DEFINITION OF E-COMMERCE

E-commerce, also known as electronic commerce or internet commerce, refers to the buying and selling of goods or services using the internet, and the transfer of money and data to execute these transactions. The basic requirement is a website with the help of which the transaction can be proceeded. E-commerce can take many different formats. It can include a branded website, mobile app, market places like Amazon and eBay, and social media platforms like Facebook marketplace, Instagram Shoppable Ads and Pinterest Buyable pins. At the moment, e-commerce works as a form of retail that can provide various capabilities to small, middle and large scale businesses, individuals and freelancers. It includes but not limited to;

- ❖ Online sales of physical goods and digital products
- ❖ Online sales of intangible digital products
- ❖ Intellectual property
- ❖ Digital services
- ❖ Real-time auctions
- ❖ Tickets' sales
- ❖ Utility bills payments
- ❖ E-banking
- ❖ Online marketplaces

The activities listed above use the internet as a platform for either information exchange or monetary transaction or both at times. Nearly every imaginable product and service is available through e-commerce transactions, including books, music, plane tickets, and financial services such as stock investing and online banking. E-commerce allows people to do business without the constraint of distance and time. The transaction between the buyer and seller is made electronically so physical interaction of the parties is absent. Examples of the top e-commerce companies include; Alibaba, Amazon, Walmart, eBay. *In Uganda*; Jumia (www.jumia.ug), Olx which re-branded to JiJi (www.jiji.ug), katale (www.katale.ug), bazebo (www.bazebo.com), KiKUU (www.kikuu.ug) etc.

FEATURES OF ECOMMERCE

Ecommerce is Technology-enabled: Traditional commerce has been taking place since times immemorial but ecommerce is a result of integration of digital technology with business processes and commercial transactions. The technological foundations of ecommerce are; internet, WWW and various protocols.

Technology mediated: In ecommerce, buyers and sellers meet virtually on online platforms rather than physically. Hence ecommerce does not involve face to face contact.

Universality: Buying and selling take place through websites in ecommerce. The websites can be accessed from anywhere around the globe at any time hence possessing the feature of universality.

Intercommunication: ecommerce technology ensures two way communications between buyer and seller. On one hand by using ecommerce, firms can communicate with customers through ecommerce enabled websites. On the other end, customers can also fill order forms, feedback forms and can communicate with business operating firms.

Delivery of information: ecommerce serves as the best channel of communication. Ecommerce technologies ensure speedy delivery of information at very low cost and considerably increase information density as well.

Electronic completion of business processes: By using ecommerce we can perform business transactions like accounting and inventory through computers at global level.

Virtual communities: Virtual communities are online communities created by means such as chat rooms and specifically designed sites like, where people can interact with each other having common interest using the internet.

Inter-disciplinary in nature: Implementation of ecommerce needs a lot of knowledge of managerial, technological, social and legal issues. Besides this, understanding of consumer behavior, marketing tools and financial aspects is as crucial as designing interactive e-commerce websites.

Customization: with the use of ecommerce technology, the world is moving from mass-production to mass customization. Product customization ensures that goods are tailor made as per the requirements and preferences of customers. Like Dell computers website- www.dell.com enables the consumers to mention configuration of a computer and then the product is made available and delivered as per the configuration ordered by the customer.

E-COMMERCE PROCESS

TYPES OF E-COMMERCE

E-commerce can be classified into three major categories;

- Products or services sold.
- Parties involved in the transaction.
- Platforms on which ecommerce businesses operate.

PRODUCTS OR SERVICES SOLD

Physical goods: This is the most common type of eCommerce business. It was the first type since ecommerce business ever started. Many of the physical products that you can buy from a physical store can be bought from an online store. Most of the sellers of these products are online retailers. Items are showcased online. Shoppers are able to add the products they intend to buy in their virtual shopping carts. Once the transaction is complete, the store ships the order to the shopper or an alternative of in-store pickup. Online retailers compete with traditional brick and mortar businesses (physical shops). Unlike the physical stores, here goods cannot be examined (touch and feel or try on) which limits a more informed purchasing decision. Consequently, ecommerce businesses need to show how online shopping can be a worthy alternative- use of techniques such as accurate images, detailed product descriptions, prompt expert assistance, customer friendly delivery and return terms help with the purchasing choice and also add to customer risk taking. Examples of such online stores include Amazon, eBay, Flipkart, H&M, Alibaba, Jumia, Kikuu, chic me, Kikuubo online etc.

Digital goods: The goods sold in this type of ecommerce business are called "e-goods". These goods can only be bought on a digital platform and can also only be used on a digital device. Usually when you purchase digital goods online, after payment has been received the merchant will provide you with your digital item as an e-mail attachment or they may provide you with a secure link where you can download the item through the internet. Digital goods can only be sold and used on a digital platform. For example, Netflix sells entertainment material over digital platforms, amazon prime, kindle (online e-book e-commerce store operated by amazon to provide electronic books, newspapers, magazines etc. to interested readers), internet radio- RX radio (https://www.rxradio.ug/) owned by James Onen aka fat boy. With this type, there are low overheads due to the absence of inventory costs and delivery limits. However, sellers may face tough competition with free content or software and should stress the benefits of purchasing goods rather than getting them for free. For example, when launching an image-sharing resource, entrepreneurs can bet on the high quality of provided assets and the importance to reward contributors.

Services: This type of e-commerce business has become popular recently and growing at a very fast pace. Until recently, no one ever thought that services could also be bought and sold online. Services such as medical consultations, online classes, trainings, cooking tutorials, nanny services- (The Cradle owned by Manuela Mulondo- https://thecradle.ug/) and many more can now be accessed online. This type of e-

commerce business is growing at a very fast rate, all you need is to identify what people need and develop a platform to provide that service. Overall, it offers an alternative communication channel to customers. Examples include; Chimp reports (online gossip)-https://chimpreports.com/, Mubsep (platforms for online courses)-https://mubsep.mubs.ac.ug/, rocket health under medical concierge group, the first health care eshop in Uganda (Consultation with a doctor and pharmacist 24/7)-https://www.rockethealth.shop/.

