Chapter VI
Evaluation of Fuzzy Models to Support Online-Trust Assessment

Fahim Akhter
Zayed University, Dubai, UAE

Zakaria Maamar
Zayed University, Dubai, UAE

ABSTRACT

Online trust is a critical element to the success of electronic commerce (e-commerce). Indeed it reduces the level of uncertainty that arises because of the lack of face-to-face interactions with vendors. In e-commerce purchaser-vendor interactions are subject to uncertainty, anonymity, and communication means reliability. This chapter discusses how some trust models have been developed to address these issues. Some models promote familiarity and competitiveness as part of the exercise of assessing online trust. This assessment uses fuzzy logic-based techniques.

INTRODUCTION

The relationship between trust and commerce goes back to ancient times. First comes good bartering; a transaction was always in person, and the goods carried their individual intrinsic values. For example, someone might give away clothing and obtain food in return. The next type of commerce involved the exchange of precious coins, which derived value from the metals they were made of. Then paper money came, issued by governments, and financial institutions. Just as the first means of commerce (bartering) relied on trust between individuals, e-commerce equally depends on trust between people and online businesses (Ahuja, 2000). In the early years, bartering
was the main process for the exchange of goods and services. Furthermore, it overcame the problem of lack of currencies. Nowadays, bartering still continues but in different ways, despite the existence of several currencies and the progress of humanity from the Stone Age to the Byte Age (Maamar, 2003). Mainly, money is given to pay for the goods purchased and the services used. Notwithstanding the various technologies that could be involved, undertaking commerce transactions can be associated with one of the following exchanges (Liand and Huang, 2000): bargaining, bidding, auctioning, and clearing. The first two exchanges are bilateral and the last two exchanges are trilateral.

**E-commerce** has unique features as compared to regular commerce, which allows consumers and businesses to interact with each other on favorable terms and conditions. E-commerce is ubiquitous, meaning that it is available almost everywhere, which enables customers to shop any time from home, work, just to cite a few. E-commerce has extended the market beyond conventional boundaries so that transactions could take place from anywhere. It is enabling business transactions to cross cultural and national boundaries far more easily and cost effectively than regular commerce. E-commerce enables a vendor to establish an interactive mode of access with customers even in a remote area with the help of text, video, and audio, which is not possible with regular commerce. During this interactive process, e-commerce allows for two-way interactions between vendor and consumer in ways similar to face-to-face experience in traditional commerce. The cost attached to a transaction process has been reduced and the quality improved by the widespread of technology. Internet reduces the overhead of storage, processing, and communication while improving the accuracy and timeliness of information. Online vendors can target their products or services to specific individuals/communities by adjusting the sales pitch with regard to customers’ preferences and cultural norms. This level of personalization of messages and customization of products and services does not so readily exist in regular commerce. E-commerce has a potential to be used to generate higher profits, improved communications, reduce operating cost, and improve customer service due to be open all the time.

During **online shopping**, a user often relies on common sense and applies vague and ambiguous terms when making a buying decision. The main problem currently faced by vendors is not the availability of information, but the possession of appropriate levels of knowledge to take the right decisions (Casillas et al, 2009). A typical online customer normally develops some sort of ambiguity, given the choice of similar alternative products and services (Mohanty and Bhasker, 2005). Decisions to buy or not to buy online are often based on users’ human intuitions, common sense, and past experiences, rather than on the availability of clear, concise, and accurate data. Fuzzy logic is used for reasoning about inherently vague concepts (Lukasiewicz, 1970), such as “online shopping is convenient”, where level of convenience is open to interpretation.

While a number of studies have examined browsers’ concerns over trust, confidentiality and security, few have sought to identify gender-related differences in respect of e-business infrastructure. There is now substantial evidence that the Internet has changed the way in which customers conduct online transactions in respect of their culture norms (Akhter & Kaya 2008). Though many factors influence the decision process of online transactions such as ease-of-use, pricing, convenience, and security (Akhter et al, 2003), the perception of an influencing feature is more important than the actual level of the feature itself. For example if the perceived security level is higher than its actual implementation then that will contribute positively to the online transactions. There may be cases where the reverse is true as well, but for such cases a high level of persuasion will be needed to alter the perception level.
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