Technology and Sustainability in China Hotels

◆ Take Hangzhou & Qingdao Hotels as An Example

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Part I Introduction and Objectives

1.1 The Need of Development of Tourism Industry in China

China is a country with an amazing population of 1.4 billion. As an ancient oriental dragon with a history of over 5,000 years, it bears a special cultural magnetism for worldwide and domestic tourists. Tourism in China as an industry has greatly expanded over the last few decades since the economic reform and open policy to the outside world initiated in the late 1970s. For the past 35 years, it has played an increasingly significant role in China’s national economy.

With the rise of personal incomes and living standards, the China tourism industry kept developing continuously. According to the statistics released by the State Statistics Bureau, China has the largest domestic tourism market in the world with 3.3 billion domestic tourists in 2013. The inbound tourists still reached 129 million visitors, bringing an income of 51.7 billion USD. Beijing Shanghai Xian and Hangzhou etc are among the top 20 China Destinations for Overseas Tourists. The number of outbound tourists totaled 98.19 million, up 18% compared with 2012. The number is expected to surpass 100 million this year.

Despite the global travel and tourism industry is still in the slow recovery from recession, the Chinese tourism market becomes the only bright spot. Today China has become one of the worlds most-watched and hottest inbound and outbound tourist markets and the largest domestic market. It is the third most visited country in the world. According to the WTO, in 2020, China will become the largest tourist country and among the largest for overseas travel. China is the largest trading nation in the world - this has greatly promoted the hotel industry in the past years.
1.2 The Need of Development of Hotel Industry in China

When China first opened its doors to the outside world, it could not meet the lodging, transportation and communication demands of overseas tourists. Following the reform and the implementation of Open Door policy, the Chinese government gave special priority to the development of international tourism in the 1980s. The first joint-venture hotel began in 1982 with the Jianguo Hotel, importing the management of the Hong Kong Peninsula group. Since then China has experienced rapid growth in inbound, outbound and domestic tourism over the past decade. Being one of the world's fastest growing domestic and outbound travel markets, demand continues to outpace supply in China, especially the local and international branded hotels.

The international - and also local - hotel chains are expanding further. End of 2012 alone Marriott, Starwood Hotels, InterContinental Hotels Group and Accor had together around 400 hotels in development.

Business travels in China are growing strongly, more hotels needed. According to predictions, the country could become the largest market for business travels until 2016. End of 2013, 2.7 million rooms in 11,700 hotels were waiting for guests, and a large number of luxury hotels will enter the market in the coming 2 years, especially the banquet and conference business is an important revenue provider.

Although government restrictions on public spending have adversely affected business travel in China, domestic and outbound travel spending continue to grow, Chinese hotels still benefit a lot from booming tourist market. A forecast by the World Tourism Organization anticipates that the number of
hotel rooms in China will reach 6.1 million by 2025, exceeding the US to become the largest hospitality market in the world. In developed countries, the high-tech and intelligent high-star hotel has become a measure of an important criterion, the global high-end hotels are trying to integrate technology services and management. Intellectual property represents the trend of the future development of the hotel industry. At present, smart hotel with high-tech has become an important high-star hotel building goals in China.

1.3 The Need of Rapid Development of Technology in China

The theme of tourism year of China in 2014 is “Beautiful China, 2014 -- Year of Smart Travel”. Smart travel is based on the integration of information and communication technologies (ICT) in order to meet the individual needs of tourists and provide the tourists with high-quality and high satisfaction. Smart travel is a new form of tourism industry which is highlighted in the “Tourism Law”. Hotel industry is one of the three pillars of tourism. Smart hotel is an important part of construction of smart travel. Under the background of smart travel construction, smart hotel with sustainable services and management systems will be the trend to upgrade the hotel.

Technology improves a hotel’s ability to provide hospitality. 20 years ago the success of a hotel depended as much on its ties with an established chain as it did on the quality of the rooms it offered. Today, this field has been leveled, not by personalization, but technology, especially cloud technology—the internet-based tools that provide the opportunity for hotels to compete on the global stage, with independents and chains alike. With the cloud technology, hotels are able to free themselves of physical infrastructure and benefit from an always-accessible platform that houses best-of-breed systems— including the hotel’s property management system, central reservation system, reputation management and rate recommendation tools, data insight platform, channel manager, booking engine and GDS, to name but a few.
According to Criteo’s Travel Flash Report, the first half of 2014 saw: Mobile bookings on travel websites are growing faster than desktop, at 20 percent versus 2 percent; Smart phones and tablets account for 21 percent of hotel bookings; In-app bookings account for 12 percent of total mobile bookings made on travel websites.

When the travelers’ use of the internet, smart phone or tablet device, and the hotels should know this kind of new, ubiquitous ecosystem and where travelers are and where hotels therefore need to be.

---The picture provided by the Dragon Hotel

With the rapid development of tourism industry, hotel industry and the integration of information and communication technologies, China now faces a stern challenge of restructuring its economy to achieve sustainable development. The purpose of this case study is to investigate the influence of technology adaption on the sustainable development of China’s hotels. Thus we can get a sustainable living which can lead to a synergy between humanity and the environment via technology...
Part II Literature Review

2.1 Key Issues in Sustainability

At the end of the 1960's, the human begins to pay attention to the environment problem. In June 5, 1972, the United Nations held a conference on human environment, put forward the concept of human environment, and adopted the Declaration on the human environment, set up the environment programme.

----the picture provided by Baidu Gallery

The concept of sustainable development is firstly discussed in 1972, Stockholm at the United Nations Conference on the human environment. This workshop gathered representatives of the global industrialization and developing countries to create a healthy and vibrant environment. Since then, human gave hundreds of definitions of the meaning of sustainable development, covering levels of international, regional, local and specific sectors.

Sustainable development is the result of human reflection of industrial civilization process. It is a human reflection of series of environmental, economic and social problems, especially the global environmental pollution and widespread ecological and rational choice made by the imbalance of the relationship between them. Economic development, social development and environmental protection are interdependent.

----the pictures provided by Baidu gallery
In 1987, the World Commission on environment wrote the report in the common future, firstly ex-
pounded the concept of sustainable development, which has been the consensus of the international community.

In 1991, China initiated the Ministerial Conference of developing countries on environment and development, issued a Beijing declaration.

In 1992 June, in Rio de Janeiro World Summit, China government solemnly signed the Declaration on environment and development.

In March 25, 1994, the People’s Republic of China, the State Council passed the twenty-first Century agenda of China. In order to support the implemention of the agenda, China formulated the twenty-first Century agenda priority project plan.

In 1995, China took the sustainable development as the basic strategy of the country.

Development is not limited to growth, Sustainable development is not stalled. Sustainable development depends on a growing development. The consciousness of sustainable development means it will take a new approach to achieve environmental protection while developing the economy, and achieve the unity of economic benefit, environmental benefit and social benefit. The training goal is not only for environmental awareness to human, but also deeper to nature system. It is not only for human benefit as the goal, but to the harmonious development of human and nature as the goal. So, Sustainable development is not only admitted to the external value of nature to human, but admits that it has its own value, life on earth or life support system continued survival value. This is the intrinsic value of nature. The sustainability of human life and the life of the earth system must achieve three persistent interrelated: ecological sustainability, economic sustainability, social sustainability. Human activities cannot be beyond the ecological system of the assimilative capacity, cannot damage the natural system to support life on earth. Development once destroyed the material basis of human survival; the meaning of development would not exist.

The term “sustainability” as defined in the literature and viewed in industry, however, varies widely in scope. Some are focused strictly on economic and environmental considerations, while others en-
compass equity, various definitions of justice, and other social criteria. Someone addressed that environmental sustainability at the firm level needs to be viewed in connection with the business fundamentals of the firm, and corporate sustainability should consider profits and investment as well as pollution and resource use.

2.2 Key Issues in Technology Management and Sustainability

Technological innovations have been regarded as one of the key drivers for firms to sustain competitive advantage in existing businesses, and to explore new business opportunities. For technological innovation, firms have invested an enormous amount of resources in their research and development, and actively cooperated with external partners. For instance, more than 70 percent of CEOs prioritize innovation as one of the top three strategic issues, and emphasize the importance of innovation on sustainable growth. Despite increasing investment in innovation, many corporate executives have not been completely satisfied with the low returns on innovation and little impact on their organic growth to reduce the gaps between CEOs’ expectations.

