

## **Electronic Menu and Ordering Application System: A Strategic Tool for Customer Satisfaction and Profit Enhancement**

Arnelyn M. Torres

*Department of General Studies, Hanseo University, South Korea  
lynnnetorres@gmail.com*

### **Abstract**

*Culinary tourism is a new niche market that is gaining ground in Korea. Food is one of the top reasons why tourists visit Korea. However, they are reluctant to eat local food when the written menu is in the host country's language. There are several apprehensions for this. First, they lack the familiarity with the food ingredients and the way of ordering it. Second, tourists are afraid to enter an eating establishment because they might be cheated about the price and overcharged. Lastly, if they do not know what is on the menu, the food might be culturally unacceptable. This paper proposed an electronic menu and ordering system that intends to provide an efficient and effective customer-wait staff communication, an ideal tool to provide exceptional customer service in restaurants. The use of interactive menu and ordering system application is expected to overcome the challenges and fill the communication gap between the customer and waitstaff. The features of the menu are anticipated to give a vivid image of the dish, enlighten the customers about their order, ingredients, food allergens, grades of spiciness and price. The well-informed customer can now easily choose and decide for his order based on the information he had seen from both text and photos. The orders can be quickly sent to the kitchen through a touch screen or a smartphone and prepared fast for immediate customer indulgence. The application system expects to encourage more customers, repeat business, promotion of Korean cuisine and increase restaurant sales.*

**Keywords:** *menu, customer service, culinary tourism, communication gap*

### **1. Introduction**

One of the main implicit factors that tourists consider in choosing [1] the destination is food. In November 2000, an international conference on cuisine and tourism is held in Cyprus. The majority of papers mentioned that local meals play a leading role in impressing tourists and increase the attraction of a region [2, 3].

The menu is the geographical map that guides the customer through the fare offered by the establishment. Like the map, it is of greater importance as a guide through the culinary territory to outsiders, such as tourists [4]. Besides, it is the principal means of mediation between establishment's offerings and prospective customers [4].

In some Asian countries like South Korea, tourists' avoid local culinary establishment, even they desire to visit them. There are several reasons why tourists are reluctant to try local food. First, menus written in Hangul are hard to read, and local dishes are difficult to identify. Second, they are unfamiliar with the ingredients and names on the list. Third, most of the waitstaff lack the competence to interact with foreign tourists. These reasons identified classified as communication gaps.

The advancement in information and communication technology (ICT) has significantly influenced the business transactions [4][6]. The use of an electronic interactive food and beverage menu and ordering system can improve the restaurant business in the hospitality industry. The automation of the menu items and ordering system are expected to provide a vivid image and detailed information about product offerings of the restaurant. Also, it will facilitate speed ordering thereby resulting fast, accurate and exceptional service that are expected to satisfy the customer. On the profitability side, it is anticipated to increase sales.

The use of interactive menu and ordering system can overcome the challenges and meet the communication gap between the customers and wait staff. The features of the menu are expected to give a vivid image of the dish, enlighten the customers about their order, ingredients, food allergens, grades of spiciness and price.

This paper will begin by discussing the contribution of tourism especially food expenditure to the economic development of the country. The importance of understanding the menu from the foreign tourists view. Why tourists are reluctant to try local food. The foreign tourists profile in South Korea will be presented. The implications of satisfactory service in traditional restaurants will be included. Finally, a proposed menu and ordering application system, and its features will be discussed.

## **2. Review of Related Literature**

### **2.1. Tourism's Economic Impact in South Korea**

Travel & Tourism is an important economic activity in most countries around the world. It generated US\$7.6 trillion (10% of global GDP) and 277 million jobs (1 in 11 jobs) in 2014 [7]. Recent years have seen Travel & Tourism growing at a faster rate than both the wider economy and other significant sectors such as automotive, financial services and health care. International tourist arrivals surged, reaching nearly 1.14 billion and visitor spending more than matched that growth. Visitors from emerging economies now represent a 46% share of these international arrivals (up from 38% in 2000) [7], proving the growth and increased opportunities for travel from those in these new markets.

Travel & Tourism expansion is forecast to continue at a stronger rate with the total contribution to GDP expected to increase by 3.7% in the next coming years [7]. New destinations and investment opportunities will also continue to emerge as tourism becomes increasingly affordable across the developing world [7]. This growth will require countries to adopt a concerted and coordinated approach to talent planning and development between their industry, governments, and educational institutions to ensure they fulfill their potential in the years ahead.

