



## E-Commerce Traditional and New Generation Models and Their Security Issues

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### Abstract

As we enter into the new millennium we can see that the world is shifting to a new era in terms of new speed of changes. Information Technology (IT) brings this new speed to human history. This fast speed of changes touches all aspects of human life. E-commerce is playing a central role in the development of people. It has created a vast range of business opportunities for both firms and individuals. In this research paper an attempt is made to focus on the initial problems of e-commerce and their solutions through new generation models and also drag the security issues behind it and their cure.

**Keywords:** E-Commerce, Encryption, Cryptography, Authentication, Integrity,

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## **1. INTRODUCTION**

E-Commerce is the term that is present in our daily vocabularies today. The magical term E-Commerce means that we buy things from all around the world simply through the magical portal called "The Internet". Not only buying but also selling, online transactions, Net-Banking and other types of transactions that are possible with the internet are comes under this category.

The first form of E-Commerce started in the 1970s when it was used by businesses to send commercial documents such as purchase orders or invoices electronically. In the early days of e-commerce, there were significant structural and procedural problems involve with buying online, a few online buyers were hesitate to buy even small ticket items despite having credit cards.

In today's scenario there is a vast change in the use of Internet. As more and more people around the world get connected- through not just PCs, but even mobiles- there is a rise in the number of transactions online. There has been a shift in the mindset of peoples about online transactions.

In the early time of e-commerce, a person choose an item from the website but after selecting it he or she would be entrap to buy such item. There was lack of the element of touch and feel of physical shopping and the notion of accountability.

For the rise in e-commerce, things had to evolve. The web sites themselves had to try to incorporate with such drawbacks of e-commerce and the consumer had to change his mindset and come up with his own workarounds. To get over the lack of touch and feel, e-commerce web sites started showing product pictures differently. They developed zoom and 360 degree views. This was accompanied by reviews. Testimonials came about to build trust. Money back guarantees became the norm and product replacement/ exchange were offered. The consumer, on the other hand, began evolving his own methods. For actual purchase online turned out cheaper because of the lesser overheads of seller. The popularity of e-commerce in India increased when COD or Cash on Delivery service started. The consumer tempt to online transactions now.

The present study is on the evolution of e-commerce and it explains the underlying security of various payment platforms and some tips over the safe practices.

## **2. OBJECTIVE**

The main objective of this research is to study the revolutionary changes in the world through the e-commerce and incur the initial problems behind the e-commerce and their solution and also see the major issues of security and its cure.

### **2.1 INITIAL PROBLEMS WITH E-COMMERCE**

There were many problems which act as a barrier in front of the evolution of this technology. These are as follows:-

- 1) **Internet Adoption** - When e-commerce was introduced, the percentage of users was very low due to the lack of internet access for customers that did not live in the major metro cities. Moreover, the Internet speed was slow. So, the earlier versions of e-stores did not have the big images on their websites due to which the customers did not saw the all brands and varieties of the item.
- 2) **Payment Problems** - In earlier times, customers did not pay directly to the owners of the e-stores, they used the middleman technique by which they paid to the middlemen and

middleman paid to the owners but it contain a lot of risks because all middlemen were not loyal and owners took their payment after a long time.

- 3) **Low Quality Of Business Model** – The ancient model of e-commerce was not so good because a user can buy or sell product locally, not across the country or worldwide.

### **3. NEW TECHNIQUES IN E-COMMERCE**

To establish e-commerce in the society in a powerful manner several new concepts were introduced due to which the e-commerce becomes very popular among the world. However, no story about e-commerce can be complete without the introduction of International e-commerce giant, **eBay** .

**eBay** globally has been an e-commerce powerhouse and have changed the way people shop around the world. eBay become so popular because a new concept was introduced by it in e-commerce industry. It uses a unique Business model by which rather than sourcing products from established brands and selling these for a margin, eBay created the largest online bazaar globally that is free of middlemen and unconstrained by geographical boundaries which makes it possible local products to be sold across the country and exported across the globe. So, with eBay millions of people took interest in e-commerce.

With the development of e-commerce, there are sites that offer auctions on branded items, sites that let you loan your second property to travelers, sites that have created an online market place and even sites that recommend what sites you should shop from. There are also sites that have created a niche for themselves online and become knowledge partners to the customer by offering specialist products and services. Some of the models used by businesses to engage their consumers are:-

- 1) **Megamall** – The Online megamall is the most popular business model within the industry. Here businesses bet on the products their consumers would most like to buy and stock those in a virtual store. Customers then go online and purchase the products they like and pay for it using a variety of mediums such as credit cards, net banking etc. These stores then have their own dispatch team that delivers the product to the customers in the promised time frame. Examples of these stores are Amazon, Flipkart, Infibeam, Indiaplaza.