Green technology involved in energy conservation, environmental protection and other green energy and other fields. Efficiency, conservation, environmental protection, green technology industry is pulling the world’s largest engine of the economy. Green technology will become the new round of industrial revolution. It includes: green products, green manufacturing process design, development, green new materials, new energy development, consumption patterns of improvement, green policy, research and environmental protection laws and regulations, theory, technology and management studies and others. Green technology is the development of a green economy, environmental protection and ecological construction further important technical assurance.

Now, people need use much energy to do things as traffic, building, and daily life and so on. But when we use the energy there are more hazardous substance as CO2 is made for energy. Hazardous substance are breaking our lives environments, this is a big problem for every people. So we can find or develop one kind of technology which is not making environmental destruction.

2.3 Green Hotels in Mainland China

As the depravation of the ecological environment in the whole world day by day, the environmental protection and the promotion of the green consumption have been attentive by people day after day. The sustainable development strategy established by Chinese State Council and the Three-green project recently released by the economic & trade commission in the central government have proposed the re-
quirements for the sustainable development and the management works for the environment in the hotel sector in our country. Meanwhile, due to the international exchanges are more and more frequent after our country joined the WTO and the successful application for the Olympics held in Beijing, the green consumption has gradually become the mainstream for the consumption in the future.

In order to respond to this kind of the situation and requirements, and regulate and strengthen the environmental behaviors in the hotel sector, and guide the enterprise to more consider the demanding elements in the consumer in their operation activities, like the environment protection, the security and the health, etc, this standard is specially established.

The establishment of Chinese green hotel standard refers to the international traditions, uses the advanced experiences for the implementation of the green hotel in the foreign countries as the references, and combines the operation situations in the hotel sector and the consumption level of people at the current stage in our country, to provide the practical and feasible directing opinions for establishing the green hotel, implementing and strengthening the works of the environmental management in the enterprise.

The establishment, the implementation and the maintenance of the green hotel are a sustaining development process. Due to the development of the technology for the environmental protection, the continuous deepening of the acknowledgement for the environmental protection and the increase of the comprehensive management level in the hotel as well as the improvement of the environmental achievements, this standard will follow the actual situations to be continuously amended and improved.
Part III Site Investigation on Technology

3.1 Brief Introduction to the Dragon Hotel

Situated in the junction of Hangzhou’s financial, business and cultural centers, The Dragon, Hangzhou is minutes away from the hustle and bustle of the city centre – an ideal geographical location for business and leisure travelers. The modern, luxurious and relaxing hotel sits on a 110,000 sq. m site with a unique Yangtze courtyard design to provide hotel guests with an inspirational setting to rest and revitalize. Within close proximity to the Zhejiang World Trade Convention and Exhibition Center, offices of multi-national corporations and government authorities.

It is the world’s first smart hotel that comes with an all-encompassing high-tech intelligent system. As one of the Best Business Hotels by the Golden Pillow in 2010, the Dragon is the best choice for visitors from China and around the world. The hotel cooperates with IBM in an effort to constantly seek out new technologies and breakthroughs to design entire system, providing marvelous intelligent hotel solutions.
The Dragon hotel is named after the yellow dragon cave, which is a natural hilly garden reflecting “dragon culture” and “fate culture”. There used to be a Buddhist monastery built in the Southern Song Dynasty about 900 years ago. The monastery was rebuilt in the Ming Dynasty about 500 years ago and turned into a Taoist temple in late Qing Dynasty about 150 years ago, which once ranked among the eight best-known Taoist temples in China. Meanwhile, it is also a part of West Lake which is listed as UNESCO World Heritage site.

Furthermore, the hotel is named the dragon also because that the Chinese dragon has penetrated all aspects of society, a culture of accumulation and cohesion up and down for thousands of years. It has been deeply rooted in our subconscious. Not only does it exists in our lives, but also penetrates every social field.

The hotel carved the name on a monster stone. There is a word engraved on the back of the stone from an ancient Chinese poem, which are southern hills appearing in sight of a leisurely mind. If we see the whole city as a panting, Chinese people would describe it to be relaxed and free. The line on the back of the dragon stone seems to be exhibiting its best form of real Chinese culture.
3.2 Site Visit -- the Dragon Hotel

In order to further facilitate our case study, we visited the Dragon hotel in September 2014. From self check-in/check-out system, intelligent navigation system, and intelligent meal ordering to the atomized liquids TV etc, we are deeply impressed by the high technology products in the Dragon hotel.

No.1 New Technology -- Capture the Hearts of VIPs

Highlight 1  Welcoming VIPs (RFID technology)

---The picture provided by the Dragon Hotel

In the Dragon hotel, VIP members can use the intelligent card system, an integrated system that
automatically identifies them as soon as they enter the hotel, allowing them to complete the admission process without any formalities. When VIP guests drive into the parking lot and then the check-in process will be completed as well as the room card is activated. VIP guests would also receive welcoming messages automatically when they step into the hotel. Service staff would get VIP guests coming messages right now, including the name of the guests, sex, nationalities, pictures, etc. for individual services. Compared with traditional hotels, the radio frequency technology used in the Dragon hotel certainly helps guests save more time and also improve the working efficiency of the staff. Besides, the VIP guests would also give rise to the feeling of being respected.

Highlight 2 VIP Long Range Registering (TABLET PC)

The Dragon hotel utilizes TABLET PC ----- Paperless and wireless network check out system for long range registering. Guests can finish hotel registration, personnel identification and go through the procedure of credit card payment through TABLET PC. Instead of going through traditional hotel check in procedure, the Dragon helps the business travelers save much more time.

No.2 New Technology --Fully Automatic System with Much More Conveniences

Guests who always stay at different hotels might have the terrible experience, such as lining up to check in, getting lost when looking for rooms, finally when they found their rooms; it took forever to find AC remote controls. Let’s see how the Dragon hotel fixes all these problems?

Highlight 1 Intelligent Navigation System

The Dragon hotel uses radio frequency technology to guide guests to find their rooms. There is an automatic guiding light on each floor. When guests get into the elevators, they can scan their room keys
on the scanning area to reach the target floors. According to the chip’s function in each room key, the guiding light would be on when guests step out of the elevator, so guests would know the room directions. It saves them lots of trouble. In order to protect the privacy and security of guests, the guiding lights only display the directions of the rooms. So guests can definitely avoid the problem that they can’t find rooms. This certainly helps the Dragon Hotel save human resources, which is an important manifestation of the sustainable development of the hotel.

---The picture taken by Judy

Highlight 2 Self Check in/Check out System

For the business people who are familiar with computer operation, they can use the check in/check out kiosk in the lobby so as to improve working efficiency and save more time. This self check in/check out system can help guests finish hotel registration and get room keys in 20 secs. The hotel also provides manual service of registration just like others, which takes more than 5 minutes every now and then. For most business people, they would rather choose self service than spend more time standing at the hotel reception. Using self check in/check out system helps the hotel save much more energy and also helps the guests save time.
No.3 New Technology – E-guests Rooms

After a busy day outside, we all wish we could just lie on the beds. The room lights, TV, AC or music would be turned on automatically. The guest rooms in the Dragon actually make all these happen. According to the customer data collected by the Dragon, the room AC would be automatically adjusted to a cool and comfortable temperature in order to cater to guests from all over the world. Compared with traditional hotels which provide hotel room handbooks in each guest room, guests who choose the Dragon don’t have to worry about how to figure out the functions of each facilities in their rooms, which can ensure their comfort and convenience throughout their stay.

Highlight 1: Amazing Intelligent TV System

The information can be found on TVs. Since there is no hotel guide book in the room, some of senior guests may wonder whether it would be easy for them to use the intelligent TVs or not. No worries. The hotel has customer relationship leaders who would introduce the room facilities for each guest. These typical personalized services in the Dragon certain draw more attention from guests.

Highlight 2  Ordering Meals Through TVs

For most traditional hotels, guests always order meals by checking menu provided by hotels, which
is really time-consuming. In the Dragon, guests can order meals on their room TVs directly. The Dragon uploaded the menus on TVs for the convenience of the hotel guests. After guests finishing ordering, the intelligent TV system would send the orders up to the servers. The servers working at the hotel restaurants would get in touch with the guests who just submitted the orders to confirm the relative information and then send the orders to the kitchens. Instead of getting dressed then heading to the restaurants, guests can enjoy their meals in their rooms. The Dragon also got a lot of credit for it from customers from all over the world. The smart TVs provided in the Dragon Hotel follow the principle of sustainable development, which also help the hotel gain more and more customers from all over the world.

