IS3220: Service Science AY 2012/13 – Semester 2

DINEOUT!

A Comprehensive Service Solution for the Modern Restaurant

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PREARED FOR PROFESSOR. LIAN

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Introduction

Industry background

The restaurant industry is a classic service industry, where the customer experience is the primary focus of the business. It is also an industry that has not sprinted forward to embrace technological advances, since the personalized and high-touch nature of its service encourages more effort in training staff to handle any type of situation.

The restaurant industry is also a cornerstone of the economy in many countries. The global restaurants sector value stands at 1600 billion in 2011, with increasing growth since the market crash of 2009 (MarketLine, 2012). Analysts have forecasted growth of 5% year-on-year for the next five years, indicating that the industry is steadily growing and expanding.

Food is a necessity, and dining out is nowadays considered an affordable luxury by many people in developed countries. Consumer palates have become more sophisticated, and their knowledge of food has increased by leaps and bounds. Dining out is a growing trend, and the widespread accessibility of information on the internet has led to consumers making better informed decisions of where to eat.

The number of transactions within the industry is estimated to be 700 billion in 2011 (MarketLine, 2012). A transaction is counted as one person, going into a restaurant, ordering a meal, and leaving. If a party of four visits the restaurant, it's counted as four transactions. If we transformed the customer experience for just 1% of the global market, it would mean changing seven billion customer experiences, which is an amazingly exciting prospect.

Restaurants, the service system

Restaurants can safely be classified as a service system according to the four principles of inseparability, heterogeneity, intangibility and perishability. Restaurant service cannot be inventoried – the food and service is created and consumed at the same time. There is a huge range of service offerings, and every customer will have a unique opinion of the service experience. Reputation and trust are large parts of what draws customers into a restaurant. Unused service capacity cannot be saved for later use, meaning that if there are 5 empty tables on a Friday night, those are lost opportunities that cannot be carried over to the next day.

Stakeholders

We have the customers, the employees and the government.

Customers are critical to restaurants because they are the source of revenue. In order to encourage repeat visits, the first impression must be amazing. Past studies propose that customers judge the quality of service performance in fine dining restaurants by comparing expectations (Parasuraman, Zeithaml and Berry, 1985). If their expectations are not met, these customers are less likely to recommend the restaurant or become regulars. The highly competitive industry means that there are many other restaurants that provide similar services, and the cost of switching for the customer is negligible.

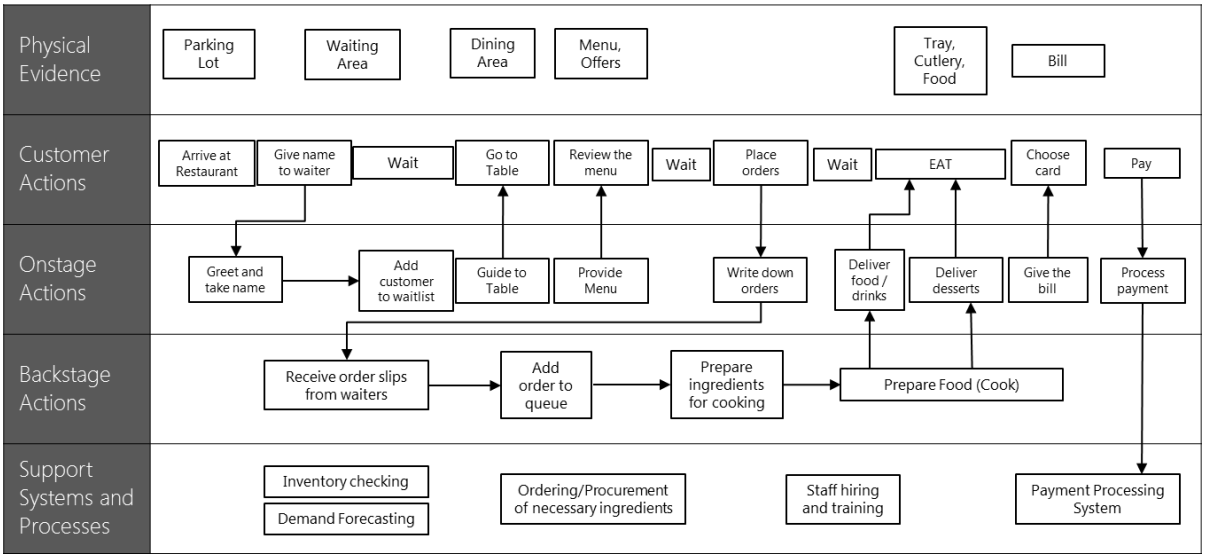
Restaurant employees are oftentimes the first touch point of the customer in his or her service encounter, and are the first opportunity the restaurant has to manage customer expectations of its service. According to the service-profit chain proposed by Heskett, happy employees lead to excellent customer satisfaction and high profitability (Heskett et al, 1994). Chefs and backroom staff are concerned with the food produced from the kitchen, and the reputation of the restaurant's food is directly connected to their personal pride and reputation.

