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ลูกค้าสัมพันธ์ในอุตสาหกรรมบริการโรงแรม

Application of Data Mining for Customer
Relationship Management in the Hotel Industry

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บทคัดย่อ

ในระยะเวลาไม่นานมานี้ ธุรกิจหลายประเภทได้นำเหมืองข้อมูลไปใช้อย่างกว้างขวาง อาทิ ศูนย์การค้า ห้างสรรพสินค้า และธนาคาร ด้วยวิธีการใช้เหมืองข้อมูลทำให้ธุรกิจสามารถดึงข้อมูลของลูกค้าที่ซ่อนอยู่ในฐานข้อมูลขนาดใหญ่กำหนดเป้าหมายและระบุกลุ่มลูกค้าที่มีคุณค่าได้ อย่างไรก็ตามเทคนิคนี้ยังไม่ค่อยได้นำมาใช้กับอุตสาหกรรมบริการโรงแรมเท่าใดนัก เพื่อแสวงหาความสัมพันธ์ทางธุรกิจในระยะยาวกับลูกค้าอุตสาหกรรมบริการโรงแรมต้องให้ความสำคัญกับการจัดการลูกค้าสัมพันธ์และถือปฏิบัติเป็นประเด็นสำคัญของการจัดการในลำดับแรกๆ การศึกษาครั้งนี้ได้นำการวิจัยเชิงคุณภาพมาใช้เพื่อเข้าใจแนวคิดของเหมืองข้อมูลและการจัดการลูกค้าสัมพันธ์ การประยุกต์ใช้เหมืองข้อมูลสำหรับการจัดการลูกค้าสัมพันธ์ในอุตสาหกรรมบริการโรงแรมของไต้หวันได้รับการตรวจสอบด้วยวิธีการสัมภาษณ์บุคคลเชิงลึก จากผลการศึกษาครั้งนี้พบว่า การทำเหมืองข้อมูลกำลังกลายเป็นเทคนิคของการจัดการลูกค้าสัมพันธ์ที่ได้รับความนิยมเพิ่มขึ้นเรื่อยๆ ในไต้หวัน และในการศึกษานี้ยังได้เสนอการแนะนำขั้นตอนการใช้เหมืองข้อมูลสำหรับอุตสาหกรรมบริการโรงแรมในไต้หวันอีกด้วย

คำสำคัญ : เหมืองข้อมูล การจัดการลูกค้าสัมพันธ์ อุตสาหกรรมโรงแรม
ประเทศไต้หวัน

Abstract

In recent years, data mining has been widely utilized by many businesses such as shopping centers, department stores, and banks. By using data mining, a business can extract hidden information's customers from large databases to target and identify valuable customers. However, this technique is still rarely applied to the hotel industry. To seek long-term business relations with their customers, the hotel industry must look into Customer Relationship Management (CRM) and treat it as one of the top priority management issues. The qualitative research approach were undertaken to understand the concept of data mining and CRM in this study. The applications of data mining in CRM in Taiwan's hotel industry were investigated by means of personal in-depth interviews. According to the result of this study, data mining has increasingly become a popular CRM technique in Taiwan. A recommended process describing the procedures of using data mining were also proposed in this study for the hotel industry in Taiwan.

Key Words : Data Mining, Customer Relationship Management,
Hotel Industry, Taiwan

INTRODUCTION

Faced with fierce and mounting competition pressures, businesses in Taiwan's hotel industry need to maintain a sustainable competitive advantage in order to survive and thrive. Data mining, a new Customer Relationship Management (CRM) technique, is one of the available promising options to help businesses achieve this goal. Although there have been many discussions over utilizing data mining in banks, shopping centers, and department stores, few relevant researches (e.g. Min et al., 2002; Ha & Park, 1998) were conducted to investigate the application of data mining in the hotel industry. Particularly, in Taiwan's highly competitive environment, the task related to application of data mining to maintain customers is more concerned for the hotel industry since the primary focus of the hotel industry is to deliver a constantly improving level of service to existing customers and to win new guests through marketing initiatives. In this regard, data mining is becoming an indispensable tool for hotel marketers as many hotel organizations grew more customer-oriented due to high competition.