--- The pictures taken by Judy

Highlight 3 Keeping Guests Updated with Flight and Travel Information through TVs

The intelligent TVs system in each room consists of eight languages versions. It is connected with Zhejiang Xiaoshan International airport. It upgrades every 15 minutes, so guests especially for those business people who are always in hurry, can get to know the daily flight status. Especially for those guests who are not familiar with technology products, as long as turning on the TVs in the rooms, they can search for their flight statues on TVs directly instead of calling airlines.

Most traditional hotels would provide tourism info on hotel handbooks in each guest rooms, so guests can only check related travel info on these books, some of which listed on the book has outdated already. For the tourists who stay at the Dragon come to Hangzhou for the first time would also get timely travel info only by checking the TVs. The hotel uploads useful tourism information on the TVs,
including the local attractions, foods, shopping, etc. with different language versions. It really brings convenience to the hotel guests who want to travel around and also draws attention to the Dragon.

Highlight 4 Access Control System

The Dragon has digital door viewers in each guest rooms for security purposes, which is a tremendous initiative. When the special electric doorbell is ringing, guests can see the visitors outside the door on the TVs in the rooms. Compared with other hotels which still have traditional door mirrors in guest rooms, the Dragon uses the access control system to protect the privacy of each hotel guests. For instance, if the person showed up outside of the door is the boss of the guest, he/she would have the time to deck himself/herself out to avoid awkward situations.

Highlight 5 The Atomized Liquids TVs in the Bathrooms

The guest rooms on the administration floor have the atomized liquids TVs between the bathrooms and living rooms. The guests can watch TV while bathing. The hotel also installed sound systems in the bathrooms to prevent from sound of water. For those guests who are shy, they can press the button on the wall, so the clear glass would have an atomization effect. This high tech product provided in each hotel room really does a huge favor for the guests who are obsessed with watching TV. Not only is it a good way for the guests to enjoy watching TV, but helps them fall in love with bathing as well.
No.4 New Technology -- Helping Guests Save Money

Highlight 1 Smart Phones with Global Communication System

For the convenience of the foreigners staying at the Dragon, the hotel provides a smart phone in each of the guest rooms. They can be instantly connected to any other phone on the planet and also connected with the room numbers. Other than that, guests can also enjoy free local calls during their stay in Hangzhou and carry the phones with them when visiting Hangzhou. Even if guests get lost, they can directly call the hotel service center for help. This high technology product has helped quite a few foreign guests who just arrived in Hangzhou without any communication tools save lots of time and money.
No.5 New Technology -- High Tech for Low Carbon Development

The Dragon has been committed to low carbon development since 2009. As for an intelligent hotel, it’s necessary to combine technology with environment to create hotel low carbon development. The dragon has already made lots of efforts on that. Not only is it the best way to improve working efficiency, but protect the environment as well.

Highlight 1 Intelligent Lighting Dimming System

The lighting equipment in the hotel lobby, public corridors, and restaurant can automatically switch over at the different points of time every day. For example, lots of guests check in during 2:00 PM – 10:00 PM. The headlight in the hotel lobby would automatically be switched to the brightest. After midnight, there wouldn’t be lots of people walking around in the lobby. The lights would be switched to the darkest for saving electricity. Compared with other traditional hotels which keep on lights for 24 hours, the Dragon has saved much more energy on that, when it comes to environmental protection.

Highlight 2 Intelligent Air-conditioning Systems

The modes of the AC in the Dragon can be automatically switched when seasons change. The
temperature set up in each room is 28°C during summers, 18°C during winners. When guests leave their rooms, the AC in their rooms would automatically raise the temperature for energy conservation instead of turning them off. So when guests get back, the temperature in the rooms wouldn’t be too hot or too cold for them. Some of the hotels also pay attention to energy saving. They switch off the ACs completely once guests step out of their rooms. Later the guests return to the rooms, they are just like furnaces or the ice, which leading to low service quality of hotels. The intelligent AC system used in the Dragon has helped the hotel meet environmental standard on the basis of quality of service.

No.6 New Technology – Online Booking Platform

The Dragon has made lots of effort on booking platform through social media. Nowadays, with more and more social APP coming out, people have started to use them for promoting information, including the Dragon hotel. The hotel has created its official account for booking online and developing promotions.

Highlight 1 the APP of the Dragon

The Dragon hotel has developed its APP for guests who want to make reservations in an easy way. As long as downloading it on APP store, guests can make reservations whenever they want on their cell phones. It has certainly saved time and avoided lots of trouble compared with traditional hotel booking. Nowadays, most of the hotels with international brands such as Four Seasons hotel, Aman hotel haven’t put out their APPs yet, which makes the Dragon walking in the forefront of similar products.
Highlight 2  Wechat Booking

Wechat has become quite popular among Chinese people, just like Facebook in western countries. It’s one of top three social APPs in China nowadays. Lots of people use Wechat talking to their friends and browsing information online. The Dragon has created its official account on Wechat so that the hotel can even communicate better and faster with their customers in providing service and information. For the guests who want to book rooms through Wechat, they just need to follow the Dragon on that and finish booking rooms in 10 seconds instead of making endless phone calls.

No.7 New Technology -- Intelligent Evaluation and management

Highlight 1 I-TOUCH Intelligent Evaluations

The Dragon hotel provides I-TOUCH for hotel staff. The staff would get orders or room service requirement through text messages, which is a good way to improve working efficiency and also can minimize the rate of mistaken tasks. Meanwhile, the system also helps the hotel management conduct performance evaluations of employees. Compared with traditional hotel ordering procedures, the dragon has saved much more manpower and this paperless and wireless way to order food is also pretty green.
Highlight 2 RFID Tags for Staff Management

Today’s organizations recognize that RFID (Radio Frequency Identification) provides solutions to problems that no other technology can solve. There are RFID tags inside the uniform of the hotel staff. The Dragon has divided the hotel to several sections and every section has installed a reader, which can easily search for the location of each hotel staff through the RFID tags. Since there is a reader in every section, the tags on the uniform also would show the certain duty of each employee. For instance, if someone is supposed to work at a section according to the tag, he/she actually shows up at B section, which is typical event of absence without leave, so the tags inside the staff uniforms can conduct performance evaluations of the hotel staff as well.

Highlight 3 RFID--Fixed Assets Management

RFID is almost indispensable when it come to tasks that include automated data capture and identification applications, where a contactless identification is possible through RF signals. In terms of security, the Dragon hotel has taken action in using RFID tags on valuables. Once someone makes an illegal move on the valuables such as calligraphy, painting, the system would automatically make alarm calls.

--- The picture provided by the Dragon Hotel

Highlight 4 Intelligent Management of Staff

An Automated Fingerprint Identification System is effectively a storage, search and retrieval system for finger and palm print electronic images and demographic data. A facial recognition system is a computer application for automatically identifying or verifying a person from a digital image. One of the ways to do this is by comparing selected facial features from the image and a facial database. The Dragon has installed the living fingerprint identification system and facial recognition tech to manage attendance of the staff.
3.3 Interview

We were lucky to meet Kevin Lou, the hotel engineering director of the Dragon hotel. He took us on a tour of the Dragon in September 2014. He told us that high technology has gradually opened up the interactive channel between guests and the hotel. It has helped the hotel achieve diversity on some level. Furthermore, high tech has also created an innovative guest experience, which helps the hotel build great communication with guests. We also had a short interview with Mr. Kevin about the technology of the Dragon hotel.

Here are the interview questions we set:

3.3.1 How does the Dragon utilize technology on operations management?

3.3.2 As a leader in China hospitality industry, what’s your opinion about the future tendency of the development of the Dragon?
3.3.3 What’s the biggest challenge for the Dragon?

3.3.4 Known as a leader in China hospitality industry, what’s the biggest advantage of the Dragon?

3.3.5 With more and more foreign funded hotels rushing into China hospitality, what measures would the Dragon take in order to protect its market leadership in China?