The government is the third stakeholder in the restaurant, and is mainly concerned with food

safety and regulation. It has to enforce standards to avoid public health problems. There are many countries where the restaurant industry is also a key component of the economy, oftentimes drivers of tourism.

Challenges & Business Goals

Service Blueprint of existing service



Issues with Existing service

In the last few years numerous advances have been made to improve service levels, food quality, food presentation and ambience in the F&B industry yet till date the reservation process followed is a great source of inconvenience for most customers. At present there is no provision for consumers to access a centralized source of information where they may search for restaurants or cafes that suit their tastes, check its availability and make a reservation online. Consumers therefore have to individually call numerous restaurants to check for availability and make a booking. Walk in customers too often find themselves waiting in long queues to get a table; if there was a means to check the availability in real time, this issue could be overcome.

At present another challenge with the restaurant industry is that customers with special dietary requirements (such as Halal meats, Kosher foods) have no smart solution to check restaurant menus and decide if it suits their requirements. This becomes an even more complex challenge for customers who are allergic to specific food ingredients, as often restaurant staff are untrained to handle such requests.

Challenges also exist between the interaction of front stage and back stage employees. Building on the reference to the customers with food allergies, a commonly recurring issue is that service staff often fail to communicate order specific details to chefs in the kitchen. Chefs must prepare orders according to current demand and presently rely on the experience and intuition of the head chef when procuring materials and making preparations in advance. Oftentimes they are caught off guard and this results in wastage of materials, or leading them to be under-prepared to meet demand of certain menu items.

Business Drivers

*Urbanization***:** Urbanization of lifestyles has resulted in more people looking to dine out and take away food rather than preparing food at home. Saving time is now given priority over cost and healthiness of meals, hence the urbanization of lifestyles will continue to drive growth and demand better service offerings from the F&B industry. In a survey conducted by Deloitte Consulting LLP among top executives of the F&B industry, 66% listed 'Convenience' as the key consumer trend for the year 2013.

Higher Disposable Income: Consumers are willing to spend more on the convenience and luxury of eating out. This also results in people spending a larger share of their budget in the middle, and up-market space of the F&B industry.

Digital Media Presence: With the present trend of check-ins on mobile apps, sharing photos and reviews on social media networks, consumers now have wider access to information about others' dining experiences. Restaurant owners and managers have to leverage on this new media to build and sustain a positive brand image of their outlets; digital media can act like a double-edged sword as bad reviews can have a greater negative impact on such a medium than compared to traditional word of mouth. In a recent KPMG survey of senior executives in the F&B industry 63% agreed that social media does make a significant impact on their business and is presently the most effective marketing channel (KPMG, 2012).