There has been an explosive growth of methods for discovering new knowledge from raw data in recent

years. Traditionally, analysts are the ones who perform the task of extracting useful information from recorded data. However, as the data sets grow in size and complexity in modern business, the task of converting the captured data into information or even knowledge is becoming so demanding that human workers cannot handle it at an acceptable speed. Recently, CRM has an important recognition for many hotels' strategies because CRM mainly revolves around marketing and begins with a comprehensive analysis of consumer behavior (Kotler, 1997; Kotler and Keller, 2009). However, it will be difficult to analyze and segment customers without a suitable technique such as data mining. In order to succeed in CRM, hotels must apply data mining to develop valuable information for better and closer interactions with the customer. As addressed by Forcht and Cochran (1999), data mining is an effective technique for tracking hotel customers' patterns that can discover useful information or knowledge within a database that can be used to improve actions or guide decisions for hotel industry. Further, it is an analytic process designed to explore data, normally large amounts of data, in search of consistent patterns or systematic relationships between variables.

The purpose of this paper is to understand and explore the application of data mining in CRM in Taiwanese hotel industry because this sector is currently under intense pressure due to not only the hotel itself sharing this highly competitive market but also the different types of accommodation including private hotel, motel, etc. Thus, the main strategy for hotels in Taiwan now is to maintain customer relationship instead of exploiting prospective guests. In this study, the review of literature was first conducted to establish a fundamental understanding of the data mining concept and CRM. Next, fifteen hotels in Taiwan were interviewed with qualitative semi-structured questions used to investigate whether data mining technique has been applied to CRM in Taiwan's hotel industry. Lastly, results and discussion were proposed, followed by conclusion of this study.

THE HOTEL INDUSTRY IN TAIWAN

The World Tourism Organization reports that tourism has become a major source of foreign exchange in many countries. According to the Government Information Office in Taiwan, the number of the people visited Taiwan in 2009 accounted for 4.4 million, which generated income of about US\$ 12.5 billion. The three main

purposes of visitors to Taiwan have been sightseeing, business, and visiting relatives (Taiwan Today, 2010). The average visitor's daily expenditure in Taiwan is about US \$ 210, and most of this (about 45 per cent) accounts for the hotel cost. Thus, the hotel industry is an important part of Tourism in Taiwan, and will become more significant in the coming decade. Additionally, this industry is one of the most competitive sectors in the country. According to Go et al. (1994), this intense competition has resulted from long-term overbuilding and the resultant excess capacity.

The international tourist hotel industry in Taiwan has been expanding since 1970 resulting from the devotion of the Taiwanese government to actively planning and promoting tourism until the saturation of the market. The hotels in Taiwan can be classified into four groups according to standards of accommodation: international tourist hotel, ordinary tourist hotel, ordinary hotel, and hostels. International tourist hotel is the most popular group in Taiwan's tourism industry. As of the end of May 2009, Taiwan had 63 international tourist hotels with a total of 18,348 rooms. Taiwan also had 31 regular tourist hotels with 3,672 rooms, and 5,464 ordinary hotels as well as bed and breakfast hostels with a total of

117,256 guest rooms. There are 38 international tourist hotels in the planning stage with an estimated 11,034 guest rooms, representing a total investment of nearly US\$ 2.62 billion. The competition among the international tourist hotels is forecasted to be even more aggressive in the future due to new developments, market structure changes and major business hotel competition. The top five hotels are the Grand Hyatt Taipei, Sheraton Taipei Hotel, Howard Plaza Hotel Taipei, The Splendor Kaohsiung, and the Grand Formosa Regent respectively (Sourcingtaiwan, 2010).