In South Korea, the direct contribution of Travel & Tourism to GDP in 2014 was KRW 30,046.7 billion (2.0% of GDP) [7]. The tourism industry reflects the economic activity generated by industries such as hotels, travel agents, airlines and other passenger transportation services. It also includes, for example, the operations of the restaurant and leisure industries directly supported. The total contribution of travel & tourism includes its wider impacts (*i.e.*, the indirect and induced impacts) on the economy. The indirect contribution includes the GDP and jobs supported by the tourism industry, government, and other businesses. Travel and tourism investment spending is an important aspect of both current and future activity that includes investment activity such as the purchase of new aircraft and construction of new hotels. The collective government spending, which helps travel and tourism industry in many different ways such as tourism marketing and promotion, aviation, administration, security services, resort area security services, resort area sanitation

services, *etc.* Domestic purchases of goods and services by the sectors dealing directly with tourists such as purchases of food and cleaning services by hotels, fuel and catering services by airlines, and IT services by travel agents [8].

**Table 1. 2014 Travel and Tourism Economic Contribution to South Korea and 2015 Projection**

## South Korea

### 2015 ANNUAL RESEARCH: KEY FACTS<sup>1</sup>

#### **GDP: DIRECT CONTRIBUTION**

The direct contribution of Travel & Tourism to GDP was KRW30,046.7bn (2.0% of total GDP) in 2014, and is forecast to rise by 3.5% in 2015, and to rise by 2.9% pa, from 2015-2025, to KRW41,467.6bn (2.2% of total GDP) in 2025.

#### **GDP: TOTAL CONTRIBUTION**

The total contribution of Travel & Tourism to GDP was KRW85,944.9bn (5.8% of GDP) in 2014, and is forecast to rise by 4.5% in 2015, and to rise by 2.5% pa to KRW114,457.0bn (6.0% of GDP) in 2025.

#### **EMPLOYMENT: DIRECT CONTRIBUTION**

In 2014 Travel & Tourism directly supported 626,500 jobs (2.4% of total employment). This is expected to rise by 2.0% in 2015 and rise by 1.1% pa to 713,000 jobs (2.9% of total employment) in 2025.

#### **EMPLOYMENT: TOTAL CONTRIBUTION**

In 2014, the total contribution of Travel & Tourism to employment, including jobs indirectly supported by the industry, was 6.3% of total employment (1,616,000 jobs). This is expected to rise by 2.4% in 2015 to 1,654,000 jobs and rise by 0.4% pa to 1,716,000 jobs in 2025 (6.9% of total).

#### **VISITOR EXPORTS**

Visitor exports generated KRW23,600.7bn (3.1% of total exports) in 2014. This is forecast to grow by 1.5% in 2015, and grow by 3.4% pa, from 2015-2025, to KRW33,379.4bn in 2025 (2.7% of total).

#### **INVESTMENT**

Travel & Tourism investment in 2014 was KRW10,145.5bn, or 2.3% of total investment. It should rise by 6.5% in 2015, and rise by 2.8% pa over the next ten years to KRW14,281.5bn in 2025 (2.2% of total).

*Source: 2015 World Travel & Tourism Council*

## 2.2. Culinary Tourism in Korea

Culinary tourism is a new niche market that is gaining ground in Korea. A report conducted by the Korea Tourism Organization (KTO) in 2007, 41.7% of tourists considered food as one of the top reasons to visit Korea. In 2009, this figure rose to 49.2 percent. This information indicates that more travelers are becoming aware of Korean food and it is becoming one of the attractions for visitors to come to Korea [9].

Korea has made efforts in the past to use food as part of the tourism experience. Experimental culinary tours like agricultural tourism, traditional restaurant dining appreciation, fish market and tea tours have been created to give insights into the culture of Korea [10].

Choi (2012)[10] argued that Korean food has a great potential since the current world trend in food consumption is healthy cuisine. Korean food or locally known as “*Hansik*” is considered slow food, a cuisine well suited to health and well being because it is mostly based on vegetables grown locally and aged and fermented sauces [11].

Several Korean cuisines have received positive assessments from foreign media. One of the world's top five healthiest foods in the world that was recognized by a health magazine in the United States is “*kimchi*” (spicy fermented cabbage). Another popular food, “*bibimbap*” (rice topped with mixed vegetables and meat) won the prestigious Mercury Awards from International Travel Catering Association in 1998. The same dish received the top prize from

the International Catering Award given by Singapore Airlines in 2001. In 2006, The New York Times Magazine included 52 Korean food-related articles as healthy food [8]. As such, the perception of Korean food from an international perspective is very promising. However, traditional restaurants based in Korea are struggling with customer-service issues.