3.3.1 How does the Dragon utilize technology on operations management?

Information and Communication Technologies (ICTs) are acting as integrating and enabling technologies for the economy and they have a profound impact on our society. The Dragon hotel, a world famous intelligent hotel utilizes ICT on many different ways when it comes to operation management for improving efficiency and service quality. The hotel divided it into three parts, which are hotel reception system, E-guest rooms, hotel online booking platform.

- The reception system consists of three types of hotel registrations: Self check in/check out system, Tablet PC and VIP welcoming.
- The second part is the guest room. There are lots of intelligent products used in the guest room, such as intelligent navigation, digital door viewer, atomize liquids TVs, intelligent communications and TVs.
- The third part is the online booking platform. Guests can download the Dragon APP on App store and make reservations on the APP. Or guests can follow the Dragon hotel on Wechat and book hotel rooms on the common platform through Wechat.
- Besides, the Dragon also uses intelligent products on management of staff. We installed the living fingerprint identification system and facial recognition tech to manage attendance of our staff.

3.3.2 As a leader in China hospitality industry, what’s your opinion about the future tendency of the development of the Dragon?

For the future tendency of the development of the hotel, we would pay more attention to four points:

- **Paying more attention to community building**
  The hotel is planning on involving in social activities for public good to enrich its own corporate culture, which is a good way to gain more social impact and gain more attention from guests.

- **Setting itself on a path towards low-carbon economic growth**
  The Dragon hotel has been committed to environmental protection already, which will also be put it on future tendency to establish the aim of the green hotel.

- **Developing more high tech products**
As more and more hotels have used high tech as a way to attract guests, it’s important for the Dragon to show its developing advantage in hospitality industry.

- **Improving the personalized service**
  The personalized service acts as one of the important standards for high end hotels like the Dragon. As long as improving the hotel personalized service, the hotel can obtain a bigger space in this competitive hospitality industry.

### 3.3.3 What’s the biggest challenge for the Dragon?

Along with the rapid development of tourism, the competitions between hotels and hotels are becoming more violent. It mainly shows in these four aspects:

- **Foreign funded companies**
  Foreign funded companies have rushing into China hospitality industry with abundant corporate. In Hangzhou, there are quite a few hotels such as Four Seasons, Aman, which have their own customers based on their worldwide shared customer data. Other than that, those foreign funded companies have been committed to enrich their corporate culture since long time ago. It certainly helps them gain more social influence. They have put more pressure on state own hotels.

- **High tech products**
  The hotel market is getting more competitive, since high technology products are now in common use all over the world. More and more hotels have started to use technology to attract guests.

- **Recession**
  The global travel and tourism industry is still in the slow recovery from recession. It’s time for the hotels to create more social programs to draw the attention from tourists.

- **Customer demand**
  People demand more on service and service quality nowadays. There are lots of high end hotels are pursuing high level service to attract guests. The Dragon should combines demonstrated technical skills with exceptional customer service in the future daily responsibility.

### 3.3.4 Known as a leader in China hospitality industry, what's the biggest advantage of the Dragon?

Guided by the philosophy of leading the modern luxury experience, the Dragon has been working on becoming the highest end of local hotel brand in China. In order to embody the personality of the hotel brand, the Dragon has used technology as a strategy measure to create a strong and unique impression on the guest’s visit.

- **Technology**
The technology used in the Dragon hotel has certainly enhanced market competition and established a benchmark image. The hotel management layers haven’t just put their eyes on the current crown on the head. They have also been looking for innovation and breakthrough, improving customer experience in the Dragon by using modern science and technology, which will become its unique value and draw the attention from guests all over the world.

- **Low carbon development**

  The Dragon has been committed to low carbon development, which is an efficient way to protect the environment and gain social impact. As for a smart hotel, it’s necessary to combine technology with environment to create hotel low carbon development. The Dragon has already made lots of efforts on that. Not only is it the best way to improve working efficiency, but protect the environment as well.

- **Location**

  The hotel is located in the center of economical, commercial and cultural area in Hangzhou with a gross area of 110 thousand square meters. It takes 40 minutes drive from Xiaooshan international airport, 10 minutes walking from west lake scenic spot. The hotel is next to the Zhejiang world trade exhibition center, and also close to the downtown area. The hotel enjoys exceptional location advantages and boasts convenient transportation. If guests want to go outside, they can contact the hotel service center.

3.3.5 With more and more foreign funded hotels rushing into China hospitality, what measures would the Dragon takes in order to protect its market leadership in China?

- **Enriching corporate social responsibility**

  Instead of raising prices, we want to protect the market leadership by providing unique personalized service to our guests, which would be a good way to develop our corporate culture. Foreign funded companies have been committed to enrich their corporate culture since long time ago. It certainly helps them gain more social influence. The Dragon has learned from that and started lots of social activities, like right now we hold art exhibition once a month for public donation. Other than that, we also installed AC silencer to block the sound of central AC in order not to disturb local residents’ life.

- **High technology**

  We would keep developing high tech products to benefit guests. It helps improving the quality of serving and brings guests extraordinary experience when guests stay at the Dragon. We summarize our operation management to three words “modern, luxury, quality” by using high technology. As more and more hotels have used high tech as a way to attract guests, it’s important for the Dragon to show its developing advantage in hospitality industry.
3.4 SWOT

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**STRENGTHS**

- **Location**

  The Dragon hotel has an advantageous geographical location. It is close to the well known scenic spot West Lake, which is not only a China national scenic area, but also the UNESCO world cultural heritage site. As Hangzhou is becoming a very important tourist city for both inbound and domestic tourists, the Dragon hotel is the ideal accommodation.

- **Chinese style architecture**

  Throughout various local hotels in different cities in China, its architecture is the same as the architectural style of each city with much steel and concrete jungle with a high glass wall which is very similar. It is hard for the visitors to find local culture. However, the Dragon hotel has studied the local traditional culture, geography and architecture and created sustainable environment which allow the free dialogue with nature on the basis of technology. So while stepping into the Dragon Hotel, you will find its tolerance characteristics mixed with luxury and Chinese traditional Jiangnan garden views. It takes full advantage of West Lake aura.

- **Technology**

  As China’s first intelligent hotel, the Dragon has used “technology” as a way to build its own brand. It has given guests unique experience when staying at the Dragon. On the one hand, high technology gives them high end personalized service by providing modern, convenient, efficient experience. On the other hand, with the development of science and technology, the hotel operating cost has increased. However, introducing technology into the hotel can certainly improve the hotel working efficiency so that the operating cost of the hotel would be controlled and reduced.
National brand

As a national brand hotel, the dragon hotel certainly helps the tourists who come to Hangzhou for the first time get to know more about this city with a profound cultural background and achievement in ancient China. Meanwhile, it also leads the highest end of local hotels.

Low carbon development

There are two reasons why the Dragon has chosen the high tech products. One is that high technology can bring guests different kinds of experiences. The other is that high tech can make energy conservation, which helps environmental protection and improves the hotel working efficiency and the quality of service. In a word, technology used in the Dragon hotel leads to sustainable operation management for improving efficiency and service quality.

WEAKNESSES

Corporate social impact

Though the Dragon is China’s first smart hotel which has incalculable impact on many local hotels, comparing with foreign funded hotel, it still lacks a little bit corporate social impact. It is biggest disadvantage in the Dragon. The hotels which are lack of corporate culture would be hard to have social impact. With more and more foreign funded hotels rushing in, their rich corporate culture helps them gain more permanent guests and social influence. If the state funded hotels like the Dragon want to survive among the competitive hospitality industry, it’s important to pay more attention on corporate culture building with aims to embrace responsibility for corporate actions and to encourage a positive impact on the environment and stakeholders including customers, employees and communities.

Outdated intelligent facilities

The Dragon started its reconstruction in 2007. After two years rebuilding, the Dragon successfully turned into the first global intelligent hotel. Because scientific and technological knowledge update very fast, some of the technology used in the Dragon seems to be a little bit outdated compared with the newly constructed hotels. Some were even abandoned but the hotel still places them at the certain positions in the Dragon. Some reviews of the guests from different online booking websites also show the guests’ evaluation about some outdated facilities.

OPPORTUNITIES

Personalized service

People demand more on service and service quality nowadays. The Dragon could also connect demonstrated technical skills with exceptional customer service in the future daily responsibility to cre-
ate a strong and unique experience for guests.