Proposed Solution

Description

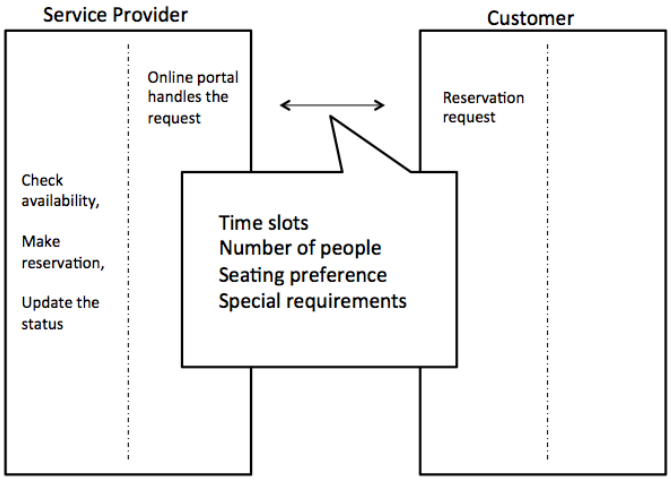
In order to address the existing challenges identified in restaurant industry and provide benefits to the various stakeholders involved, we propose the following service innovation: *DineOut!*. By making use of IT technology, the system is designed to provide a seamless, hassle-free dining experience to consumers, as well as help service providers improve their performance. In general, the proposed service innovation is a service system that provides a platform for consumers to search for a restaurant, make online reservation, browse online real-time menu and place orders online. Consumers are able to access *DineOut!* via web browsers or mobile devices.

Services Offered

DineOut! provides various services to stakeholders. In this section, we will demonstrate three major services provided by *DineOut!*

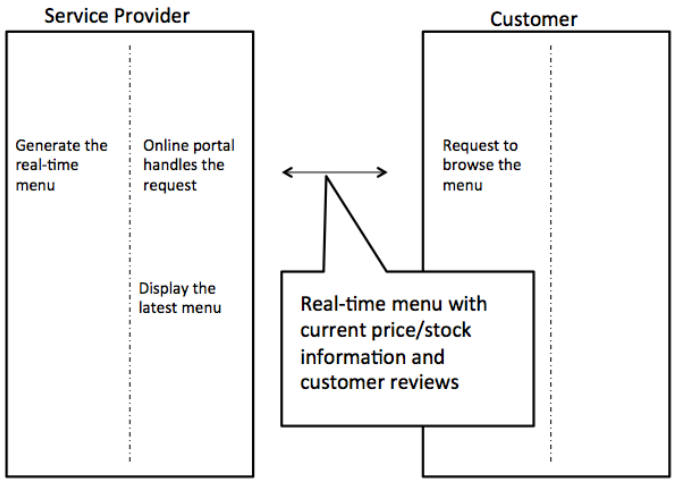
Online Reservation

DineOut! allows consumers to make reservations for selected restaurants online. Information including the number of people, selected time slots and seating preference will be sent to an online portal. Other special requirements such as baby seats or seats for handicapped people can be made as well. The system will check availability for selected seats, make reservation and update the status of the system, e.g. the number of remaining seats.