DATA MINING

Recently, the importance of databases has been increasing in the business sector, and therefore, it requires a method for collecting, storing, and, analyzing a massive amount of data. As a result, data mining is introduced to facilitate what business needs due to its benefit for easily handling large and complex data sets (Peacock, 1998). The study of Min et al. (2002) defined data mining as a process of searching formerly unknown but meaningful information by filtering large data sets and using a combination of pattern-recognition, model building, and validation techniques. Data mining is also known as an interactive computer-

based method employing statistics to gather and filter vast data sets into a format beneficial to analysis (Frawley et al., 1992; Smith, 2001; Wells et al., 1999). Its ability to manage a number of data is appropriate in representing the complexity of business environment rather than other statistical methods (Kantardzic, 2003; Tischelle and Maselli, 2001). The process of data mining involves organizing data, checking errors and eliminating irrelevant data. Afterward, the data are extracted into a specific pattern or trend and next data are verified to assure how well they match. At this stage, the data are ready to be easily used.

Forcht and Cochran (1999) claimed that data mining has a significant impact on businesses since its main benefit is to find out new patterns about buyer behavior in customer databases. Data mining can help managerial practitioners in comprehending the data captured from customers via computer databases. According to the study of Shaw et al. (2001), utilizing the technology of data mining enables to reveal valuable information about clients' attributes and their purchasing patterns. Further, Hoontrakul and Sahadev (2008) explored the process of customer segmentation by using the application of data mining

in the on-line travel industry in Thailand. Their findings showed that data mining techniques were very useful in solving the pattern of customer enquiries in on-line settings. In the aspect of hotel industry, this technology has been currently utilized as an effective marketing tool for predicting or discovering hotel guests' behaviors. For example, Harrah's hotels and casinos in Las Vegas introduced a trademarked loyalty-card program, "Total Rewards", which tracks customers' purchasing activities and provides rewards that encourage spending at Harrah's properties. Harrah's used an information system called WINet to link all its properties, allowing the firm to collect and share customer information. The process effectively changed the corporate culture from an every-property-for-itself mentality to a collaborative, customer-focused enterprise. The WINet system connects and consolidates customer information from all of the company's transaction, slot-machine, hotel-management, and reservation systems. Based on this information, Harrah's designs marketing strategies to retain their customers by offering different sales promotions for different customers as follows. Customers who live outside the local area receive complimentary hotel rooms or transportation, while drive-in

customers get food, entertainment, or cash incentives (Levinson, 2001). Another good example is the Howard Hotels & Resorts in Taiwan. In the collaboration with Fubon Bank, the Howard Hotels & Resorts offered their customers loyalty cards, which customers collect point rewards and receive discount, and then customers are able to redeem rewards and spend more at Howard's properties. By analyzing data collected from loyalty cards, the Howard Hotels & Resorts can track customers' purchasing activities. Consequently, the hotel could prevent their customers from defecting to competitors.

To sum up, the hotel industry should be aware of future trends and develop marketing strategies much more inclined with customers' needs such as creating seasonal promotions and incentives, establishing customer loyalty campaign, and forecasting the number of rooms for reservation. In order to achieve all customer-oriented tasks, the hotels are likely to require such reliable technology as the data mining in order to effectively manage richer information of the current customers. However, using this technology is in a preliminary stage due to its complexity, costly and time consuming. A hotel which is ready to implement this system should well manage the existing data, provide

relevant training for staffs, and prepare a sufficient amount of investment in hardware and software systems.

CUSTOMER RELATIONSHIP MANAGEMENT (CRM)

Nowadays, businesses are encouraged to adopt Customer relationship management (CRM), which refers to a process designed to collect data related to customers, to grasp features of customers, and to craft marketing campaign accordingly (Swift, 2001; Zaltman, 1997), in order to manage the relationships with their customers effectively. An increased relationship with customers can ultimately lead to greater customer loyalty and retention and, ultimately, profitability. According to Newell (2000), businesses should pay special attention to the top group (top 10 percent) which normally consists of very loyal customers because of their high profitability. It is especially important to win customer loyalty from the more and more demanding customers in today competitive era otherwise those customers incline to switch to other competitors. By this CRM is important because it increases the best services possible through better understanding customer needs and wants. If a hotel business can somehow maintain or

improve customer loyalty, a gain in customer profitability would surely entail because customer retention allows a hotel not only to protect its potential revenue but also to create other revenue opportunities.