- **Sustainable development**

  More and more new equipment, new science and technology and new materials would be used in hotels when it comes to intelligent hotel operation. The Dragon has a mass of high tech products. They could be used to benefit the community and also combine with green environmental protection and keep working on environmental conservation and community building to contribute to society.

- **The sub-brands of the Dragon**

  The Dragon hotel can create a series of hotel sub-brands for mass consumption. The buffet of the Dragon, the bakery, the wedding banquet, the Dragon laundry etc. All of them would be launched for separate brands by the Dragon. Nowadays the change and request consuming for most people are more and more high. These products from the Dragon can be extended to all level of society for social influence.

- **The new tourism law**

  China has rich cultural and resources and natural sceneries yet the country’s tourist industry still lags behind the world’s mature tourist markets. On October 1st 2013, China’s first tourism law took effect in order to regulate the country’s tourism market and upgrade the sector’s services, to boost the industry. According to the country’s tourism development plan, tourism will become a strategic pillar industry by 2015 and basically meet international advanced standards. The first tourism law and the expanding inbound and domestic tourist market will focus more on enhancing services quality. And it will accelerate the process of smart hotels...

**THREATS**

- **Global recession**

  The global travel and tourism industry is still in the slow recovery from recession. The number of Chinese inbound tourists still faces the negative growth. For the high end hotel such as the Dragon, the rates would be a big problem for tourists from all over the world. They would rather choose budget hotels than luxury ones.

- **Technology used in common**

  With the development of tourism, the competitions between hotels and hotels are becoming more fierce. Many hotels have started to use technology to enhance industry competition ability. Intelligent operation management used hotels have become pretty common.

- **Competitive market**
Lots of foreign funded enterprises have rushed in with corporate cultures and high popularity overseas. A great impact has been exerted on enterprises of China. The foreign funded enterprises unify the rules and regulations of management and manage the mode of running. In addition to that, the foreign funded enterprises also have globally shared the database information of guests so as to provide high end personalized service. Other than that, the foreign owned hotels also pay more attention to enterprise culture for improving service quality and social benefits for helping people. Those foreign funded companies with excellent enterprise culture are strong competitors for hospitality industry.

- **Government policy**

From 2013, Chinese government restrictions on public spending have adversely affected business travel in China, especially hotel industry. The major guests of the Dragon hotel were from the government in the past. So the impact of the policy environment is relatively large. Comparing with 2013, the revenue of the Dragon hotel has been reduced by 5%. But the government policy also contributed to the transformation the hotel. In 2014, the Dragon hotel has focused on the depth of hotel business and the cost control by technology, especially making efforts in the expansion of sub-brand of the Dragon.

- **Unfavorable local market**

The hotel industry focuses on rules, details and the quality. But the current situation sometimes leads to many difficulties on the construction and decoration industry. The hotels need to face all kinds of difficulties in order to set up an ideal new hotel.

3.5 **Conclusion/suggestions:**

The Dragon has been committed to creating its own brand by improving its quality of service and customer satisfaction. The hotel uses technology as its unique strategy mean to draw attention from guests from all over the world and it has successfully built an intelligent hotel. The Dragon has created a particular hotel guests experience, which makes it stand out among the other some high level commerce hotels around the world. However, the hospitality industry in China has become more competitive due to different factors and most of them cannot be changed easily. The state owned hotels have been under lots of pressure from home and abroad. Building on the theories we summarized above, the hotel are encouraged to take the sustainable path from following several aspects:

- **A good hotel should have corporate social responsibility on the basis of technology.**

  After decades or even centuries of development, International brand hotel groups succeed finally. Its success depends not only on its strong brand influence, service standards, system platform, personnel, but also the corporate social responsibility of its founders. Many international brand hotel groups’
founders closely link the hotel culture with social responsibility.

In recent years, with the rapid development of China's hotel industry, a great number of local hotels pay more attention to more luxurious and modern design and they pay little attention to the social responsibility which most international hotels focus on. Actually as a huge industry, the hotel industry is related to not only itself, but people's livelihood, moral and social responsibility from its upstream and downstream industries. China local hotels should learn from the international hotels.

As a hotel with social responsibility, the hotel managers should train employees to develop social responsibility and contribute meager strength to this community. Each hotel should carry out some social care activities according to their actual situation. With information communication technology, it is more convenient. For example, hotels can organize its employees to visit a local orphanage, nursing home, or to take the initiative to donate blood, or regularly organize volunteer staff. In short, the social work can instill a sense of social responsibility through social charitable activities and build responsible corporate culture which is as important as the operating income and brand value success.

- **A good hotel should not follow the unpractical high-tech products blindly.**

At present, some smart products with high technology are standardized products with new concept. They can’t match hotel’s individual need. Some hotels just follow the trend to invest smart products with high technology. Some hoteliers and guests even don’t know how to use some smart products which may cause psychological rejection of the high-tech products. In the present case, the application of high-tech products must be practical, comfortable and convenient. The hotelier should also consider the relationship between inputs and outputs. Don’t follow the trend blindly. Communication is really important. For example, there is a switch electric curtain, but some guests do not know how to use, the curtains are easily damaged. So the curtain should be designed to be both automatic and manual modes, avoiding the subsequent maintenance. Of course, from the hotel perspective, how to teach the first guests to use smart products is critical which can avoid complaints from the guests and allow guests to use high-tech products with comfort effect.

- **A good hotel should raise the customer’s awareness of environment protection via technology.**

In recent years, China hotel industry has tried to use technology to promote energy conservation. To a certain extent, it needs the consumers to transfer the value comfort or luxury consumer spending. And therefore cooperation and support of customers is one of the important factors affecting the hotel industry of energy conservation. From the environmental point of view, the hotel industry in developed countries generally does not provide room disposable supplies. But in China many local hotels still provide
hotel rooms with six small pieces of practice because of lack of support and response of guests. This shows that China's hotel industry, green consumer environment has not been fully established, the green consumer awareness has to be raised. The establishment of green consumption environment is a long way to go in the process which needs continuous efforts from the whole society.

- **A good hotel should integrate elements of fashion and local traditional culture via technology.**

  A modern hotel building should be stylish, and can integrate environmental and traditional culture perfectly. On the basis of the original traditional culture, the hotel can absorb and integrate elements of fashion. Thus our traditional culture with new vitality can better adapt to the development of the hotel. The Dragon hotel is a very good example to finish the perfect fusion of fashion elements with the traditional cultures on the basis of technology.

- **A good hotel should collect travelers’ reviews via technology.**

  Travel reviews have significant effect on hotel. Online review sites and social media have transformed people’s approach to travel planning and booking as well as its implications on the hospitality industry. For example, Trip Advisor, as the world’s largest travel site, it offers travelers unparalleled access to 150 million reviews and opinions, covering more than 3.7 million accommodations and attractions around the world, as well as a wide variety of travel planning features with seamless links to booking tools. So travel reviews have significant effect on hotel conversion rates and pricing at the point of purchase. It’s important to use simulated booking engines and heat mapping technology to determine consumers’ hotel choice. Besides Trip Advisor, there is Booking, trip, Elong, etc, in China which customers will leave their reviews via ICT. Hoteliers should treat these reviews seriously which may help the sustainable development of hotels.
Part IV Site Investigation on Sustainability

Vania visited Qingdao China Community Art And Culture Hotel, Qingdao Shangri-La Hotel, Qingdao Lushang Hyatt hotel, Qingdao Sea View Garden Hotel and Intercontinental Qingdao hotel in September 2014. Also, Vania worked as a trainee in marking department of Shanghai Four Seasons Hotel during the summer holiday. Vania found a lot of material from her working and visiting.

4.1 Brief introduction to the Qingdao China Community Art and Culture Hotel

Mr. Niu Hubing took over the renovation project of Qingdao Huaguang packing container factory in 2004. After an argument, the group was determined to do a Chinese culture theme hotel on Huaguang packing container factory site, and named CHINA community. CHINA represents China culture, of course not only Chinese culture, but under the background of internationalization Chinese culture. The "CHINA" with the community together, the group tried to convey China culture and Western civilization, combining ancient and fashion, humanized space and natural ecological.

