Payment technologies

- organizations require a standard method for the transfer of funds. The available e-commerce payment technologies ensure the security of e-commerce transaction, and also verify the authenticity of the users involved.

- There are various e-commerce payment technologies, which are in the form of transaction methods and tools, to secure transactions.

  - Electronic fund transfer (EFT)
  - Payment gateways
  - secure electronic transaction (SET)
  - open trading protocol (OTP)

EFT

This refers to the transfer of funds using computers instead of paper. Large organisations use EFT to save time and to ensure the security of the exchange of funds between individuals and businesses.

EFT technologies have certain features.

- confidentiality
- Integrity
- merchant authentication
- Non repudiation

* Confidentiality.

EFT Technology must ensure all payment information is confidential. to do this, EFT technology employs strategies, such as encrypting transactions and using certificates to authenticate customers.

* Integrity

EFT Technology must mantain the integrity of payment information and ensure it is not altered in transit

This technology also needs to verify transaction information

* Interoperability

TO ensure interoperability between EFTs, the model used should be widely adopted and supported. Even a minor change will result in incompatabilities

* merchant authentication

EFT technology requires that the merchants involved in transactions prove their identities.

Merchant authentication includes non repudiation that enables business to track transactions and operate securely.

* Non repudiation

This requires that the EFT provides proof of the transaction. Digital signatures can also be used to prove identities and the occurence of a transaction.

* An example of an EFT technology implementation is the automated Clearing House (ACH) network, which is a nation wide batch orientated system,

* The National ACH association (NACHA) operate rules governing this in the US, These rules provide the basis for the interbank clearance of electronic payments.

* Financial institutions send or receive ACH entries through ACH operators, such as the American Clearing House Association, the federal reserve Electronic Payments Network and Visa.

* These operators also act as central clearing facilities. The ACH network transfers and clears funds between banking institutions for customers and merchants.

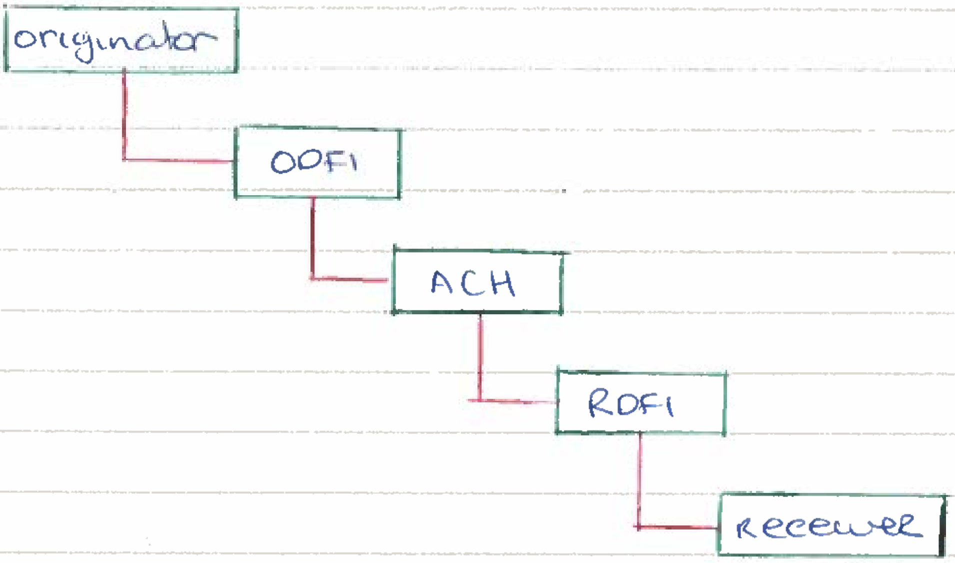
* ACH TRANSACTIONS

An ACH transaction involves certain users
An orginator, who can be an individual or an organization, initiates entries into the ACH network.

* The Orginating Depository financial institution (ODFI) originates ACH entries when requested for compliance with its customers.
ODFIs must adhere to the NACHA operating rules and guidelines.

* The Receiving Depository financial institution (RDFI) is authorized to accept ACH entries.
This institution also adheres to NACHA guidelines.

* A receiver, who can be an individual, corporation, or organization, permits an originator to initiate a debit or credit entry to a transaction account held at the RDFI.



CIW Foundations

U4 ⓥ

* The ACh Network is a mediator between financial institutions during the transfer of funds. A merchant opens a merchant account to receive EFT or credit card payments.
The merchant transmits the credit card or banking information in batch format to the institution, generally a bank, holding the merchant a/c.