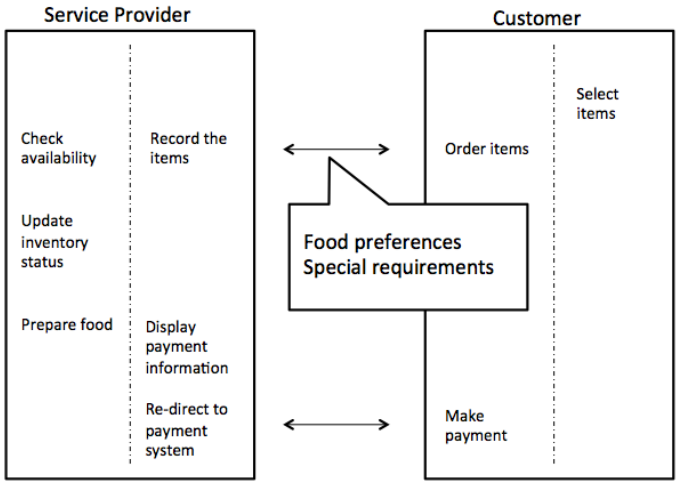
Online Real-time Menu

Online real-time menu provides consumers with the latest food information. The consumer can access the menu from website or mobile application. The system will dynamically generate the latest menu based on the current price and inventory information. The food type (Muslim, Chinese, Western, etc.) and basic ingredients information of a particular dish will also be displayed. A customer is also able to leave a review and view others' reviews of a particular dish.



Online Ordering

When the customer is browsing the online real-time menu, he/she can also order food at the same time. The system provides customization service to customer after he/she selects the food. For example, for those dishes with chilies, the customer can specify the amount of chilies they want. With reference to the ingredient information displayed on the menu, the customer with allergic reaction to certain ingredients, such as peanut, can make special request to remove the ingredients from the food. After the order is submitted, the system will check availability, update inventory status and inform the kitchen to prepare the food. The customer will be then directed to a payment system. Partial payment is required as a deposit.



Other Services

Besides the three major services discussed above, *DineOut!* also provides other services to consumers and service providers. For example, location-based search service allows consumer to find the nearest restaurant. The review system integrated with social networks allows consumers to share their dining experience on Facebook, Instagram or Twitter.

Values Offered

DineOut! offers value to all the stakeholders involved. In this section, we will focus on two key stakeholders, which are the service provider and the consumer, and explore the values and benefits they receive.

Service Provider

Improved Performance

DineOut! is able to help service providers improve the performance of their business process. We select the capacity and turnover rate of the system as performance metrics. Since the online portal of the *DineOut!* is able to handle multiple requests simultaneously, the capacity of the system is significantly increased compared to legacy systems where one employee handles all the requests through one phone line. Furthermore, since the orders come before the customer arrives, the food can be prepared in advance. Thus the time each customer spends in the restaurant can be reduced significantly, which will increase the turnover rate of the system. With higher capacity and turnover rate, the restaurant will be able to generate higher revenue.

Improved Cost Efficiency

By adopting the proposed service innovation, we believe that the service providers are able to improve the cost efficiency of their business process. Although a one-time training and installation cost is incurred, the labor cost can be reduced in the long run. Since the order information is available before the customer arrives, the demand for certain dish/material is

predictable, and the restaurant incurs less opportunity costs caused by under-preparing and out-of-pocket costs due to over-preparing. Furthermore, the costs associated with errors during service encounter such as wrong orders caused by poor communication between kitchen and front stage workers, can be reduced. By also automating the ordering and reservation process, *DineOut!* helps restaurants reduce overall labor costs as less waiters will be needed to take orders, and it will be a much faster process.

Consumer

Greater Convenience

DineOut! allows consumers to search for a particular restaurant, make reservation, browse menu and order food whenever they want, no matter where they are. The time they spend on the whole process is also reduced significantly. In the legacy system, a customer has to first find the phone number for the restaurant, dial the number and wait until the hotline is available. After customers arrive at the restaurant, they will probably spend another thirty minutes at the table waiting for their food to be served. *DineOut!* is able to greatly simplify the whole process, and the customer is able to sit down and enjoy their food. This is particularly attractive to those with a fast lifestyle or tight schedule.

Customized Service

The services provided by *DineOut!* are highly customizable. As we mentioned in the previous section, customers are able to specify their needs when selecting table or ordering food. This is particularly important to customers with dietary restrictions or allergies. In the legacy system, the waiter may not be able to provide accurate information on the ingredients inside a certain dish, which may cause serious problems. The online real-time menu in *DineOut!*, however, specifies the ingredients and food type of a certain dish.