As the old plant reconstruction project, the original foundation conditions were poor, it was necessary to remove the reinforcement, but also the expansion of reconstruction, difficult to imagine. Designers take full advantage of existing conditions, first choose from the best embodies the Chinese living culture and courtyard Earthen start, expand architectural design, interior designers immediately follow up, both in perfect unison. From architecture to landscape to the interior seamless, system integrity, and there are many wonderful pen and highlights. Architecture and interior space, the patio, the day Gallery, skylight opening and closing of a degree, inside and outside Mutual, it is some of the wonders of Heaven;
Water Gallery, pools, waters throughout the building and outside, a reflection of the Chinese people of charity, music wise water, gave birth to hydrophilic interest; Earthen wood texture design reflects the original ecology of charm, with more than 300 groups constitute the doors closed all wooden appearance, performance Earthen floor is surrounded qualities. At the same time, can open doors again constitutes an open, diverse, both inside and outside each picture taken by the post-modern meaning, described as "amazing Earthen." Many designers have tried to make a modern interpretation of the classic Earthen, more or less always some shortcomings. And CHIAN Earthen commune is a breakthrough in design is remarkable, perfectly embodies the unity of its spiritual core and design themes.
The hotel is a commodity in the original packaging plant on the basis of the old building reconstruction. The original building, there is no special place, is a building area of 8000 square meters of floor frame structure buildings (a layer of workshop), the pour 'L' shape, circular floor dining is a part of the original boiler room now. From the point of view, usually on the basis of the original building into a hotel not only advantages, as there are a lot of deficiency. Such as original layout and architectural form, architectural space, etc., are lack of the basic requirement of the hotel building, all of the given condition is to have a factory building and internal space.

And designers made a disadvantage into advantage. Specific operation is that in the old building and built a layer, at the same time, on the basis of a set of new and old buildings parallel bar, new parts and the original structures between three meters patio space, nest connection between two groups of buildings, form has a rich experience of architectural space level. After renovation, construction of half surround close space also happens to be the hotel landscape and parking Spaces, the required water. After modification, the hotel building area is about 13000 square meters.

Hotel food and beverage into CHINA commune to the landmark building of the hotel, is the core part of the hotel's most influential, it is a like Chinese restaurants in Fujian tulou, the building design idea comes from the tulou, but it is not the soil, but the wood structure, its facade composed entirely of by living in the window, the window sash is closed like a big barrel, casement opened QuanLou fully shaped, and spread its wings, dynamic, open and close completely is two kinds of architectural landscape changes.
Throughout the hotel on the layout of the building, it has relatively independent significance, plain and guest room part of the architectural form interesting composition, formed a very interesting architectural structure, the contrast of both round and square "", also have "open and close". And trademark logo floor construction also has played a very good attract customers and hotel logo.

Throughout the hotel building "concave" form layout, set up a shallow water body and parking Spaces, and through the hotel guest room part of the entrance there is a plenty of road, passing the plank road of that time, people can fully enjoy the circular MuLou and water landscape. Entrance and building facade is not trivial, ostentatious design decoration. This also and consistent pursuit of the overall design of the hotel, concise and simple entry and building facade, makes people feel there is a kind of fashion.

4.2 Site visit

China Community hotel is a renovation project of factory, so the hotel uses the ceiling glass design in order to effectively solve the lighting problem. The public areas are brighter. So as to effectively reduce the consumption of electricity.

China Community hotel use tarpaulin paper as the doors, reducing the trees and paint use.
China Community hotel use lanterns not bright fluorescent lamp. It could reduce the use of electricity, otherwise, it will not disturb the rest of the guests.
The water around the hotel is recycled.
China community hotel allows the guests to choose its own laundry service. The guest could wash clothes by hands for fun.

In China community hotel, The staff of the front desk can see the room status by the operating system. Computer screen shows the total amount of room and the amount of the room which have checked in, the amount of the room which is vacant, including the dirty room, which room is clean in time can facilitate the guest check in, and so on. Such scientific management more convenient for staff to control the guest room, effectively improve the utilization rate of the room. Also greatly improve the working efficiency, reduce unnecessary waste, and at the same time promote the sustainable development.

What’s more? Hotel will design different discount activity to attract customers in different festivals. Such as in the father’s day, mother’s day and other holiday such as Thanksgiving feedback the rate of the room will by half. Attract a large number of customers.

Hotel is the Xuan paper to decorate the wall instead of paint. Xuan paper can absorb moisture, very suitable for the air humid coastal city. At the same time, the use of paper wall, reduces paint using formaldehyde and other industrial raw materials, exempt from the harm to human body.
Chinese elements crafts is shown everywhere in China community hotel. It is a cultural show to the world. The propaganda China culture to the tourists from all over the world.
Every month, the analysis of energy consumption meeting is held.
Environment protecting is very important for Four Season Hotel. So they designed a way to support sustainability. If guests don’t need to change their bedding article, they can just put the card on bed. The staff of House Keeping will know. This issue helps reduce the using of water and enhance the efficiency of scientific management.

This is a room house keeping environmental protection card. If the guest needs to change directly, just put the card on the bed. The staff will work for the replacement.
Hotels use lots of water for different sections every single day. Employees must wash their hands before they get started to work. So this employee hand sanitizer really helps a lot. Instead of using too much water to clean their hands, only two pumps can make the hands clean. It always has been used in the kitchen for water conservation.

There is a big room hidden at the basement. These big machines are used for water recycling. The dirty water coming from the guest rooms or the restaurant can be used for watering the plants or any other places.

Lots of businessmen are the regular customers. They are always in a big rush. Some of them would like to book the limo from hotel. When the guest arrive hotel, the staff just lead them to their room. They don’t need to get to the front desk to check-in. But we need the guest’s information to check-in. And this scan pens has a baby camera in it. Staff can use this pen to scan the guest’s information when the guest in the limo. So this scan pen can certainly save them lots of time during check in or check out.

For meeting the guest’s requirement, every room has a HYCO. If some guest needs some coffee, just put the capsule into the machine, it will quickly cook the Espresso for them.
In hotels, we found some candle like this. This is not the real candle. It is kind of an electric candle. You don’t need to worry about causing fire accident of its burning out. And you don’t need to worry about the strange smell from the candle. Also you don’t have to change it day by day. So it’s really useful and environmental.

In Four Seasons hotel you can see this machine everywhere. It enhances the efficiency of scientific management and reduces the risk of fire hazard.

In Four Seasons Hotel Hangzhou we can see this Electronic propaganda page in front of every ballroom. It reduces the use of paper and more flexible and clear.

Every ballroom has a card reader. It can avoid the stranger coming in and enhance the efficiency of the meeting.
This is the 24 hours auto-recycle cistern in Four Seasons Hotel Shanghai. It takes 3 cisterns, they can both clean the water. Usually the first cistern receive the polluted water, the second cistern clean and filter the polluted water and send the clean water back. The third water is usually a spare one.

In staff canteen of Four Seasons Hotel Shanghai, you can see this logo everywhere. It reminds the staff to cherish the food and don’t waste them.

This is the ashtray of Four Seasons Hotel. They use salt instead of water, it reduce the wasting of water and also looks more artistic and also reduce the risk of fire hazard.

We can see this box next every printer in Four Seasons Hotel Shanghai. It is used for collecting recycle paper to reduce the wasting of paper.
4.3 Interview

Vania took an interview with Mr. Zhang Guoyong, the director of Qingdao China Community Art and Culture Hotel on Oct 8th.

The recycle of the water landscape is about two water landscapes. There is a big impounding reservoir and two pumps under the wooden trestle, the pumps are controlled by the computers. It moves like the spring. When the pumps which under the wooden trestle is opened. The recycle begins when the pool is full of water, and the water will back to the impounding reservoir. And it just recycles like this day by day. And the inside water landscape is also controlled by the computer.

The intelligence building gradually develops along with the progress and fusion of the calculator technique, communication technique, automation controls system and graphical display. With the rapid development of, the hotel industry is broadly making use of the electronics digital technique means, electronic commerce and modernization information system day by day. Hotel Building being the importance information-based carrier, it requests the hotel building must be turned to intelligence construction. The intelligent comes true the intelligence management by delivering information flow, controlling information flow delivered by intelligent.

We are trying to build a low carbon hotel, which means the hotel which makes use of the core value of low carbon economy principles and applies the mode of low carbon economy development to build and operate applying low carbon science technology. The hotel industry has the characters of heavy energy consumption, high-emission and heavy pollution. Because of the huge amount of energy demand in the world, resources scarcity and energy price continuously ascension, the expenditure of energy expenses of the hotel makes up the proportion of business expenses 8% to 15%, and present up-trend.