In the hotel industry, it is significant for any marketing campaign to collect customer information and later to provide customized services to each customer based on the accumulated information. With CRM, best customers can be targeted based on frequency of purchasing services and hotel marketing managers then identify clear goals and objects for those targeted customers. This is consistent with the findings of Min et al. (2002) that CRM often focuses on valued customers who repeatedly purchased lots of hotel services. The study by Lo et al. (2010) showed that CRM has been implemented in managing customer relationships for large-size hotels from their qualitative research used semi-structured interviews with hotel managers in Hong Kong. On the contrary, CRM may become interesting challenges for small hotels as suggested by Moriarty et al., (2008). CRM also extracts valuable knowledge from various customer interactions over time, which would be much easier with the assistance of suitable IT solutions.

Innovations and advancements of IT such as database technology (i.e. data mining) have played a central part in changing the world market, particularly hotel sector. By analyzing customer information aggregated from previously different databases, data mining can allow hotels to discover and predict the most profitable customers. For instance, Hilton Corporation employed a new technology (i.e. data mining) at its Beverly Hills headquarters to predict consumer-behavior trends in other applications such as marketing and management (Stevens, 2001).

RESEARCH METHODOLOGY

The qualitative approach was chosen because this study aimed to understand and explore the application of data mining in CRM in Taiwan's hotel industry. The study is therefore framed within the hotel sector in Taiwan. Taiwan is regards as one of economic development countries in the Asia-Pacific region and has now become one of the global high technology countries where many hotel accommodations are located. This allows for an interesting sample to investigate the reality and applicability of data mining in the hotel sector.

Data collection was commenced in 2008 and purposive sampling with a

snowball technique was employed due to time constraints to organize personal in-depth interviews with hotel directors. Key management staff from twenty-three hotels in Taiwan was approached for interviews. These hotels were selected because of their similar characteristics in terms of a number of guest rooms, city-center location, and good reputation among hotel customers. All potential participants had to meet the criteria of being directors with a marketing or service background. Of twenty-three hotels invited to this study, fifteen agreed to participate, representing a response rate of 65.2 percent.

A semi-structured and face-to-face interview approach was adopted in order to explore the perceptions of Marketing Director or Service Director from those participating hotels. The semi-structured interview allows the interviewer to add supplementary questions to probe, or get a deeper insight into, the content and meaning of the answers given (Cavana, Delahaye & Sekaran, 2001). Initially, general topics were introduced and determined questions were followed as the conversation developed and opportunities took place. The questions attempted to gain insight into the knowledge and application of data

mining in the hotel sector and how hotel industry may utilize data mining practice in terms of developing CRM into their organizations. Specifically the questions were developed to provide feedback on each individual's understanding of the data mining application toward the business. The interviews were performed by a single interviewer, ensuring the purpose of study was maintained and to avoid biasing the research with a second researcher. Importantly noted, the role of the interviewer was to create and ease the atmosphere in which participants could feel free to describe their opinions. Nevertheless, the size of the sample suggests that the results represent only an exploratory study but these should provide a basis for further research in this area.

RESULTS AND DISCUSSION

All fifteen directors claimed that they had heard of or read about data mining. They also acknowledged that computerized database systems are used in their businesses to store guest records. Hence, all research participants agreed that data mining technology was essential for the development of long-term relationships with customer. For confidentiality reasons, the exact

data mining products used in their hotels were not recorded in this study.

