Chapter 6

Knowledge Discovery in Mobile Business Data

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ABSTRACT

The increasing number of mobile device users is creating a huge amount of useful data for the providers. These data are valuable and can help a business with further developments and strategies if turned into knowledge with the use of data mining. The mindful use of data mining allows organisations to increase customer satisfaction, to determine new consumer groups for marketing purposes, to detect fraudulent activities, and to find future usage of mobile technology. This chapter explores the examples of usage and the process of data mining in the m-business domain. Some of the forthcoming problems to apply data mining in the m-business domain and their possible solutions are also discussed.

INTRODUCTION

Research and practices in mobile (m-) business and mobile (m-) commerce have recently seen an exponential growth. The applications and services that were envisioned for the mobile business marketplace are becoming a reality today (Davis, 2000; Leisen, 2000; McDonough, 2002; Purba, 2002; Tveit &
Tveit, 2002). Mobile activities such as communicating with colleagues via e-mail, booking and purchasing relevant tickets, receiving product information via SMS alerts, and transmitting customer orders with a wireless PDA are typical applications of m-business. M-business applications are not just focused on the consumer use but can also be used on an enterprise level. Using m-business applications, enterprises are able to operate their business more effectively, have a greater level of customer satisfaction, and generate additional revenue (Wireless Business Intelligence, 2002). This means that mobile solutions can influence the way companies maintain their operations, organise employees, monitor inventory levels, and provide on-site solutions for customers.

In its simplest term, m-business is “dynamic,” which allows users to access information and perform transactions and other operations from anywhere at anytime via wireless networks. Consequently mobile business applications are generating a large volume of data through various information sourcing and transactions (Magic Software, 2002; Whatis.com, 2002). The m-business techniques and applications advance together with the expanding amount and complexity of data. M-business applications require the monitoring and mining of time-critical data to make sound financial or organisational decisions. The overwhelming need to get benefits from the generated data has provided an increasing opportunity to analyse the data.

Data mining (DM), or knowledge discovery in databases, is the extraction of interesting, meaningful, implicit, previously unknown, valid, and actionable information from a pool of data sources (Fayyad, Piatetsky-Shapiro, & Smyth, 1996). This valuable and real-time information inferred from the data can be used for decision making. This potentially useful information allows maintaining a competitive edge in our present environment. For example, the rapidly increasing sale of mobile phones and PDAs has resulted in an increased number of service providers. The DM technology can help providers to develop services and sales strategies for future benefits.

With the usage of m-business applications increasing every year, it is imperative to understand the concepts and techniques required for mining vital information for organisational needs. The focus of this chapter is to discuss the importance of data mining within the field of mobile technology. This chapter introduces the state-of-the-art data mining technology in the mobile and distributed environment created by mobile commerce applications. Based on the existing and future work of data mining, this chapter collates some data mining applications within the m-business field. There exists a significant number of challenges to access and analyse such types of data. This chapter addresses these data mining challenges and some strategies that should be implemented for better use of m-business data. This chapter also includes some existing work related to data mining applications to m-business. Although much research has been done in both individual areas, literatures relating the two are scarce.
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