The low carbon economy pushes the development of green hotel, but construction of green hotel has to rely on application of information technical to carry out the hotel building intelligence. Information technique investment usually not only has same investment repay with the facilities in the investment room and information-based construction but also influences and improves hotel management.
efficiency etc. Hotel intelligent integrates information-based value into the value chain of oneself in the hotel and promotes the competition ability of the hotel.

This is a line chart of Qingdao China Community Art And Culture Hotel Energy costs account for the proportion of total expenses in 2013.

In recent years, along with the earth's environment pollution to further deepen, more and more people begin to realize the importance of protecting the environment. All walks of life to save the earth, energy conservation and emission reduction work also pay more attention to energy, scientific management has become an important professions work content. Our hotel energy management cooperates with foreign advanced energy management method and develop scientifically and reasonably energy management measures to improve our hotel economic benefits, combining the current situation of hotel energy management.

4.4 SWOT
A Framework of Sustainability-oriented Technology Management

A framework of sustainability-oriented technology management, as showing Figure above, is developed to progressively respond to increasing sustainability issues in the technology management practices. The framework consists of six building blocks with four key technology management processes moderated by the level of sustainability and other external factors. It presents key issues and relationships of sustainability with well-known technology management processes. The core technology management process includes four sub-processes: technology strategy, value creating process, value capturing process, and performance. Other two building blocks, i.e., sustainability and key factors, are moderators on how sustainability issues are impacting these core technology management processes. We briefly introduce key arguments and recent understandings related to each process, and then suggest how sustainability issues can be aligned with technology management.

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| Culture Hotel | ■ attracting a new "green" consumer groups  
|              | ■ comfortable work environment for employees;  
|              | ■ upgrade the hotel market image | ■ reduce the tourists stay experience in some ways  
|              | ■ the loss of former customers | ■ The ISO standard system  
|              | | ■ Government policy support | too fast  
|              | | | ■ the relationship between the hotel and the community. |

**Strengths**

Sustainability in Hotel can bring market opportunities include the following areas: access to low resource, energy costs and procurement costs; lower waste disposal costs; catch the opportunity to attract new green consumer groups; create a staff more safe and comfortable working environment; to enhance the image of the hotel market; to improve relations with the communities in the hotel. Seen from the hotel's own cost considerations, the construction of a green hotel is indeed the road to recovery, green hotel advocated resource conservation, recycling, reduce costs and improve the environment can effectively control the hotel's operating costs, so the hotel towards sustainable development the way.

**Weakness**

The sustainable development of the hotel is not completely equal to immediately save and reduce the cost, in the implementation of a certain stage, such as construction or operation period, in order to solve the existing environmental problems, hotels need to increase investment, in order to create a healthy type hotel products also need a large number of investment. In addition, the energy saving equipment investment needs a lot of money, if poor management or lack of stable customer resources, recovery period of growth must be to make the hotel operator headache. In addition, China hotel has its own weakness. First of all, to large losses of China Hotel, the investment return rate is very low, which means that the development of the hotel is not good, in the poverty, do not have the strength to carry on environmental protection; secondly, the hotel managers' environmental protection consciousness, the emergence of many acts of destruction of the environment, such as scenic waters emissions without treatment of domestic sewage, garbage directly in the area, or to expand the business land and wanton felling of woodlands, architectural style and the scenic area coordinate, destroy the landscape quality, resulting in high energy consumption, high consumption of the hotel to the social environment of the indirect effect etc.

**Opportunity**
Sustainable development is increasingly concerned about the topic, the sustainable development of the hotel can not only create a comfortable and safe living space for the guests, but also to protect the health of human. The sustainable development of the hotel is a product of a certain stage of the sustainable development theory to the development of the concept of environmental protection, green, it is to meet the people's pursuit of health and longevity of thought, have great market potential. People prefer to live in a good ecological environment and environmental protection in the hotel, especially the elderly, return to nature, enjoy a stronger sense of environmental protection, these specific groups it is realistic tourist hotel, the sustainable development of the hotel to catch these customers, in fully meet the customers, also won the profits derived from the attention to environmental protection, conservation of resources, make they become loyal tourist hotel. In addition, there are now more and more people are keen on environmental protection, in favor of the sustainable development of the hotel, and the occupancy of green hotel and save resources as a fashion and a grade of the sign, location gives green hotel more and more high expectations, this let green hotel to enjoy higher reputation in the counterparts, especially through the ISO14000 and ISO14001 of the green hotel, is not only in accordance with the advanced environmental management system in hotel management, but also is the heart of consumers brand.

**Threats**

The sustainable development of the hotel as a new competitive enterprises in the market there are many disputes and threats. For example, the current discussion of the problem of disposable goods hotel, hotel to cancel the disposable goods, its purpose is very obvious, is to saving and environmental protection, in order to soap as an example, a net weight of 30 g soap, the guests each use only about 1/5, the residual 4/5 in cleaning the room often change; secondly, because most of disposable goods using plastic as raw material, it is difficult to be degraded, become the source of pollution in the city. In March this year, the China www.sina.com.cn held "whether you agree with the hotel industry to cancel the disposable goods" survey, 67.92% of people agree with the hotel completely abolished, 10.39% of people agreed to partially cancel. The data show that, the hotel to cancel the disposable goods can be obtained for most of the customers to understand, however, the hotel is worried about, only a few hotels push for such a policy will lead to the implementation of the policy of the hotel no more competitive, thus affecting their source, therefore, to unified action in the implementation of this policy, take measures as soon as possible, otherwise "bad money drives out good" of the tragedy may reproduce. In addition, the sustainable development of the hotel industry with the threat from other hotels. Customer demand for personalized hotel classification of diversification, the emergence of Eco-Hotel, alienation
Hotel, and theme hotel new hotels must seize tourists, green hotel to expand green propaganda and management efforts to remain invincible in the competition. If the concept of green business can go deep into the management of the hotel, the hotel building into these have green management concept of Eco-Hotel, theme hotel is bound to be a profound revolution in the hotel industry.

4.5 Conclusion

4.5.1 Set up sustainability consciousness

American management guru Jorge Winter once said: the time that general manager can ignore environment has passed, in the future to make money company must be able to regulate environment. Hotel management must correctly understand the current problems in environmental protection, only in the sense of their own problems, can hotel staff improve the sustainability service. In the day and night operations a large amount of resources be consumed and many pollutants produced. Construction of sustainability service must take saving energy, protecting environment, reducing consumption as precondition, using sustainability services, sustainability procurement, sustainability marketing as channels. Furthermore, sustainability concept should be instilled into every employee’ heart. Through creating sustainability culture, carrying out special sustainability training, guiding sustainability service skills, regulating daily sustainability behavior, introducing sustainability reward system and other means to encourage employees to establish sustainability idea, with conscious awareness of sustainability service, then truly dedicate themselves in it.

4.5.2. Establishment of assessment criteria for sustainability service

There is clear assessment standard for Sustainability. Hotel can develop assessment criteria for sustainability service on base of that, focusing on assessing employee knowledge in all aspects of sustainability service. Whether the hotel consumers satisfied with sustainability food, whether customers and employees are encouraged to actively participate in social environmental protection activities, all these are important indicator of whether a hotel is ecological environmental protection supporter in international world.

4.5.3. Establishment of monitoring mechanisms

1) Control the emissions of pollutant: Review of the unreasonable hotel interior design and equipment layout, carry out improvements and adjustments to ensure hotel has sustainability fresh air. Equipment that make serious pollution must be eliminated or rectification. Equipment used on a regular basis
should be normally maintained and cleaned. Recycling energy systems such as (solar, wind, water cycle, etc.) should be created to ensure recycling of resources.

2) A reasonable control of resources:

   a) Control the amount of raw materials used: Before procurement setting standard purchase orders, requiring buyers and suppliers providing raw materials in strict accordance with the specifications and purchase order, to ensure that raw materials meet the production requirements, and eliminate waste caused by substandard raw materials. Regulating storage requirements of fresh air, temperature and humidity.

   b) Control energy consumption: Establishing energy-consuming equipment classification and measurement instruments ledger. Installing water, electricity, gas measurement instruments by sector. Setting up equipment number distribution accounting ledger. Establishing energy statistics system and give out comparison, recommendations, analysis report. Developing appropriate assessment and reward system. Controlling energy consumption.
Part V Conclusion

In order to protect environment and the health of the people, it is necessary to develop Greens Hotel. Greens Hotels will be soon as popular as Internet. Green Marketing runs through every aspect of the hotel to improve the visibility, deepen green ideas, build green hotel standards, and create the world's green hotel brand, increase market share, develop a green hotel brand marketing strategy to gain competitive advantage, promote the sustainable development of the green hotel.