Smarter Decision Making

DineOut! provides comprehensive information to customers. The availability information of tables and a certain dish is made available to customers before they come to the restaurant. Besides this, the online real-time menu is able to provide customer more than just pictures for illustration purpose only. The ingredients information, real-time pricing, food reviews, pictures and videos come together with the menu to help customers make more informed decisions.

Service Innovations

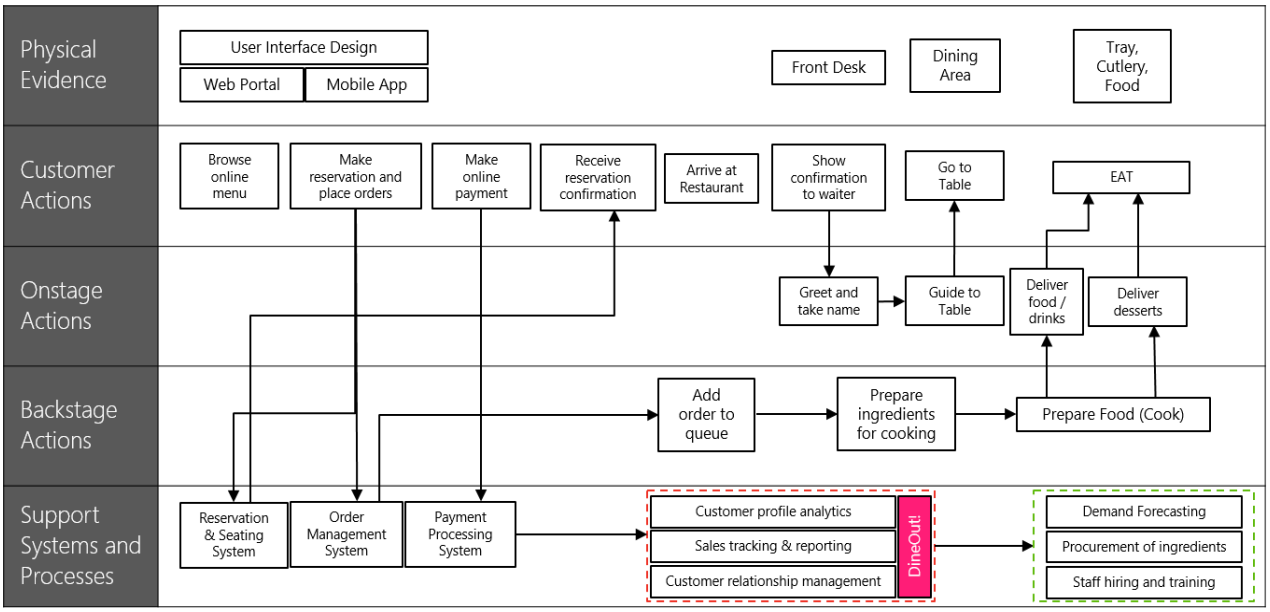


Figure 1 Service Blueprint

As *DineOut!* involves an automated self-service process, many of the on-stage actions have been replaced. The customer primarily interacts with our online web portal and mobile app to search for information, place their orders and make reservations. This mobile self-service system enables customers to make their reservations and place orders whenever and wherever they choose. They are no longer restricted by congested telephone hotlines that only operate during opening hours, and this improves the customer experience when making reservations. Our

system can handle multiple reservation requests simultaneously. In addition, as the new process is fully automated and computerized, the probability of human errors is greatly reduced. For the restaurants, this represents a great improvement in efficiency, and increase in profits. Customers are able to access all the menu and information online. They no longer need to be seated before making order decisions, thus eliminating the order-time bottleneck, and increasing the turnover rate.

Information Aggregation

DineOut! is in itself, an online marketplace. As such, we are able to provide "in the middle" services to help match the buyers (customers) to the sellers (restaurants). *DineOut!* provides information aggregation through an online menu system. Restaurants will upload information about their food and drinks, and customers can view the menus of all the participating restaurants in one place. This naturally helps the customers reduce search costs (Pereira 2005), and makes it more convenient for them to find new dishes and places to eat.

