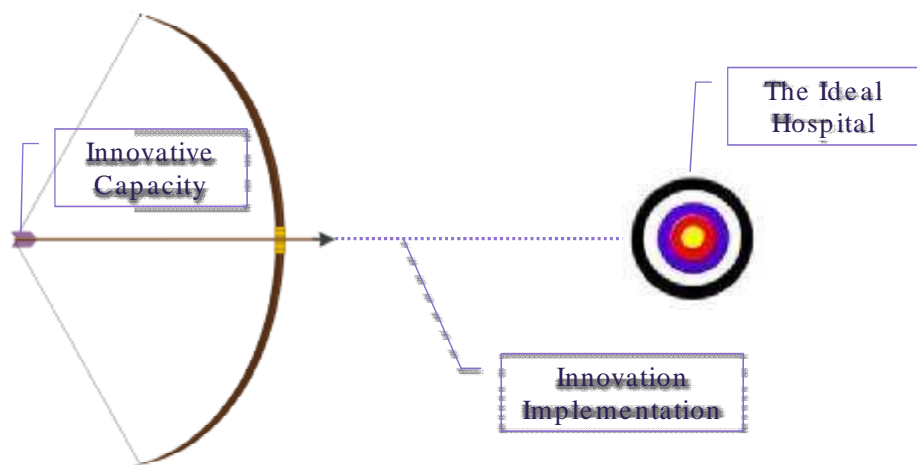


Diagram 2 : The Innovation Model

5.1 Innovation Target of American-Sino OB/ GYN/ Pediatrics Services (ASOG)

First of all, the innovation goal of ASOG is to become customers' ideal hospital. People who live in Shanghai think that the ideal hospital is specialized in one medical specialty, especially in severe, complex disease conditions requiring specialty care and children healthcare market. Superior customer service is to maximize customers' experience.

For ASOG, the goal is served as the highest quality of medical service to how to comfort patient in mentality. It is known to all of us that the medical staff has three standards of qualification. Firstly, cure the sick and save their lives. The medical staff shall cure patients with smile, skills and technologies. Second is humanistic care. Besides curing patients, the medical staff shall have the sense of pity and compassion for patients and treat patients like family members. The third point is to enter into the patient's soul and be the patient's spiritual partner.

Therefore, the innovation goal of ASOG is to enter into the patient's soul and be the spiritual partner for the patients.

5.2 Key Elements for ASOG's IC Cultivation

The formation and development of innovative capacity in ASOG include key elements of the traditional academic researchers' findings—that is a reliable

leader, a united staff team, innovation diffusion office, effective communication mechanism and information gathering and sharing system and rewards and punishment policies. In addition, government relations and staff's participation are also included for consideration.

In the above factors, the internal staff survey showed that the most important factors of ASOG are stable government relations and staff's participation. The other factors are the operating elements for supporting the above two ones.

With stable government relations, ASOG can be issued licenses more quickly than other competitors. Also, ASOG can handle medical accidents with high proficiency, and receive funds support from government in medical research. More importantly, stable government relations can make staff work contentedly and conduct innovation without external worries.

In China, national conditions shall be taken consideration. Chinese government is a strong centralized government, which controls all the resources and powers. In addition to government relations, staff's participation shall be also paid key attention.

On one hand, rewards and punishment policies shall be strictly set up. On the other hand, the cost and negative impact shall be considered if innovation fails. If cost is reduced, it can minimize the damage on innovation staff and instill the

innovative power continuously. This is Innovation Crisis Management that we normally say. The IC developing model of ASOG is shown in Diagram 3 (Designed by Author) as follows:

+ The Innovative Capacity Developing Model

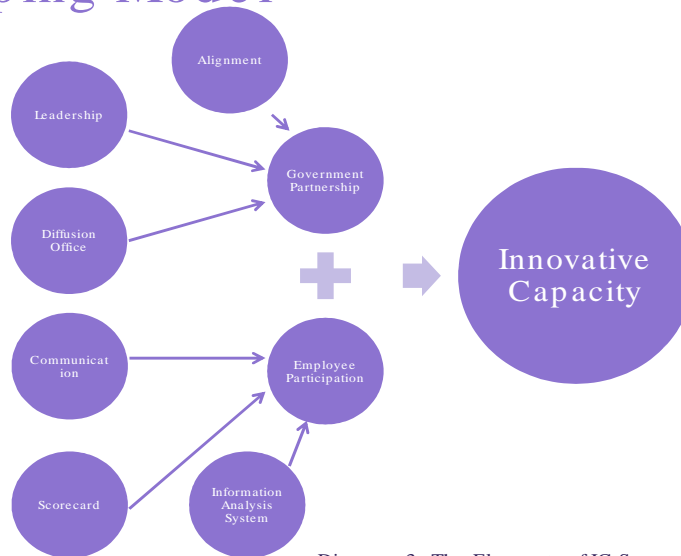


Diagram 3 : The Elements of IC Supporting System

5.3 Key Elements of ASOG Innovation Implementation

Like the former researches, leadership, competitive intelligence, information technology, specific characteristics of the organization's change process and resources integration ability are the key elements of ASOG's innovation implementation. During the whole process, innovation monitoring and measurement are of great importance for timely revision.

It is not difficult to recognize the significance of the above five elements in other industries. However, experienced team is also important in innovation

because only with rich experience, the medical staff is able to catch the trend of market, integrate resources, and apply advanced scientific and technological skills in conducting innovation. Therefore, experienced medical management team is especially crucial for innovation implementation in ASOG. Please see Diagram 4 below (Designed by the Author).

+ The Innovation Model of ASOG

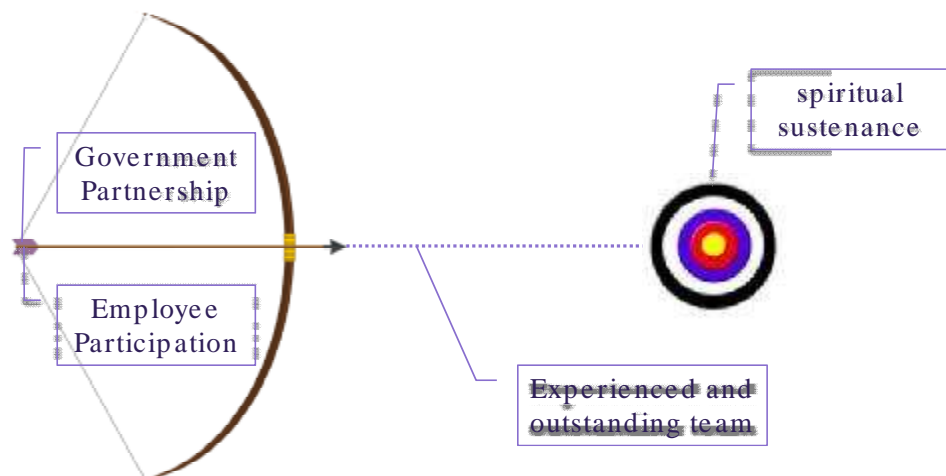


Diagram 4 : The ASOG's Innovation Model

All in all, ASOG has established strong government relationship and motivated staff's innovation passion. With the experienced medical team, innovation is being continuously correcting and concluding for the aim of entering into the patient's soul and being the patient's spiritual partner.

5.4 Build the healthcare public-private partnerships

When people implement innovation, they shall consider the innovation cost and risk. When I interviewed 7 chairmen of private and public hospitals, all of them mention that the strong healthcare public-private partnerships is the most effective way to reduce the innovation cost and innovation risk except internal operation management.

Because public hospitals own 100% healthcare investment from Chinese government, they operate the advanced medical equipment and the strongest clinic team. ASOG can shift from assets to efficient operations through outsourcing part of medical tests to public laboratories. In the same time, this way also effectively reduces the medical risk and brightens ASOG's prospects considerably when ASOG solve the problem of medical disputes cases.

Moreover, ASOG is able to access to skills and knowledge through this partnership. Public hospitals have a broader team of experts in clinical, legal, technology, process engineering and strategy, particular in the clinical area. Hence, inviting experts to join us or building quick referral program with public hospitals can solve difficult and complicated diseases. In addition, it is a good way to develop our clinic physicians' skills.

Except using resources from public hospitals, ASOG is able to increase service capacity through building the partnership with social institutes, such as,

postpartum care center. When ASOG pack patients like sardines into wards and needs new beds, they can encourage patients to move to postpartum care center.

ASOG can use the experience of NHS for reference. Infrastructure private-public partnerships have traditionally been measured by a common yardstick called Value for Money (VFM) and use VFM calculations (both monetary value and percentages) to justify the value of this partnership is delivering compared to traditional ASOG procurement.