### 2.3. Foreign Tourist Profile

In 2012, 11.1 million foreign tourists visited South Korea making it the 20th most visited country in the world, and the 6th most visited in Asia [9]. Most tourists come from Japan, China, Taiwan and Hong Kong together accounts for roughly 75% of the total number of international visitors. In 2014, the top 10 foreign visitors were from China, Japan, United States, Taiwan, Hong Kong, Thailand, Malaysia, Singapore, Russia, and Philippines [9].

**Table 2. Korea Inbound Tourist**

2014 South Korea's Top 10 Foreign Visitors			
1	China	6	Thailand
2	Japan	7	Malaysia
3	United States	8	Singapore
4	Taiwan	9	Russia
5	Hong Kong	10	Philippines

The Visit Korea Committee conducted a survey to foreign tourist last October 2014. According to the result, 92% of the respondents were satisfied with their trip to Seoul or Korea. Foreign tourists said that 91% of them were willing to revisit Korea. In addition to the survey result most popular reasons to return to Korea were shopping (37%), accessibility (23%), local sightseeing (23%) and hospitality (11%) [11].

The Korea Culture and Tourism Institute conducted a survey in 2014 about the food preference of foreign tourists. According to the result, tourists loved *bibimbap* the most at around 35%, followed by *bulgogi* at 33%. *Samgyeopsal*, grilled pork belly, took the third spot at 30%. The survey concluded that foreign tourists' favorite food differed according to their nationality. While Japanese visitors loved *galbi* or ribs, and Chinese preferred *samgyeopsal*, Westerners from European countries or the United States enjoyed *bulgogi* the most, the survey revealed [12].

### 2.4. Information and Communication Technology (ICT)

Since the year 2000, there has been a significant growth in the Information and Communication Technology for Development in South Korea. The country has achieved the status of a world-leading ICT capability. There has been a great enthusiasm about the potential contribution of ICT to development across many development organizations [13].

The tourism and hospitality industry especially the restaurant sector are gaining a rising importance worldwide as they have been supporting the economy for decades [14]. The emergence of computers pioneered the automation of the food ordering system. The waitstaff after taking the order would enter the items ordered in the system. A monitor displays the

information in the kitchen. The kitchen staff would then prepare the dishes accordingly and on completion would notify the wait staff that collected and delivered the dishes to their respective tables.

With the advancement in the computer and communication technology, various systems were launched in the market for the purpose of automation of the food ordering system. Some of the existing systems are QORDER, Personal Digital Assistant (PDA), and Multi-touch Technology [14].

QORDER is a system wherein all orders were taken on a handheld device called the QORDER. It was a portable android device where the waiter enters order information on the touch screen and then sends it to the kitchen [14] for processing. Simultaneously, the POS system receives the sales information for later billing.

Personal Digital Assistant (PDA) system was the customers or waiters key in ordering process. This system is reliable for easy communication between the PDA and server due to wireless technology. However, this system has drawbacks like it do not provide real feedback from customers. Menu cards were unattractive and uninformative, as it did not support images. [12].

Multi-touch technology is an enhancement to the existing touch technology where users are allowed to control and perform operations simultaneously on the electronic visual displays using multiple fingers or gesture inputs [14]. The disadvantages of this system are, it is expensive, and has a shorter lifespan.

### **3. Challenges and Limitations**

#### **3.1. Foreign Visitors' Perception of Korean Cuisine**

According to the World Economic Forum's Travel and Tourism Competitiveness Report (2011), Korea ranked 32nd among 139 countries [15]. The reasons behind Korea's relatively poor position in the ranking may arguably be partly related to food and food culture.

In 2014, Korea Culture and Tourism Institute to find out foreign visitors reaction about their Korean cuisine food experience conducted a survey. 810 foreign visitors participated in the survey. They came from China (350), Japan (120), Southeast Asia (190), USA (59) Europe (43) and 41 others that are unidentified. According to the survey's result, foreigners graded Korean cuisine at 74.4 out of 100. By region, Americans gave the highest score followed by Japanese then Europeans and at the lowest rate Japanese and Chinese [12].