* on behalf of the merchant, the bank holding the merchant a/c uses the ACH network to clear the funds from the bank of the credit card issuer or customer.
This completes an ACH transaction.
ACH does not carry out real time processing and requires about 24 hours to settle a transaction.

* ACH offers more facilities compared to credit card authorization, which only checks the card validity and the availabity of funds.
The ACH network is associated with most of the financial transactions except wire transfers. Every Country has its own form of ACH, governed by the laws and regulations prevalent in that country.

B. Payment Gateways

A payment gateway is a hardware or software based technology that mediates between a merchant and its bank.
End customers do not set up their own systems as payment gateways.

* When the merchant receives a payment from a customer, the merchant uses the payment gateway to send credit card information to the bank

* When the gateway receives transaction message, it authenticates the users and ensures that the information is sent to the correct users.
It requires information to be encrypted to prevent unauthorized users from using it.
The gateway also ensures that the information is not modified in transit and verifies credit card information

* A Third party need not be used as a gateway because many Companies offer dedicated gateway software, which can be configured and administered. Examples of such software applications are
IBM payment gateway
Sunshop shopping cart

* Payment Gateway Companies include

- Verisign
- Merchant Warehouse
- CC Avenue
- Authorize.Net
- SEC pay
- Link point
- Merchant CGI

C SET

* Set is an internet protocol that uses digital certificates to secure financial transactions. Each party involved in a set payment requires authentication during the payment process. Set uses public and private-key encryption methods. It uses enveloping for quicker encryption and decryption.
Set enables very complex transactions, such as obtaining a credit card or returning goods

* SET was developed to create a standard electronic payment protocol. In 1995, Mastercard, Netscape communications, IBM and other companies launched the 'secure Electronic payment Protocol (SEPP)'; whereas Visa And Microsoft consortium launched the 'Secure transaction technology (STT)'
In 1996 SEPP and STT were merged into forming the internet payment standard SET.

* The Process of using Set to purchase a product comprises six steps
First, a customer provides an issuer bank with credit card account number, expiration date, security goods and the name and billing address of the customer.
This session is encrypted throug a protocol, such as Secure Socket layer (SSL) and transport layer security (TLS).
All other sessions are encrypted by default.

* After verifying the customer information, the bank creates and signs an SET certificate that is generated through Public key infrastructure (PKI). This certificate performs authentication, and sensitive information, such as credit card numbers, need not be sent over public networks.

Next the bank grants the signed certificate to the customer, who can then shop at websites and stores that use SET

* To serve a customer with a SET certificate, a merchant should register with the issuer bank and provide its merchant ID number and company name.

After registration, the issuer bank provides the merchant with its SET certificate.

When a customer begins shopping, the customer and merchant present their SET certificates to one another

* Because the SET certificates are granted by issuer banks, the customer and merchant are assured that all identities are proper and secure. The transaction is also encrypted. When the customer wants to purchase an item, the merchant can verify whether the customer has adequate funds available for the purchase, in addition to checking the identity of the customer

* SET is advantageous compared to conventional credit card transactions. In this transaction, a cardholder sends details to the merchant, who then contacts the bank to obtain clearance of the payment.
The bank obtains this authorization from the institution that issued the card, through a financial network operated by the card Association.

* The financial networks have proprietary protocols functioning on secure, dedicated links. As a result, an infrastructure of links and transaction processing computer hardware exists to electronically authorize credit card payments.
Therefore, SET defines only the subset of dialogs between the customer and merchant and between the merchant and the payment gateway.

D OTP [open trading Protocol]

* OTP is promoted by companies such as AT+T, CyberCash Digicash, HP, oracle, Sun, wells Fargo bank and the Royal Bank of Canada
It uses digital certificates to enable encryption OTP can be used for B2B and B2C models. OTP is standardized and described in Request for Comment (RFC) 2082.

* OTP specifies the trading protocol options that control the process of the trade. These options inform the customer as to how the transaction will take place and of the payment options available. The transaction details are dealt with dynamically. For Example, a vendor may offer a rebate if a customer purchases specific items in large Quantities or with a specific credit card.

* All transactions are formatted in XML instead of a proprietary format.
Example <Address>
54 Oakleaf Ave.
New york
NY 10040
</address>
all domains require standardized markup tags. Web browsers, such as MS I Explorer and Navigator support XML. OTP also supports Electronic Data Interchange (EDI) for transaction processing

* OTP supports real and virtual delivery of goods and services & it maintains a record of the trade. OTP offers a flexible method for linking the entire business transaction from terms and conditions, to payments, to acknowledged delivery of goods.
Since this information is available in a standard format, it enables the provision of automated and less expensive customer service.