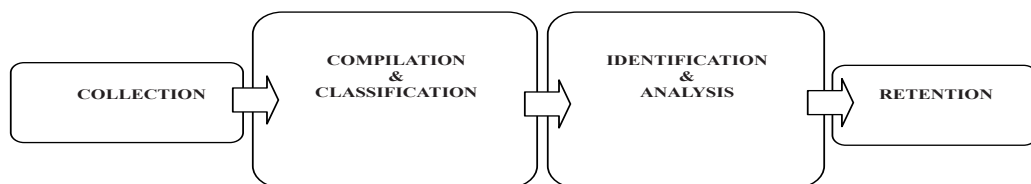
In the hotel industry, data mining is a computer-assisted analysis technology with many applications. Data mining is also regarded as an efficient and effective means through which hotel industry can maintain lasting relationships with customers. With a data mining tool, it enabled hotel industry to relate CRM to their marketing activities such as targeted promotions focusing on frequent customers. Using forecasting as an example, hotels could use data trends to schedule hotel amenities that consumers feel most important. All the interviewees indicated a preference for data mining as a hotel information source in improving customer service and reducing costs. In addition, all directors ascertained the importance of maintaining strong relationships with the channel members. The wholesale and retail tourist agents were viewed as "an extension of sales team." The channel members were seen as the main role in bringing new business to the hotel chains. In terms of hotel's relationships with customers, all directors admitted that their priority was customer retention. All directors believed that "if you can keep your customers, they will generate new business by word of

mouth for you.” However, hotels need to understand that data mining technology alone does not guarantee marketing success. Data mining simply cannot replace face-to-face interactions between hotel staff and customers. As stated by Ohmae (1999), improved insight and perspective could sometimes be gained from talking to three customers for two hours instead of by surveying a thousand customers.

According to the interview results, it was clear that hotels have already tried to take advantage of data mining. All directors agreed that the improvement brought about by data

mining is beneficial in retaining customers for hotel industry. The directors interviewed also shared the opinion that data mining could serve as a tool to establish, maintain and enhance long-term relationships with customers. Nevertheless, the majority of directors claimed that many small and medium-sized hotels in Taiwan still have not employed data mining to compile and analyze their customers. To help the hotel industry establish a competitive advantage, a recommended process of data mining is proposed as shown in Figure 1 and discussed as follows.

Figure 1: The process of data mining for CRM



Step 1. Gather customer data from accommodation bookings and the membership registration process. In room division, catering division or boutique, it is possible for hotels to retrieve other valuable information from hotel records such as special requests, frequency of stay and spending behavior.

Step 2. Use data mining to compile information from collected data related to each customer’s purchases or demands. Using classification technique, customers are arranged into pre-defined segments that allow the size and structure of groups to be monitored. In the end, marketing analyst could use the demographic information to allocate customers to segments.

Step 3. Identify the targeted segment(s). Use data mining to identify groups of customers with similar behaviors and track as well as measure customers' reactions to different offers. CRM strategies can be devised after this step and used to establish good lasting relationships with customers.

Step 4. Improve services according to the responses collected from the targeted campaign so that high-profitability customers can be retained. Use data mining to customize the services according to their preferences.

7. CONCLUSION

The personal in-depth interviews offered interesting insights into the issues of data mining and its potential as a tool of marketing and customer relationship management (CRM) in the hotel industry. It is apparent, according to the results of the interviews, that data mining has grown to be the dominant technique for identifying different types of relationship customers in the near future. Gaining a competitive advantage

through customer knowledge is vital in strengthening customer relationships for the hotel industry in Taiwan. The goal of CRM is to deliver knowledge at the right time to the right person. For CRM to succeed, it is essential to identify valuable high-profitability customers and establish last relationship with these customers. Data mining is certainly beneficial and indispensable in this regard. It is highly recommended that small and medium-sized hotels properly recognize the danger of being left behind if larger hotel organizations continue to develop data mining capabilities and customer relationship management programs. It is also strongly recommended that small and medium-sized hotels use the proposed data mining process as a roadmap in establishing their CRM strategies. Future research could investigate how the application of data mining for CRM effects satisfactions from customers' perspectives. Such findings may contribute more in-depth to the body of knowledge into the field of data mining.

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