Even if the strong private-public partnership is not key element of innovation, but it can effective reduce operation cost and innovation risk. This partnership can also make staffs innovate with one heart and one mind without worries what will happen next.

6. Limitation

According to Diagram 2, innovation target, innovative capacity cultivation and the key elements of innovation success have been analyzed. However, like how to use bow and arrow and how to control the strength to make the arrow hit the target with the highest speed shall be considered. By referring to the innovation model, when cultivating innovative capacity, it shall be considered that how to set up innovation target according to the current resources, how to utilize innovation resources and how to achieve innovation goals with no harms on the supporting system. The above questions are the actual problems in the innovation process. Matta & Ashkenas (2003) put forward the concept of testing project in the article named "Why good projects fail anyway". Through downscaling the project, effectively evaluating the utilization of resources and implementation process and working out results, the method is a way to design projects that can avoid unnecessary failures. According to Matta's and Ashkenas's experience on project management, mini-projects are generally injected into large projects. These small and challenging projects help teams disclose the missing pieces that plague larger efforts, and they prove that how to control innovation scale or how to set up feasible innovation target.

7. Conclusion

China's government supervises strictly with medical industry, especially women's and children's medical service providers. The only two policies about medical industry are "Women's and Children's Protection Law" and "Family Planning Law". Moreover, the injustice of serious resource allocation is an indisputable fact in China. All the resources tend to be given to state-owned medical institutions, while there is almost no support for private medical ones. The complex market environment makes private medical institutions develop slowly.

However, due to the rapid increase of doctor-patient problems in the public hospital, high quality with friendly services is highly demanded. In private medical institutions, innovation is a unique way to attract customers, even the VIP customers of the public hospital. (Wen 2011)

All in all, innovation is of great importance for ASOG. This paper is to analyze how to make a success in ASOG by innovation. ASOG's innovation goals are set up by investigating the needs of customers and the standards of medical staff. The previous researches on IC have been analyzed, and the actual experience (Public and Private Women's and Children's Hospitals in Shanghai) has been referred. The two key elements of innovation cultivation, government relations and staff's participation, have also been considered. Experienced medical staff,

as the factor of the uniqueness of the medical industry, is also a key element aiming for innovation success. In addition, the strong private-public partnership can reduce innovation cost and risk. Compared with other similar findings, this paper is more practicable, localized and area specialized.

In terms of the similarity of China's medical industry, this paper is not only for ASOG. It has a significant meaning for the similar industries or China mainland high-end private medical institutions. Moreover, if foreign hospitals want to establish branches or look for partners in China, this paper can be also considered as an important lesson.

This is the first study on Shanghai private women's and children's hospitals in recent years. It has little realistic significance on the public medical institutions for its different resources, customers, and government's participation. For future study, it can put emphasis on how to make innovation better in public medical institutions. As shown in limitation, how to effectively use resources and maximally improve innovative capacity is also a path of study.

To any of the enterprise managers or management team, I believe cash flow is the key element for an enterprise to survive. When we handle an enterprise, we remind ourselves of the importance of cash flow in every moment. However, in order to get the cash flow, we shall keep attracting customers, and innovation

is the root of attraction. The weak innovation awareness is recognized as one of the most serious corporate management problem (Duan 2012). Hence, increase innovation awareness and cultivate innovative culture are the best way to service to patients.

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9. Appendix

9.1 Appendix 1

Questions to Shanghai Citizens and Expatriates

问卷对象：上海市民和移民

(Please tick the options you feel most appropriate/ valid to each questions)

请在以下选项中勾选你认为最合适的回答

1. Male () or Female ()

请问您是男性 () 还是女性 ()

2. Please choose your age group:

请问您的年龄大约在以下哪个范围：

- 20 to 30 | 20 岁-30 岁
- 31 to 40 | 31 岁-40 岁
- 41 to 50 | 41 岁-50 岁
- Above 51 | 51 岁以上

3. How many years have you been living in Shanghai

请问您在上海已经居住了多久？

- 5 to 10 | 5-10 年
- 11 to 20 | 11-20 年
- 21 to 30 | 21-30 年
- Above 31 | 31 年以上

4. Please mention your monthly income level (RNB) from all sources.

您的收入水平？

- 1000 to 5000 | 1000-5000 年
- 5001 to 8000 | 5001-8000 年
- 8001 to 12000 | 8001-15000 年
- Above 15001 | 15001 年以上