5.1 Preconditions

It should strictly abide by the related laws and regulations on the environmental protection, the energy saving, the hygiene, the epidemic prevention, the food, the fire fighting and the planning in the country, and various items of licenses are complete and valid.

The highest management in the hotel must appoint the special person (The green representative) to be responsible for the task of the construction of the green hotel in this enterprise, and the hotel should have the green working plan, and make clear the environmental targets and action measures, and improve the related regulations and systems on the public security, the food safety, the energy saving and consumption reduction, as well as the environmental protection, and continuously renovate and develop them, and the hotel management should check the fulfillment situation of the targets and the execution situation of the regulations and systems on a periodic basis.

The training programs on the public security, the food safety, and the environmental protection in the hotel should be participated by all the staff, thus to improve the concepts for the safety and the environmental protection in the employees, and the person in charge of the works of the construction of the green hotel must attend the trainings and the education on the issues of the security and the environment.

In the guest activity area, the guests are encouraged and led to have the green consumption in forms of the notice and the demonstration board, etc, to make them concerned about the green activity. After being granted with the “Green hotel”, the hotel must place the plate in the obvious position.

Related documents and files for the green hotel are established.

5.2 Save the water consumption

The new-type water-saving equipments should be actively introduced, and many types of the water-saving measures should be taken, and the callback and the utilization of the water resource should be reinforced.
The total volume of the water consumption in the hotel should be recorded at least once per month, and the flush volume of the water every time in the toilet, the flux of the water per minute in the water faucet, the water flux of the water faucet in the plunge bath, the water consumption in the urinal, and the water consumption in the dish washer, etc all have the clear standards to be executed.

The water consumption in the hotel is mainly in the guestroom, the cleaning of the kitchen and the dishware. Various primary departments should have the standards and the responsibility systems for the rated volumes of the water consumption.

The water consumption in the hotel should be supervised at least once per month, and the water measurement system should be established to record and analyze the situation of the water consumption. The water leakage in the water faucet is strictly prohibited.

5.3 Energy management

The hotel should have the report from the energy management system, and at least once of the supervision for the electrical balance should be fulfilled in one year, and various primary departments should have the rated volumes and the responsibility system for the energy consumption of the electricity and the coal (the oil).

The equipments for the ventilation, the refrigeration and the heating should reinforce the daily maintenance and the cleaning management, and should be equipped with the supervision system, and the airproof situations in the refrigerator and the window should be checked every year, and the inspection report should be compiled.

Improve the measurement system for the utilization of the energy in the hotel actively adopts the new technologies for the energy saving, and the enterprise with the conditions should use the recyclable energy system (the heat supply device by the solar energy, and the terrestrial heat, etc).

5.4 Environmental protection

The sewage discharge, the emission of the smoke and the dust in the boiler, the emission of the waste hot gas, the emission of the air pollution in the kitchen and the noise control in the hotel should fulfill the related standards in the country.

The use articles for the bath and the wash should not contain the phosphor, with the correct use and volume, thus to reduce the impacts for the environment to the minimum.

The refrigerator, the air conditioner and the cooling water unit, etc should actively adopt the environmentally friendly equipments.
The indoor green should be coordinated with the environment, without the pollutions in the decoration, and the air quality complies with the national standard.

The green coverage rate in the outdoor lands that can be green reaches 100%.

5.5 Garbage management

The hotel should control and manage the garbage by means of the categorization of the garbage, the reclaiming utilization and reducing the quantity of the garbage, etc.

The hotel should establish the equipments for the collection of the garbage in categories so as to reclaim and utilize the garbage, and the staff can categorize the garbage as per the specified standards.

Fulfill the promotion for the treatment of the garbage in categories for the guest.

There are the special depositary points for the hazardous castoffs like the waste battery, etc.

5.6 Green guestroom

There are the non-smoke guestroom levels (The non-smoke small building). The one-off use articles for the guest like the toothbrush, the comb, the small fancy soap and the slipper, etc and the cotton textile articles like the towel, the pillowslip, the bedsheet and the bath gown, etc should be replaced as requested by the guest, to reduce the times of the wash. Alter (Using the degradable material), simplify or cancel the packages used for the living, toilet and bath articles in the guestroom. The green plant good for the human being should be placed. The clean drinking water should be supplied. The daylighting in the guestroom is sufficient, with the good new air system, and in the closed status, there should be no peculiar smells and noises indoors, and the inspections for various items of the pollutants and hazardous gases all should comply with the national standards.

5.7 Green food and beverage

The restaurant has the non-smoke area, with the non-smoke symbols.

There should be the good ventilation system inside the restaurant, without the oil and the smoke.

Guarantee to sell the meat food qualified in the quarantine, and strengthen the stock channels for the raw materials like the vegetable and the fruit, etc, to ensure the food safety.

Actively adopt the green food, the organic food and the innoxious vegetable.

It is not allowed to sell the protected wild life prohibited by the government.

The regulation for the green service should be established to promote the green consumption, and provide the services like the packaging service for the residual food and the wine stock, etc.
It is not allowed to use the one-off frothed plastic dishware and the one-off wood-made chopstick, and actively reduce the use of the one-off towel.

There should be the toilets separately for ladies and gentlemen inside the restaurant, which should be clean without the peculiar smell, and the area and the number of the lavatories in the toilet should be in the proper proportion with the area of the restaurant, and the various items of articles in the toilet should be complete and comply with the requirements for the environmental protection.

**5.8 Green management**

The hotel should establish the effective environmental management system.

The hotel should establish the active and effective prevention and management systems for the public security and the food safety.

The hotel should establish the supervision system for the procurement staff and the supplier, and try to use the green food and the environmentally friendly product as many as possible,

The green activity in the hotel is widely applauded by the society, and the comprehensive satisfaction degree for the hotel by the guest reaches over 80%.

---the pictures taken by Judy & Xiaoxiao
References

8. TripAdvisor partners with TravelDaily to present the 2014 China Hotel Marketing Conference - (TravelDaily) http://www.traveldaily.cn/article/79937.html
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Teacher’s Note to the Case Study

Questions To Ask When Reading This Case Study

- How much do you know about the development of technology in the hotel industry in mainland China?
- What aspects of sustainability can you find in China’s hotel industry?
- Why should China develop smart hotels?
- How does a hotel utilize technology on operations management?
- What tourist experience could be explored or developed in smart hotels?
- What's your opinion about the future tendency of the development of smart hotels in China?
- What’s the biggest challenge for the sustainability of China’s hotels?
- What’s the biggest advantage of China’s hotels?
- How can we raise the customer’s awareness of environment protection via technology?
- How to deal with the relationship between the hotel and the community?
- Sustainability in Hotels can bring market opportunities?
- Sustainability in Hotels could reduce the tourists stay experience in some ways?
- Is it necessary to increase the energy-saving equipment investment for sustainability development in Hotels?
- Are disposable goods like disposable toothbrush or slippers necessary in hotel rooms?
- What is your opinion on the relationship between Technology and Sustainability in Hotel industry?
Learning Activities To Apply This Case Study to Your Own Country or Community

- **Brainstorming & Checklisting:** Firstly, students can brainstorm on the paper as to the utilization of technology in their country’s hotels. The more the better. After listing a number of the utilization of technology, make a discussion in class on what’s the function of the technology utilized in hotels and if it is sustainable.

- **Role play:** Students will be divided into groups. Each group should choose a typical local hotel to study and start their own field trips: pay a site visit to a local hotel and read it’s Webpage, collect all the useful information about the utilization of technology by photos and brochures, design some questions and make interviews with hoteliers and hotel guests about the relationship between technology and sustainability, and collect relative reviews on hotels’ website. Each group shall submit a report to the teacher.

- **Group project:** Students form groups, each group chooses a hotel and lists technology and sustainability points of the hotel. Students present their ideas about the relationship between technology and sustainability in the forms of power point, role play or video showing. After each presentation, students can discuss in the classroom, other students can give comments and suggestions to the student presenters.