This business model is so popular because we only need to go to one place to find a multitude of products from various brands. Some of the latest features include in this model are as follows:-

- Ability to read product reviews before buying a product i.e., much like shopping with a friend.
  - Superfast delivery time so that the thrill and satisfaction of buying something is retained.
  - Open box policies so that the customer can touch & feel the product before accepting delivery.
  - Cash on delivery, so we do not need to pay for it until the product come safely in our hands.
- 2) **Marketplace** – In terms of size, the marketplace concept is as popular as the megamalls. The core concept of the marketplace is the community. Here, the site enables the multiple smaller stores to co-exist and operate within a common ecosystem.

The Online marketplace has changed the way people shop and eBay has been the pioneer of this concept. This model enables the entrepreneurs to access wider markets and makes it possible for local products to be sold across the country. This concept is free of middlemen and unconstrained by geographical boundaries, thereby enables frictionless trade between the buyers and the sellers.

For the marketplace concept to be successful the business must not only have excellent merchants selling unique products through their shops but it must also have a large community of subscribers to attract the relevant merchants.

- 3) **Dealmaker** - This model is useful both for customers and the businesses. With deal sites, customers get exclusive access to great deals from a wide variety of local businesses, and businesses get the chance to serve new customers. In this model discount on the product is offered to the customer. A good example of this model is "Crazeal", a fully owned subsidiary of the global Groupon group.
- 4) **Aggregators** - This model is the best time consuming model for the customer because by this model you can search what you want within a small time. This model have the ability to search dozens of sites within a particular category at the same time and compiling that information into one easy to interact site so that customers don't need to go through various pages to find the best product or package. Some examples of this model are **Saavn.com** which is an aggregator of music, **thisyathat.com** is for buying books, **jungle.com** is for finding product reviews from online and offline retailers, **Trip Advisor** is an aggregate for Hotel reviews and special packages.
- 5) **Single brand crossover** - This is the model used mainly by established individual retail brands to not only create awareness about the brand and the product but also drive sales. With this model, brands are able to expand their brick store into a click store. Now these days this model is adopted by airlines that sell tickets for their flights, artists that sell their own music, authors that sell their own books, physical grocery stores that can take orders online. The main key factor of this model is that it manages trade-offs between separation and integration of their retail and online businesses.

So, these are some models or new techniques which give a revolution in the field of e-commerce.

#### 4. SECURITY IN E-COMMERCE

One major issue also arises corresponds to the security of the e-commerce market. Suppose a customer purchase an item from the e-store and he or she pay by credit card but his or her details can be seen by others if the network is not fully secure. So, there will be a need of security for the e-commerce activities.

Due to the increase of e-commerce, we are trying to do all works at online but are our data would be safe. We all are familiar with the online threats that can harm our data, so due to the great involvement in the e-commerce activities it becomes our duty to do e-commerce activities safely. There are some security aspects by which we can secure the e-commerce activities like Cryptography, Message Security, and Digital Signature.

Some methods by which we can secure the e-commerce activities are as follows:-

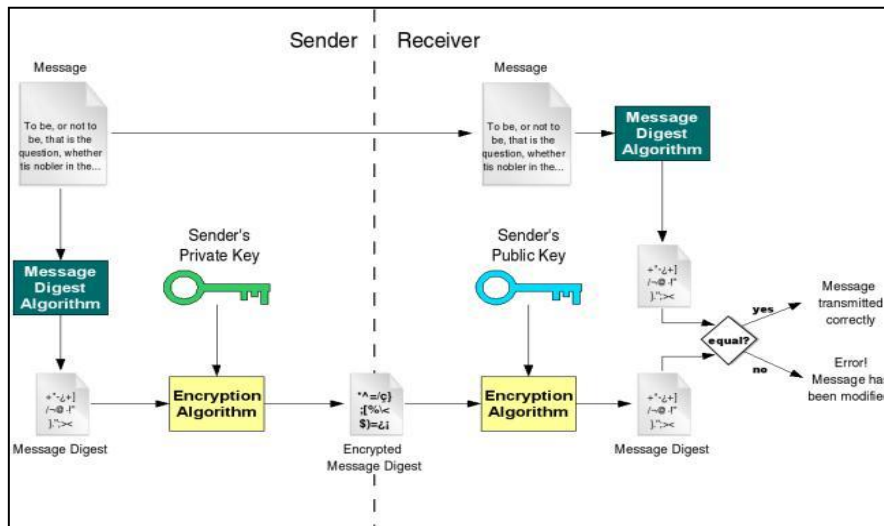
1) **Cryptography** - The word Cryptography in Greek means “secret writing.” In this process the original data is converted into coded form by the use of an algorithm and that converted data is sent to the receiver and at that end it is again converted into original form. So, by this way we can secure our data to the third person.