Supply Chain Innovations

Besides the reduction in labor costs, restaurants are also able to reduce the overall operating costs of their business, and maximize supply chain surplus. *DineOut!* allows customers to place orders during the reservation process. Restaurants will be able to know the orders well in advance, affording them greater flexibility in planning. By knowing how much food to prepare, and when the customer will arrive, the restaurant can engage in Just-in-Time preparation of the dishes. This reduces customer waiting time, while reducing food wastage costs.

We also recognize that it is often challenging for the restaurant managers to make accurate and informed decisions when it comes to planning of manpower and ordering of ingredients. Holding

a large inventory of ingredients is not the solution. The ingredients are perishable, and keeping them for long periods will affect their freshness and the quality of food prepared.

Being a marketplace provider, *DineOut!* is able to offer additional tools to facilitate the restaurant management in their planning decisions. Through the tracking of sales transactions and detailed analytics of individual item sales, we are able to provide monthly sales reports on the individual dishes sold by the restaurant. Based on a collection of these historical records, the restaurant management is thus able to leverage on the information to improve their demand forecasting and pricing strategies.

By better understanding their demand pattern, and having a more accurate demand forecast, restaurants will hence be able to minimize total inventory holding costs and ordering costs, and achieve their economic order quantity (Hax, 1984). We also encourage restaurants to make this demand information transparent to their upstream suppliers, in order to minimize the bullwhip effect, and maximize the overall supply chain surplus.

Personalization

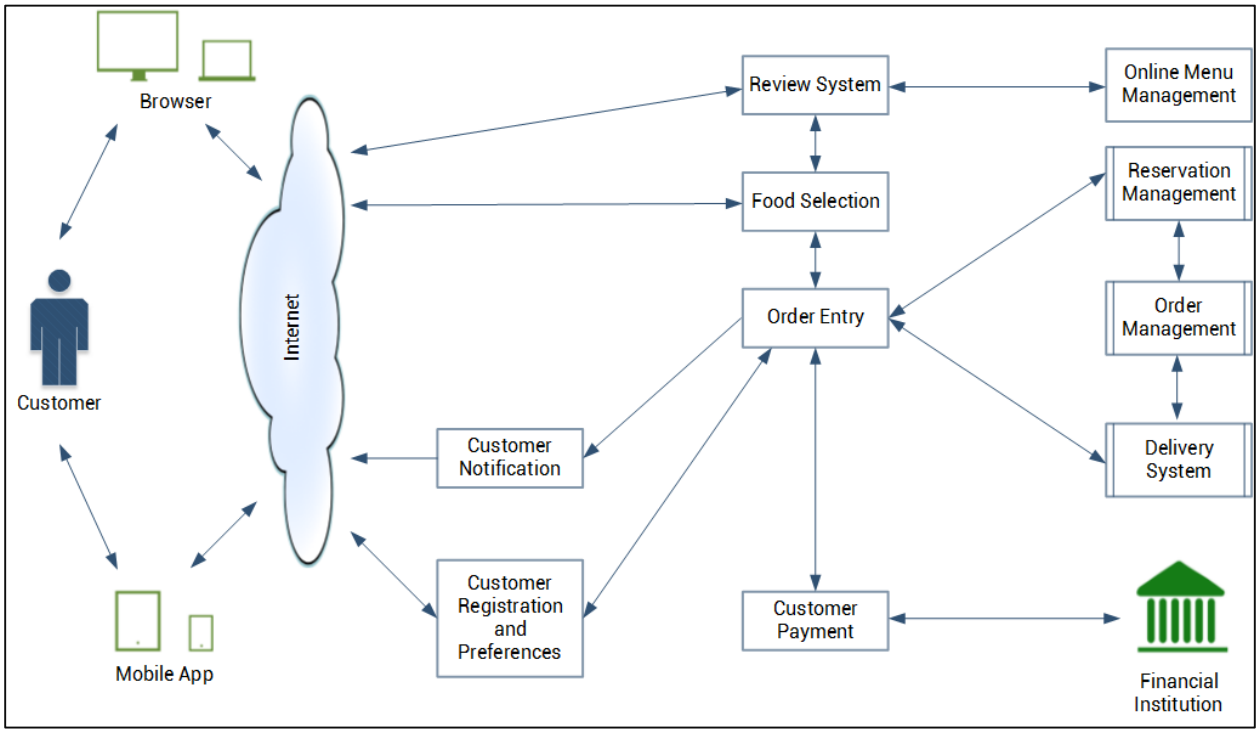
Leveraging on the online nature of the *DineOut!*, we are also able to provide greater personalization. For example, based on the customers' previous transactions and food reviews, we will be able to establish their food preferences. With this information, we are able to make food recommendations and generate contextual advertising that they may find useful.