An Italian representative of the tourism conference organized by Organization for Economic Development Cooperation (OECD), Cappati discussed in his conference paper "Educating tourist in the art of gastronomy and culture in Italy his dining and tasting experiences during the conference held in Jeonju, South Korea. He mentioned, "If the guides and interpreters had provided a more detailed illustration of the dishes presented and of the service, Korea would have achieved its purpose of introducing its cuisine to the world." Some of his quotes about the food served in the conferenced "*The new culinary knowledge about the dish presented whets cultural appetites.*" "*To talk about cooking is a prelude to eating the dish.*" To accept usual flavors in the morning requires friendly assistance - an interpretation of gastronomy that translates one system of food into another." [17] These quotes are positive reflections that Korea food tourism lacks the necessary communication to talk about it and its food culture.

When choosing a restaurant during their travels, foreign visitors considered the taste as the most important factor, at 81 percent [12]. Essential in the decision-making are the freshness of ingredients, menu diversity, and service quality.

It is fundamentally necessary to develop an appropriate system for offering/order taking and serving food in Korean traditional restaurants. Educating the customers how to eat food, informing about ingredients and methods of cooking, and presenting the menu should be given great emphasis. The main focus point for the development of menu presentation and order taking systems is customer care management.

### 3.2. Restaurant Menu

Restaurants serve a significant and vital role in tourism. The menu is the principal means of mediation between establishment's offerings and prospective customers. In some countries, tourists are reluctant to eat local food when the written menu is in the host country's language. There are several reasons for this. First, they lack the familiarity with the food ingredients and the way of ordering it. Another reason, why tourists are afraid to enter an eating establishment is that they might be cheated about the price and might especially overcharge. Lastly, if they do not know what is on the menu, the food might be culturally unacceptable such as reptile, pork, dog, or cat [4].

As Marcel Proust once said, "*The real voyage of discovery consists not in seeking new landscapes but in having new eyes*" (1923) [4]. Most people travel with this idea of discovery. Selecting great restaurants with delicious cuisine is important. However, reading the menu and identifying food to order is quite challenging [4].

The usual procedure used for food ordering in restaurants is a manual process. In some Korean traditional restaurants menu folder or card is given to customer/s. Most often the menu is written in Hangul. A food server usually a member of the family that owns the place approaches the table to get the order. When the customer does not speak Hangul, it will be unfortunate because he/she has to make a wild guess on what to eat. Often than not, it leads the customers to disappointment. Other food establishments would have a menu slip and a pen on top of each table. The customer/s should tick a box to signify their order and give the menu slip to the wait staff. The wait staff after receiving the desired items would transfer order to the kitchen by walking in there or through a computerized billing system. The food will be cooked and then serve to the customer/s. The final step would be preparing the bill. This process is very disappointing to customer/s who cannot read or write Hangul. Also, it is prone to human errors when taking orders, and delays are possible. Because of this, customers ended up with an unsatisfactory experience.

### 3.3. Communication Gap

Most of the Korean restaurants are owned and operated by the family members. While some employ Korean nationals who are hardworking and speaks Hangul fluently. However, there is one drawback: lack of competence to speak another language. Tourists lack the proficiency in reading the menu in Hangul. Neither they can comprehend the explanation of the wait staff about food offerings. As mentioned in one survey, the most inconvenient things for the respondents is communication. Tourists' cited inconvenience as the top 1 reason [12].

There are a growing number of books available to help foodservice staff to combat this situation. Several books are available to teach and train all levels of restaurant staff in the English language. Some reference books available are English for Restaurant Workers, Essential Restaurant English Book 1, Professional Spoken English for Hotel & Restaurant Workers, and Practical English Conversation for Hotel and Restaurant.

On the contrary, learning a new language takes time especially if the learner does not have enough time to study and practice. A proposed menu and ordering systems will be discussed in full detail to fill the gap between foreign customers and local wait staff.

## 4. Application as a Solution

### 4.1. Electronic Menu Features

This paper proposes an electronic menu and ordering system that intends to provide an efficient and effective customer-wait staff communication, an ideal tool to provide exceptional customer service in restaurants. Customers can browse menu items and other details about the dish. Also, they can quickly enter an order at tableside and send that information to the cashier and kitchen from a familiar touch-screen interface. It is a wireless food ordering system platform that can be installed on mobile devices such as smartphone and tablets, and it uses standard WiFi networking technology, this allows a single wireless router to host multiple handheld devices. For larger or multi-room facilities wireless antennas can provide optimal coverage to the entire area [17]. The system design is based on two most common used systems the using Android OS - an open source, Linux-based operating system and the iOS - an operating system used for Apple mobile devices.

