**CHAPTER EIGHT**

**ELECTRONIC PAYMENT SYSTEMS**

**Learning Objectives**

By the end of this chapter the learner shall be able to;

i. Explain the Payment Revolution

ii. Explain the different payment cards that could be used to pay for the online transactions

iii. Explain other forms of e-payment

**8.1 The Payment Revolution**

According to Sapsford (2004), ZA currency can be anything that all members of a society agree it should be.‖ Prior to the tenth century BC, shells often were used in trade and barter. Metal coins appeared in Greece and India somewhere between the tenth and sixth centuries BC and dominated trade for 2,000 years. ln the Middle Ages, Italian merchants introduced checks. In the United States, paper money was first issued in Massachusetts in 1690. ln 1950, Diners Club introduced credit cards in the United States. Until recently cash was king, at least for in—store payments; checks were the dominant form of noncash payment. Today we are in the midst of a payment revolution, with cards and electronic payments taking the place of cash and checks. ln

2003, the combined use of credit and debit cards for in—store payments for the first time exceeded the combined use of cash and checks (Gerdes et al. 2005). By 2005, debit and credit cards accounted for 55 percent of in-store payments, with cash and checks making up the rest. The growth in the use of plastic is attributable to the substantial growth in the use of` debit cards and the decline in the use of` cash. For example, from 1999 to 2005, debit card in—store payments went from 21 percent to 33 percent, while cash dropped from 39 percent to 33 percent (Dove Consulting 2006). Similar trends are occurring in noncash payments of recurring bills. ln 2001, 78 percent of all recurring bills were paid by paper-based methods (e.g., paper checks), while 22 percent of these payments were made electronically. By 2005, the percent of electronic

payments of recurring bills had grown to 45 percent (Dove Consulting 2006). This change in the mix of payment methods is likely to continue.

A number of factors come into play in determining whether a particular method of e- payment achieves critical mass. Some of the crucial factors include the following (Evans and Schmalensee 2005).

**Independence.** Some forms of e—payment require specialized software or hardware to make the payment. Almost all forms of e—payment require the seller or merchant to install specialized software to receive and authorize a payment. Those e—payment methods that require the payer to install specialized components are less likely to succeed.

**Interoperability and Portability.** All forms of EC run on specialized systems that are interlinked with other enterprise systems and applications. An e—payment method must mesh with these existing systems and applications and be supported by standard computing platforms.

**Security.** How safe is the transfer? What are the consequences of the transfer’s being

Il compromised? Again, if the risk for the payer is higher than the risk for the payee, then the payer is not likely to accept the method.

**Anonymity.** Unlike credit cards and checks, if a buyer uses cash, there is no way to trace the cash back to the buyer. Some buyers want their identities and purchase patterns to remain anonymous.

**Divisibility.** Most sellers accept credit cards only for purchases within a minimum and maximum range. If the cost of the item is too small—only a few dollars—a credit card will not do. In addition, a credit card will not work if an item or set of items costs too much (e.g., an airline company purchasing a new airplane). Any method that can address the lower or higher end of the price continuum or that can span one of the extremes and the middle has a chance of being widely accepted.

**Ease of Use.** For B2C e—payments, credit cards are the standard due to their ease of use. For B2B payments, the question is whether the online e—payment methods can replace the existing off—line methods of procurement.

**Transaction Fees**. When a credit card is used for payment, the merchant pays a transaction fee of up to percent of the item’s purchase price (above a minimum fixed fee). These fees make it prohibitive to support smaller purchases with credit cards, which leaves room for alternative forms of payment.

**8.2 Using Payment Cards Online**

Payment cards are electronic cards that contain information that can be used for payment purposes. They come in three forms:

**Credit cards.** A credit card provides the holder with credit to make purchases up to a

limit fixed by the card issuer. Credit cards rarely have an annual fee. Instead, holders are charged high interest--the annual percentage rate-on their average daily unpaid balances. Visa, MasterCard, and EuroPay are the predominant credit cards.

**Charge cards.** The balance on a charge card is supposed to be paid in full upon receipt of the monthly statement. Technically, holders of a charge card receive a loan for 30 to 45 days equal to the balance of their statement. Such cards usually have annual fees. American Express’s Green Card is the leading charge card, followed by the Diner’s Club card.

**Debit cards.** With a debit card, the money for a purchased item comes directly out of the holder’s checking account (called a demand-deposit account). The actual transfer of funds from the holder’s account to the merchant’s takes place within one to two days. MasterCard, Visa, and EuroPay are the predominant debit cards. .

**Processing Cards Online**

The processing of card payments has two major phases: authorization and settlement. Authorization determines whether a buyer’s card is active and whether the customer has sufficient available credit line or funds. Settlement involves the transfer of money from the buyer’s to the merchant’s account. The way in which these phases actually are

performed varies somewhat depending on the type of payment card. It also varies by the configuration of the system used by the merchant to process payments.

There are three basic configurations for processing online payments. The EC merchant may:

**Own the payment software.** A merchant can purchase a payment-processing module and integrate it with its other EC software. This module communicates with a payment gateway run by an acquiring bank or another third party.

**Use a point of sale system (POS) operated by an acquirer.** Merchants can redirect cardholders to a POS run by an acquirer. The POS handles the complete payment process and directs the cardholder back to the merchant site once payment is complete. In this case, the merchant system only deals with order information. In this configuration, it is important to find an acquirer that handles multiple cards and payment instruments. If not, the merchant will need to connect with a multitude of acquirers.

**Use a POS operated by a payment service provider.** Merchants can rely on servers operated by third parties known as payment service providers (PSPs). In this case, the PSP connects with the appropriate acquirers. PSPs must be registered with the various card associations they support.

The key participants in processing card payments online include the following:

 Acquiring bank. Offers a special account called an Internet Merchant Account that enables card authorization and payment processing.

 Credit card association. The financial institution providing card services to banks

(e.g., Visa and MasterCard).

 Customer. The individual possessing the card.

 Issuing bank. The financial institution that provides the customer with a card.  Merchant. A company that sells products or services.

 Payment processing service. The service provides connectivity among merchants, customers, and financial networks that enables authorization and payments.

Usually operated by companies such as CyberSource (cybersource.com) and

VeriSign (verisign.com).

 Processor. The data center that processes card transactions and settles funds to merchants.

Other payment methods

– Person to person payments are newest and fastest growing e-payment schemes. Able to transmit funds to anyone with an email address example is Paypal used in ebay.com

– Wireless payments such as ―M-pesa‖ from safaricom or Zap from Airtel

– E-check: Electronic version of paper check

– E-charge: Charge purchases to local phone bill