For the restaurants, we will be able to provide detailed customer profile analytics. By analyzing the data from their past sales transactions, and extracting user information, we will be able to approximate the profile of the average customer that visits that particular restaurant. Using this comprehensive demographic and psychographic information, restaurant managers can thus make improvements to their marketing efforts to boost sales.

IT Architecture & Solution Design

Solution Overview Design

The Solution Overview Design illustrates the key aspects of our *DineOut!*.



DineOut! is accessible via internet browsers and mobile application. The application allows customers to register their names, age, preferences and other relevant personal information.

Customers can log in to the application and select foods from an online menu. They can optionally enter a review system, where they can learn more about the experiences of other customers. This information comes from internal online menu management. When the customer places an order, the system queries the in-house order management to check bookings availability and inventory. It also links to a customer payment application, allowing the customer to select from various payment options. The Order Entry application automatically accesses the customer's preferences and other profile information from the customer registration database to

complete the details of the order. Once the order is saved, the customer is notified electronically via e-mail or mobile app notification. The completed order is then filled in the order management.

Application Patterns

We have identified some IBM patterns that fit into our *DineOut!* solution and the selected application patterns below are suitable for how our application components and data within the Business pattern and Integration pattern interact.

Self-service business pattern is identified during Registration, Food Selection and Order Entry.

Self Service::Router – When customers perform food selection and place order in Order Entry. The order must be correctly routed to the order management either via the reservation management or delivery management and link to customer payment application.

Information Aggregation business pattern is applied to the Review System and Food Selection.

Information Aggregation::Federation variation – Information on the two applications come from internal Online Menu Management. The applications also require real-time data to show the current price and latest reviews.

The interaction between Customer Payment application and external Financial Institute displays Extended Enterprise business pattern.

Extended Enterprise::Exposed Serial Process - The customer payment application interact with the financial institution across the organization boundaries and use the payment processing service which is opened to external entities.

