On–Line Credit and Debit Card Processing and Fraud Prevention for E–Business

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INTRODUCTION

Credit and debit cards are Americans' top choice for online shopping, with 48 percent in 2014 preferring to use credit cards, 30 percent using debit cards and 12 percent using PayPal. (Total System Services, Inc., 2014). With their Visa and MasterCard logos, debit cards look like credit cards, but they do not draw money from the same source as credit cards. Debit cards, sometimes called a check or bank card, draw funds from the user's bank checking account, not a line of credit although prepaid debit cards do not access the user's bank account. Many debit cards are actually dual debit/credit cards. Users can use these dual debit cards as one or the other. If it is used as a debit card, the user must enter the personal identification number (PIN) to authorize the transaction (Velocity Payment services, 2016). The use of EMV (Europay, MasterCard, and Visa) chips on cards has pushed more cyber-criminals to attacking on-line (Card Not Present) for fraudulent purposes.

The 10 largest U.S. merchant acquirers ranked by general purpose transactions tied to PIN- and signature-based debit cards and credit cards accounted for 64.61 billion transactions in 2013 (Federal Trade Commission, 2012). Accepting credit and debit cards is essential for any e-commerce Web site. Processing credit and debit cards over the Internet is one of the fastest growing segments of business transactions. This type of transaction or "card-not-present" transaction requires a special type of merchant account. Also, if someone steals a debit card number, an entire bank account is vulnerable. Although prepaid debit cards are also available (Wikipedia, 2016). Debit cards are basically processed in the same manner as credit cards (Velocity Payment services, 2016). In the early days of credit and debit card usage, to accept such cards, a merchant needed a merchant account through a bank. But today there are a number of services, generally referred to as credit/debit card processors or merchant account services, which will permit a merchant to accept credit and debit card payments online without their own merchant account. There are actually three different methods for processing credit and debit card payments using a merchant account service. These are:

1. **Real-Time Processing:** Real-time processing allows e-commerce merchants to link their e-commerce shopping cart with a gateway merchant service which will automatically process card payments.
2. **Virtual Terminal (Online Interface):** An e-commerce merchant can also process card transactions, manually, 24 hours a day by logging in online and submitting a secure form through a merchant account interface. A merchant can use this to process card payments while taking the customer's information over the phone if the merchant is able to access the Internet at high speed while talking to the customer.
3. **Automated Recurring Billing (ARB):** Some e-commerce merchant services need to charge customers on a monthly or account threshold basis. Some merchant account services allow the merchant to set the time interval or account threshold level and some services allow a merchant to upload multiple subscriptions using a batch file like Microsoft Excel.

PayPal is generally accepted as the most widely used online merchant account service with more than 150 million users across the world. VeriSign operates a competing service called Payflow that is typically used by merchants with a high volume of transactions each month. Although the number of merchant account service providers continues to increase, some of the more popular one are listed below (Smith, 2016; Williams and Premchaiswadi, 2009):

- Flagship Merchant Services
- Gomerchant Merchant Accounts
- Merchant Accounts Express
- Cayan
- Electronic Transfer Inc.
- E-Commerce Exchange
- NorthAmerican Bancard
- Charge.com
- TSYS
- Free AuthNet
- Merchant Credit Card
- Payment Depot
- Helcim
- Transfirst
- Dharma

Companies that sell merchandise and services over the Internet are referred to as e-tailers or e-commerce merchants. These credit and debit card processing services make it easy for e-tailers to start accepting cards for purchases of their products and services.

BACKGROUND

Who Are the Participants in On-Line Credit/Debit Card Purchases?

Consumers and Merchants

The consumer is an individual or organization that has the intent of making a purchase. They have money or credit and they desire goods and services. The merchant is the one with the goods and services and is looking to sell them to consumers. Consumers are motivated to select a particular merchant by things such as price, service, selection or preference. But the merchant's primary motivation is to make money by selling the goods or services for more money than they paid for them. This money between what they bought it for and what they sold it for is called their margin. There are several different methods to exchange money for products and services such as bartering, cash, checks, debit cards, installment payments or credit cards. When credit and debit cards are used, the consumer and the merchant both have banks that they are working with to process the credit/debit card payment transactions.

Issuing Bank

Consumers typically get their credit/debit cards from a bank or credit union, called the "issuing bank." Sometimes an issuing bank is simply called an "issuer." An issuing bank may not only be associated with major credit card brands such as American Express, MasterCard and Visa, but also with credit cards called "private label credit cards." These are the ones that department stores or shops offer, such as Sears and Target credit cards. Issuing banks are lending institutions that support these credit cards by granting and managing extended credit or maintaining bank accounts for debit cards. The purpose of the issuing bank is to grant a credit or debit card directly to a consumer. The issuer typically has a consumer fill out an application, check the applicant's credit and banking history and maintain their account. The issuing bank is the one that decides what a consumer's credit limit is, based on credit history and current debt load. There are thousands of issuing banks in the United States. In Canada and the United Kingdom as well as most other countries in the world there are far fewer banks. Issuing banks make money on the interest the consumer pays on outstanding balances from previous purchases, and they get a portion of every purchase

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