The menu and ordering systems provide the following features. It combines wireless technology and mobile operating system (Android OS and iOS) to automate the food ordering process. It allows the customer to choose the language to use [18] *e.g.*, English, Chinese, and Japanese. A detailed description of the dish, price, serving size, nutritional contents, main ingredients, the degree of spiciness, and possible food allergens will be added as additional information. Visual features like photos of dishes and videos with suggested way on how to enjoy eating Korean traditional food are included.

#### Menu and Food Ordering System Application Features



- Wireless food ordering system
- Language options for customers
- Detailed description of the dish
- Price list
- Serving size
- Nutritional contents
- Main ingredients
- Degree of spiciness
- Possible food allergens
- Photos of food
- Videos on how to eat and enjoy Korean traditional food

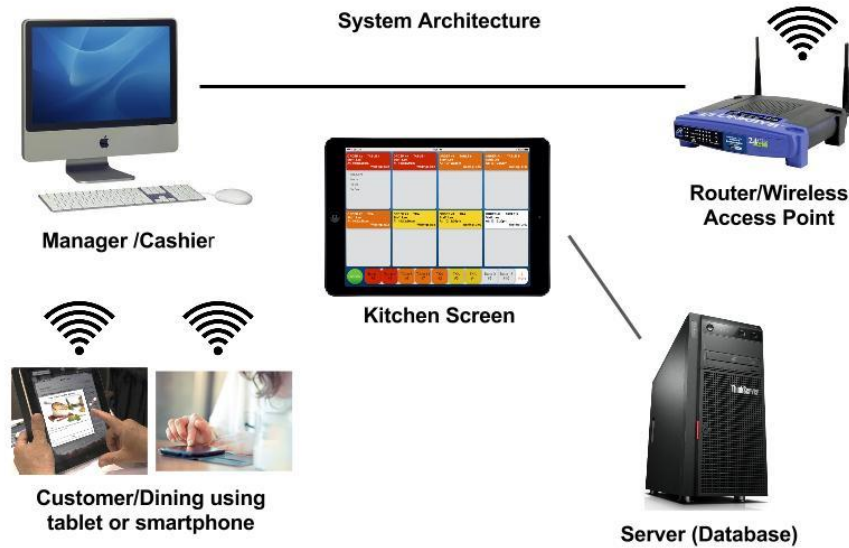
**Figure 4.1. Menu and Food Ordering System Application Features**

### 4.2. Touch and Order Restaurant System

The system architecture of touch and order system will cover the three most important areas of the restaurant. These are the dining area where order taking happens; the kitchen where food ordered go through for production; and billing where menu orders are computed for customer settlement. The main components of this system are: [a] The Android application on the tablets at the tables. The tablets will be provided to customers at their table, allowing them to view the menu and details related to it, and order immediately from their respective tables. Another choice would be, use of customer's own smartphone to access electronic menu of the restaurant. [b] The restaurant owner can customize menu or keep track of the order through its own computer and a server application. [c] A central database for



restaurant-owner to store updated information, customer order details and upload menu of the day, offers and promotions. [d] To connect the three areas of the restaurant is a wireless connectivity.



**Figure 4.2. System Architecture**

## 5. Conclusion

Local meals play a leading role in impressing tourists and increase the attraction of a region. In South Korea where foreign tourists are growing tremendously due to the attraction to Korean culture mainly traditional food, foreign tourists are reluctant to try local food. There are several reasons for their apprehension. First, menus written in Hangul are hard to read, and local dishes are difficult to identify. Another reason is customers are unfamiliar with the ingredients and names on the list. Lastly, most of the wait staff lacks the competence to interact with foreign tourists.

The tourists' apprehension to try local dishes decreases the potential economic gain for the tourism industry in the restaurant sector. On the other hand, it brings negative impressions or feedbacks about the food and dining experience. Also, this becomes a negative word-of-mouth advertisement to potential tourists. Eventually, this will lead to a decline in foreign tourists arrival.

South Korea is known for its advancement in the information and communication technology. This strength in ICT can be the solution to the communication issues between the customers and waitstaff. The creation of menu and ordering system application can improve the business in the food industry. The automation of the menu items and ordering system are expected to provide a vivid image and detailed information about product offerings. On the profitability side, it is anticipated to increase restaurant sales.