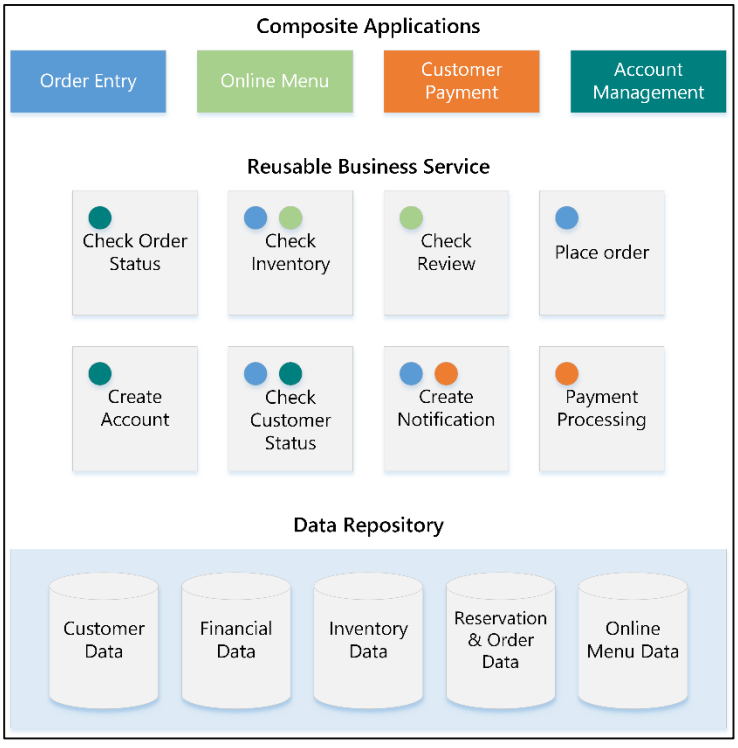
Access Integration::Web Single Sign-On - Provides seamless access to multiple applications with a single sign-on. Users can access their application portfolio easily and securely.

Access Integration::Distributed Rich Client - The application needs to deliver customer notification and application can operate in both online and offline mode.

Application Integration::Broker - The Food Selection and Order Entry functions need to integrate with, make request and route message to different functions and backend systems including Online Menu Management, Order Management, Customer Payment and Customer Notification.

Application Integration::Federation - The information content of the Online Menu Management are dynamic and real-time access by customers is essential.

Service Oriented Architecture



(Table form)

The composite applications layer orchestrates the services and functions to deliver high order application functionalities to the users. The composite applications such as order entry, online

menu, customer payment and account management embody the business processes and allow the processes to be managed.

The reusable business service layer provides functionality that operates on information. For example, the create notification function is used in the order entry application as well as customer payment application.

The data repository form the foundation from which data are drawn by the services and operate on.

Feasibility Analysis

Operational

DineOut! helps to decrease throughput time of processing one order and reduces the overall cycle time of serving the customer by automating many key processes. Enhanced information access allows for better co-ordination between back and front stage services, and allows for better planning and procurement of resources. Finally the solution will enable the business to benefit from revenue optimization through the dynamic pricing option.

On an operational front we are likely to see resistance to change from employees who are reluctant to get re-trained and learn how to use the new technology. *DineOut!* will be able to deliver its fullest potential only when there is a large pool of users along with a wide network of restaurants registered. In the initial stages of product launch it will be challenging to bring either party on-board in the early stages.

Technical

Our service will be built completely using existing technologies and frameworks available in the market and does not rely on the innovation or development of anything radically new. Hence

from a technical standpoint it is quite feasible to develop. It is to be noted however that cloud-based services are still at a state of infancy and numerous other applications that are deployed on public clouds (such as Amazon EC2) have experienced outages before. Integration of our service with POS terminals in restaurants may pose as a challenge at present there is no industry standard specification for software in such terminals.

Economic

A favorable economic climate in Asia and the growth outlook for the restaurant industry for the next five years show that the economic conditions are favorable. The only economic constraint to this solution is the financing required for the initial promotion and marketing efforts in order to overcome initial adoption issues described in the operational section.

Schedule

As the system is being developed for the first time and there is no direct competition in the near future, the time line of the system roll out does not face any pressures from any external factors. The modular architecture of the system can allow for concurrent development of the various components in order to shorten the product Go-To-Market time.

Conclusion

Overall, our team believes that the *DineOut!* offers the most comprehensive solution for the challenges faced by the restaurant and dining industry today. By making the process as seamless and efficient as possible, we are able to create greater convenience, freedom for customers. And for the restaurants, *DineOut!* helps to automate their operations, resulting in greater efficiency, responsiveness, and cost savings. It therefore leads to a win-win situation for both stakeholders.

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Appendices

SWOT Analysis