This method consists of two processes, Encryption and Decryption. In Encryption, the original data is converted into cipher data (coded data) by an algorithm. This is at the sender side and in Decryption, that cipher data is converted into original data; this is at the receiver side.

A term that is widely used in Cryptography is “key”; a key is a number that the cipher, as an algorithm, operates on. There are two types of Cryptography: Symmetric-key Cryptography and Asymmetric -key Cryptography.

In Symmetric-key Cryptography, the same key is use by the sender (for Encryption) and the receiver (for Decryption) and the key is shared.

In Asymmetric-key Cryptography, there are two keys: a **private key** and a **public key**. The private key is kept by the receiver while the public key is announced to the public.



**Working process of Digital Signature**

2) **Message Security** - In this we discuss the security measures applied to each single message. The security provides four services: Privacy, Message Authentication, Message Integrity, and Nonrepudiation.

- **Privacy** - Privacy means confidentiality, it means the sender’s message can only sense by the receiver not the other.
- **Message Authentication** - It means that the receiver has the identity of the sender so that an imposter cannot send the message.
- **Integrity** - Integrity means that the data receive by the receiver is same as sent by the sender.

- **Nonrepudiation** - It means that the receiver knows the message comes from the valid sender.
- 3) **Digital Signature** - The idea behind the Digital Signature is similar to signing a document. When we send a document electronically, we can also sign it. There are two ways by which we can use the Digital Signature are as: - Sign the entire document, Sign a digest of the document.

### Signing the whole document

While signing the whole document, Asymmetric-key encryption is used. In this, sender uses private key to encrypt the message same as a person uses his/her signature to sign a document.

In this concept, the private key is used for encryption and public key for decryption.

### Signing the Digest

Asymmetric encryption is inefficient if the message is very long. So, in this condition the sender signs a digest of the document and signs it, the receiver then checks the signature.

To create a digest of the message, we use a **hash function**. This function creates a fixed-size digest from a variable-length message. The two most common hash functions are **Message Digest 5** and **Secure Hash Algorithm 1**.

After the digest has been created, it is encrypted by the sender's private key. The encrypted digest is attached to the original message and sent to the receiver. The receiver receives the original message and the encrypted. The receiver receives the original message and the message digest. Receiver applies the same hash function to the message to create the digest. If the two digests are the same, the message received by the receiver will be correct.

## 5. CONCLUSION

A lot of research on e-commerce security is going on and many security products and systems of e-commerce are being developed and marketed. In this situation, it is important to note that security is a system property of the e-commerce. The best we can do is to show that a specific system is resistant against a set of well-known attacks. In addition, this paper has discussed some security related issues concerning authentication, authorization, confidentiality, non repudiation, we summarize the future e-commerce as follows:

- i) The traditional authentication mechanism is based on identity to provide security or access control methods; in addition, traditional encryption and authentication algorithm require high computing power of computer equipment. Therefore, improve the authentication mechanism and optimize the traditional encryption.
- ii) Effective trust models can facilitate in improving user trust in present e-commerce versus the traditional method that mentioned in this paper.
- iii) Security related issues should be researched extensively in e-commerce.

Consequently, security engineering involves making sure things do not fail in the presence of an intelligent and malicious adversary who forces faults at precisely the wrong time and in precisely the wrong way. Also note that security is orthogonal to functionality. This is

reflected in some evaluation and certification criteria, such as the ITSEC or the Common Criteria. Just because a product functions properly does not mean that it's secure. Similarly, just because a product is secure does not mean that it is functional. Unlike functionality, security is not necessarily visible to the user and is particularly hard to market (the automobile industry has the same problem). For example, bad cryptography looks like good cryptography, and it is hard to tell the difference (even for an experienced expert).

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