



# CSC-370

## E - Commerce

(BSc CSIT, TU)

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# Security in e-Commerce

- E-commerce security is the protection of e-commerce assets from unauthorized access, use, alteration, or destruction.
- Security is an essential part of any transaction that takes place over the internet.
- Customers will lose his/her faith in e-business if its security is compromised
- Recent research indicates that cybercrime is on the rise for some major companies like Equifax, Yahoo, Facebook, etc, who find themselves as a victim of cyber-attacks



# Dimensions of e-Commerce Security

- The most common security breaches for the ecommerce website are concerned with following six dimensions.
  - Integrity
  - Availability
  - Confidentiality
  - Non-repudiation
  - Authenticity
  - Privacy

# Dimensions of e-Commerce Security

- **Integrity :**

- We all have the one common question, whether we have received the same data that the sender has sent.
- Now it is the duty for integrity for the correctness of the information that has been transmitted or received or displayed on a website over the internet
- Integrity can ensure that information on the internet has not been altered in any way by an unauthorized party.
- It maintains the consistency, accuracy, and trustworthiness of the information over its entire life cycle.
- **Example :** The most common threat will be “would any unauthorized person will intercept and redirect payment into a different account” since ecommerce sites prefer online transfer mostly
- Let us consider a subscription model, where you will give credit card details for a bill payment to the merchant. If someone added extra cost on your credit card bill without both yours or merchant’s knowledge, then you need to pay extra money for something you haven't purchased

# Dimensions of e-Commerce Security

- **Availability :**

- Continuous availability of the data is the key to provide a better customer experience in ecommerce.
- The continuous availability of the ecommerce website/app increases online visibility, search engine rankings, and site traffic.
- Data which is present on the website/app must be secured and available 24 x 7 x 365 for the customer without downtime.
- If it is not, it will be difficult to gain a competitive edge and survive in the digital world
- **Customer perspective :** Can I access the site at any time from anywhere?
- **Merchant perspective :** Whether my site is operating without any downtime?
- **Example :** An ecommerce website can be flooded with useless traffic that causes to shut down your site, making impossible for the user to access the site

# Dimensions of e-Commerce Security

- **Confidentiality :**

- Confidentiality refers to protecting information from being accessed by an unauthorized person on the internet.
- In other words, only the people who are authorized can gain access to view or modify or use the sensitive data of any customer or merchants
- According to Juniper Research, nearly 146 billion records will be exposed by criminal data breaches between 2018 and 2023
- **Customer perspective :** Can someone other than the intended recipient or a person read my message?
- **Merchant perspective :** Whether information on my site can be accessed by the unauthorized person without knowledge?
- **Example :** Ecommerce uses a user name and password to login to their account. Let's consider this case for resetting the password, where an ecommerce site sends a one-time password to their customer in email or phone number if someone else reads it



# Dimensions of e-Commerce Security

- **Non-repudiation / Non-rejection :**

- Good business depends on both buyers and sellers. They must not deny any facts or rules once they accept that there should not be any repudiation
- Non-repudiation confirms whether the information sent between the two parties was received or not. It ensures that the purchase cannot be denied by the person who completed the transaction. In other words, it's an assurance that anyone cannot deny the validity of transaction
- Mostly non-repudiation uses a digital signature for online transactions because no one can deny the authenticity of their signature on a document
- Sometimes, customers claim that they haven't ordered the product from a particular merchant if they disliked the product later

# Dimensions of e-Commerce Security

- **Authenticity :**

- In ecommerce, since both the customer and seller need to trust each other, they must remain as who they are in real. Both the seller and buyer must provide proof of their original identity so that the ecommerce transaction can happen securely between them
- Every ecommerce site uses authenticity as a tool to ensure the identity of the person over the internet. In ecommerce, fraudulent identity and authentication are also possible, which makes identity a difficult process.
- Some common ways to ensure a person's identity are customer log in using a password
- **Example :** Some users can use a fake email address to access any of the ecommerce services, so customer details should be analyzed and verified before giving them the access to the e-Commerce



# Dimensions of e-Commerce Security

- **Privacy :**

- Where confidentiality is a concern about the information present during communication, privacy is concerned with personal details
- In general, privacy is used to control the usage of information by the customers that they have given to the merchant
- According to Fortune, 1.16 billion email address and passwords are exposed in 2019 through security breaches
- Privacy is a major threat to any online transaction or internet user since personal information has been revealed and there is no way back to disclose them
- **Customer perspective :** Can I control the usage of information about myself that I have transmitted to the ecommerce site?
- **Merchant perspective :** What if anyone else uses personal data collected as part of the ecommerce transaction? Is there any unauthorized person to access a customer's personal data?
- **Example :** If a hacker breaks into the ecommerce site, they can gain access to the customer credit card details or any other customer information. This also violates information confidentiality and personal privacy.