Pergamon

Technology in Society 24 (2002) 331–347

Technology In Society

www.elsevier.com/locate/techsoc

Electronic payment systems: an analysis and comparison of types

Hsiao-Cheng Yu [a,*], Kuo-Hua Hsi [a], Pei-Jen Kuo [b]

[a] *Institute of Management of Technology, National Chiao-Tung University, 1001 Ta-Hseuh Road, Hsinchu 30010, Taiwan*

[b] *IBM Taiwan, Taipei 100, Taiwan*

Abstract

Parties conducting electronic business have usually never seen each other face-to-face, nor do they exchange currency or hard copies of documents hand-to-hand. When payments are to be made over a telecommunications network such as the Internet, accuracy and security become critical. Other factors affecting the choice of alternative systems, such as their applicable environments, their potential for evolution, and their likely acceptance by merchants and consumers, must also be considered. This paper explores the advantages and limitations of several different electronic payment systems: online credit card payment, electronic cash, electronic checks, and small payments. Systematic and detailed comparisons of alternative systems are provided. This analysis is intended to be useful for companies planning to adopt or to improve an electronic payment system. © 2002 Elsevier Science Ltd. All rights reserved.

Keywords: Electronic payment system; Internet; E-commerce

1. Introduction

The worldwide proliferation of the Internet led to the birth of electronic commerce, a business environment that allows the electronic transfer of transactional information. Electronic commerce flourished because of the openness, speed, anonymity, digitization, and global accessibility characteristics of the Internet, which facilitated real-time business activities, including advertising, querying, sourcing, negotiation, auction, ordering, and paying for merchandise.

* Corresponding author. Tel.: +886-3-571-2121-57508; fax: +886-3-572-6749.
E-mail address: chengyu@cc.nctu.edu.tw (H.-C. Yu).

0160-791X/02/$ - see front matter © 2002 Elsevier Science Ltd. All rights reserved.
PII: S0160-791X(02)00012-X

The main concern with electronic payment is the level of security in each step of the transaction, because money and merchandise are transferred while there is no direct contact between the two sides involved in the transaction. If there is even the slightest possibility that the payment system may not be secure, trust and confidence in this system will begin to erode, destroying the infrastructure needed for electronic commerce.

There are currently four major categories of electronic payment systems: (1) online credit card payment, (2) electronic cash, (3) electronic checks and (4) small payments [21]. Each of these systems has its advantages and disadvantages. This paper compares the four types of electronic payment systems in terms of the requirements of merchants and consumers, the appropriate business environments, and the future potential of expandability.

This research was based on literature reviews and experts' opinions. Data from market surveys, technical journals, company reports, product catalogs, research reports, newspapers, and magazines were analyzed.

2. Assessment criteria for an electronic payment system

An electronic payment system can be assessed along the following five dimensions: the technological aspect, the economic aspect, the social aspect, the institutional aspect, and the regulatory aspect. The assessments are described in detail [10,13] in the following sections.

2.1. Technological aspect

When designing an electronic payment system, the system's ability to adapt to users' changing needs, the effectiveness and security of each transaction, the degree of compatibility among other payment systems, and the complexity in adapting to the system all need to be taken into account. The Secure Electronic Transaction (SET) is a protocol co-developed by MasterCard and Visa for secure bankcard transactions [9,15,20]. The Secure Socket Layer (SSL) is a session layer protocol proposed by Netscape for securing exchanges between a client and a server [4,5]. Other payment systems such as Netbill [8,16,17] and Millicent [3,6,11] are more appropriate for micropayment, i.e., payments of trivial amounts for which the use of credit cards is uneconomical.

The degree of security involves: users' security when depositing or withdrawing money; data, the security of application programs and databases; the security during transactions and payments; the security of the Internet and system; and security maintenance and management. Among these, the security of transactions and payments is one of the utmost concerns for companies and consumers. Transaction and payment security needs to satisfy the following requirements:

1. Authority: Also referred to as validity. This is one of the most important things to take into consideration. The purpose is to verify the claimed identities of all

دریافت فوری ← متن کامل مقاله

ISIArticles
مرجع مقالات تخصصی ایران

- ✓ امکان دانلود نسخه تمام متن مقالات انگلیسی
- ✓ امکان دانلود نسخه ترجمه شده مقالات
- ✓ پذیرش سفارش ترجمه تخصصی
- ✓ امکان جستجو در آرشیو جامعی از صدها موضوع و هزاران مقاله
- ✓ امکان دانلود رایگان ۲ صفحه اول هر مقاله
- ✓ امکان پرداخت اینترنتی با کلیه کارت های عضو شتاب
- ✓ دانلود فوری مقاله پس از پرداخت آنلاین
- ✓ پشتیبانی کامل خرید با بهره مندی از سیستم هوشمند رهگیری سفارشات