The use of interactive menu and ordering system application is expected to overcome the challenges and fill the communication gap between the customer and waitstaff. The features of the menu are anticipated to give a vivid image of the dish, enlighten the customers about their order, ingredients, food allergens, grades of spiciness and price. The well-informed customer can choose and decide for his order based on the information he sees from both text



and photos. The orders can be quickly sent to the kitchen through a touch screen and prepared fast for immediate customer indulgence. An enjoyable dining experience is expected to become a word-of-mouth advertisement leading to more customers, repeat business, promotion of Korean cuisine and increase restaurant sales.

## References

- [1] S. Yiamjanya, "International Tourists' Travel Motivation by Push-Pull Factors and the Decision Making for Selecting Thailand as Destination Choice", Retrieved from <http://waset.org/publications/9998199/international-tourists-travel-motivation-b>, (2014).
- [2] P. Skinner, "Quality Food/Wine Tourism: Compatibility with Local Culinary Tradition", Paper Presented at the Local Food and Tourism International Conference, Larnaka, Cyprus. Madrid: World Tourism Organization, (2000).
- [3] J. Van Westering, Y. Poria and N. Liapis, "Using Food, and Food History as a Resource for Tourism", Paper Presented at the Local Food and Tourism International Conference, Larnaka, Cyprus. Madrid: World Tourism Organization, (2000).
- [4] E. Cohen and N. Avila, "Food in Tourism: Attraction and Impediment", *Annals of Tourism Research*, vol. 31, no. 4, (2004), pp. 775-778.
- [5] IEEE. (n.d.). Retrieved from [http://www.ieee.org/conferences\\_events/conferences/conferencedetails/index.html?](http://www.ieee.org/conferences_events/conferences/conferencedetails/index.html?)
- [6] K. Kamarudin, "The Application of Wireless Food Ordering System", *MASAUM Journal of Computing*, vol. 1, (2009), pp. 178-184.
- [7] Travel and Tourism. Economic Impact 2015 South Korea <https://www.wttc.org/-/media/files/reports/economic%20impact%20research/countries%202015/southkorea2015.pdf>.
- [8] S. Dani, "Middle East Retail: Fostering Growth despite Challenges", Retrieved from <http://www.irjournals.org/ijmsr/Apr2014/9.pdf>, (2014).
- [9] Official Site of Korea Tourism Org.: The Story of Hansik. (n.d.), Retrieved from [http://english.visitkorea.or.kr/enu/CU/CU\\_EN\\_8\\_1\\_7\\_1.jsp](http://english.visitkorea.or.kr/enu/CU/CU_EN_8_1_7_1.jsp).
- [10] J. M. Choi and D. Gray, "Food and the Tourism Experience: The OECD-Korea Workshop", *OECD Studies on Tourism*, OECD Publishing, (2012).
- [11] Tourism in South Korea - Wikipedia, the free encyclopedia. (n.d.). Retrieved from [https://en.wikipedia.org/wiki/Tourism\\_in\\_South\\_Korea](https://en.wikipedia.org/wiki/Tourism_in_South_Korea).
- [12] Tourists rate Korean food as average: 2014 Survey | The Straits ...Retrieved from <http://www.soshiok.com/content/tourists-rate-korean-food-average-survey>.
- [13] M. Daniel and V. Yafat, "Computers in Catering: Digital Dining", *International Journal of Advanced Research in Computer and ...* Retrieved from <http://www.ijarccce.com/upload/2015/may-15/IJARCCCE%204.pdf>, (2014).
- [14] R. Shinde, "Design and Implementation of Digital dining in Restaurants using Android (n.d.)", Retrieved from <http://www.ijarccms.com/docs/paper/volume2/issue1/V2I1-0113.pdf>.
- [15] J. Blanke and T. Chiesa, "World Economic Forum. Beyond the Downturn", Retrieved from [http://www3.weforum.org/docs/WEF\\_TravelTourismCompetitiveness\\_Report\\_2011.pdf](http://www3.weforum.org/docs/WEF_TravelTourismCompetitiveness_Report_2011.pdf), (2011).
- [16] A. Capatti, "Food and the Tourism Experience: The OECD-Korea Workshop", *OECD Studies on Tourism*, OECD Publishing, (2012).
- [17] Wireless Ordering for Restaurant POS | Microworks. (n.d.). Retrieved from <http://www.microworks.com/products/Handheld-Ordering.htm>.
- [18] The International Entrepreneur – Getting Started With ... (n.d.). Retrieved from <http://www.the-international-entrepreneur.com/the-international-entrepreneur-get>.