5. What is your education level?

您的受教育程度？

- High School | 高中
- College | 大学

6. Which hospitals do you prefer for women in pregnancy related check-up and treatment?

您会选择以下哪一种医院进行孕期相关检查和治疗？

- Private | 私立医院
- Public | 公立医院

7. Which hospitals do you prefer for child care?

您会选择以下哪一种医院进行儿童健康检查/治疗？

- Private | 私立医院
- Public | 公立医院

8. Are you satisfied with your treatment hospital or not?

您现在是否对您就诊的公立医院满意或者不满意？

- Satisfaction | 满意
- Dissatisfaction | 不满意

9. What are the features/characteristics you identify with in an ideal hospital

您认为的理想中的医院的特点？

- Technical support affiliation with strong tertiary level hospital to establish credibility/ 三级医院，具有足够的技术和信誉
- Social insurance network inclusion/ 社会保险体系的纳入
- Specialize in one medical specialty, specifically in severe, complex disease conditions requiring specialty care and children healthcare market/ 专业于某一方面的治疗和护理及小儿保健市场
- Located in residential or business districts/ 位置位于居民区或者商务区
- Superior customer service to maximize patient experience/ 优质的服务，可最大限度的满足病人的需求
- Superior physical plant design and maintenance/ 卓越的医疗技术和护理
- High availability of private hospital rooms/ 更多的单人病房
- Feature cafe or restaurant services within hospital as well as rehabilitation centres/ 医院和康复中心设有特色咖啡馆和餐厅服务
- Physicians with international experience and with training in patient friendly attitude, patient confidentiality and communication / 具有国际经验的医师及友好的服务态度，对患者的资料的保密性和沟通的相关培训
- Emphasis on patient-centred care and allow patient and family engagement in the decision-making process / 强调以病人为本的护理，使病人和家属参与治疗和解决方案中

- Price transparency / 价格透明度
- Feature person physician or family physician services/ 专科医生或家庭医生
- Feature programs to engage patient's family and friends and maximize experience / 专题节目的开展最大限度的给予病人家属和朋友更多了解的经验
- Advertise cautiously, specifically on the perception of medical staff qualification and hospital credibility / 严谨的广告制度, 尤其是关于资深的医务人员和医院的信誉
- Superior operations management to reduce patient wait time and throughput / 高效的业务管理, 以减少病人的等待时间

9.2 Appendix 2

25 June, 2012



**Nottingham University
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To Whom It May Concern,

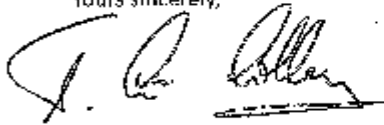
The purpose of this letter is to invite you for a live interview, on behalf of Mr. Haohong Ding, one of course member of Nottingham University Business School MBA Entrepreneurship program 2011/2012.

The topics of this interview are 'How to develop innovative capacity in the OB/GYN hospital' and 'the Major Determinants for Hospital Innovation Success', which refer to the research of Haohong Ding for the MBA dissertation.

Haohong Ding will offer to share the study results, and assure that only summary information collecting from all participants will be published.

In closing, we would be pleased and honored if you would consent to this interview. Mr. Ding will call the hospital office or so to follow up on this.

Yours sincerely,



Dr John Colley
Director of MBA Programmes

9.3 Appendix 3

Questions to Physicians/ Specialists/ Staff

(Please tick the options you feel most appropriate/ valid to each questions)

Determinants of developing innovative capacity

1. Building a partnership with the competent government department fits into existing rules, regulations, and legislation
2. Found a innovation office to offer a innovation platform and run innovation programs
3. A effective and efficient diffusion plan
4. A effective and efficient communication system
5. Institutional alignment
6. The educational level of the hospital administrator
7. The educational level of the employees
8. A trusted and exceedingly communicative leader
9. An ambidextrous organization
10. Information-gathering system (including competitive intelligence)
11. Educational programs
12. A democratic team relationship
13. Employee motivation mechanism
14. Efficient operation management
15. Promoting intellectual property protection and brand

16. The suitable innovative project

17. Innovative talents

18. The ability of risk management

Determinants for hospital innovation success

19. Leadership

20. Business Intelligence

21. Internet Technology

22. Important characteristics of the change process, such as conformity to hospital objectives, employee participation, monitoring progress, and communications

23. An innovation scorecard to track compliance

24. Financial, operational and performance incentives to support

25. Developing physicians and followers

26. Efficient procurement strategy

27. Conducting operational methods

28. Finance support

29. Involving the method of the business plan controlling system to manage the innovation process