PARTIES INVOLVED IN THE TRANSACTION
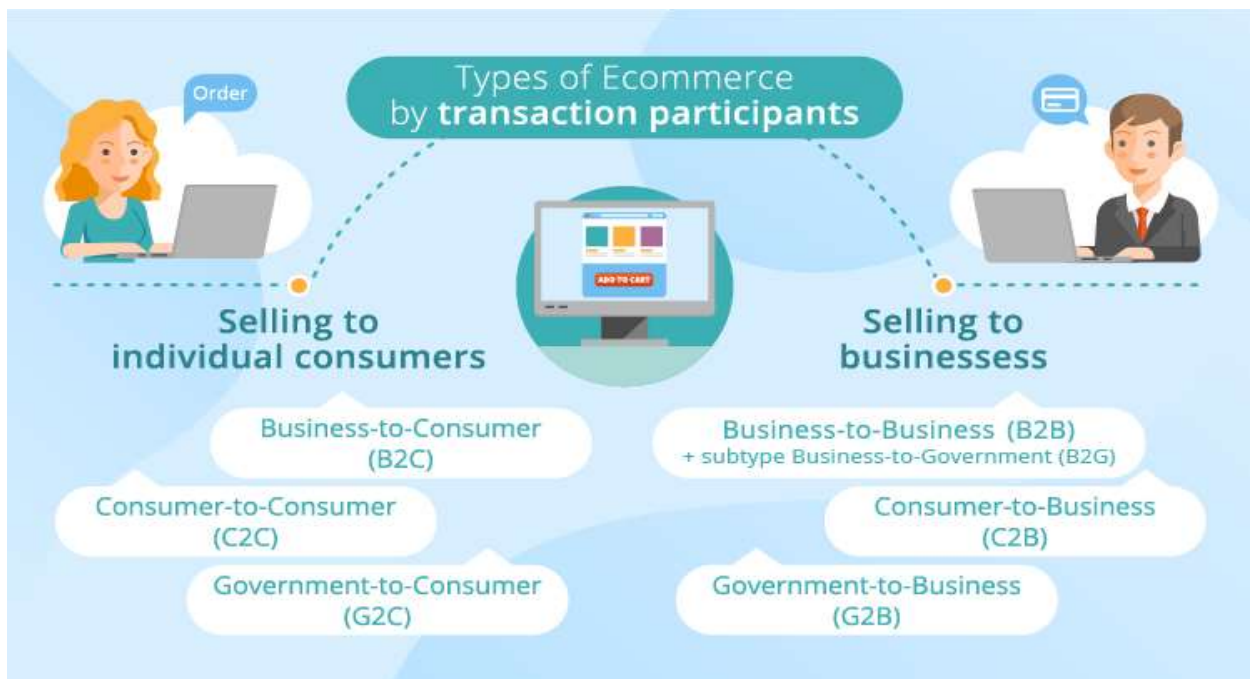
Business-to- Consumer (B2C) Model: This is the most basic type of e-commerce business. In this business, one party is a business which sells products and services to another party which is a consumer. So, transactions happen between businesses and consumers. Online retail typically works on a B2C model. Stores that engage in B2C e-commerce include; Amazon, Walmart, Macy's, In Uganda we have online newspaper platforms such as new vision, building and construction platforms such as Roofings group, Jumia.

Consumer-to Consumer (C2C) Model: Here both parties included in a business transaction are consumers which means a consumer is the seller of a product or service, and another consumer is the buyer. To place sales advertisements and connect to potential buyers, individuals use a third part business (an ecommerce website or an online marketplace). To sell a product on any of the suitable platforms, one is required to

create an account on the app or website and post the details like the price of the product, features of the product, pictures of the product etc. This comes along with the contact details so that people who want to buy that product can reach you. Examples of platforms used in this model include, eBay, Amazon, in Uganda; OLX, Kupatana, cheki (www.cheki.co.ug- used to sale or buy used cars in Uganda) Eyetrade.

Government-to- Consumer (G2C) Model: This model is also a part of egovernance and the objective is to provide goods and services to each citizen. Through their websites, the government will provide services such as information of all government departments, different application forms to be used by citizens etc. Online transactions can streamline communication between governmental organizations and citizens. Possible activities performed between government and its citizens include; paying taxes, renewing licenses, sharing information etc. for example; a consumer paying for traffic tickets or paying for their car registration renewals online may fall under this category. Examples; URA portal (driving permit renewal). MYUG-WiFi provided by government to allow citizens to access government services electronically within specific areas of Kampala. URA currently launched EFRIS- an online platform intended to manage the issuance and centralized tracking of all invoices and receipts by business taxpayers in Uganda.

Business-to-Business (B2B) Model: Here a business sells its products or services to another business. The transaction takes place between two businesses. This type of e-commerce business transaction takes place to reduce the business overhead on one business. For instance, a manufacturer or wholesale supplier selling to a retailer. B2B also encompasses multi-vendor marketplaces. Though end buyers are individual consumers, the marketplace owner sells digital space to business vendors, thus conducting B2B transactions. Examples include; kikubo online (which is a whole sale and supply store) whole sale B2B platform built for Duukas, supermarkets, whole sellers and retailers, Mukwano industries (produces plastics, packaged drinking water, soaps, detergents, cosmetics, edible cooking oils etc. and distributed to small business owners on a whole sale basis).

Business-to-Government (B2G): This type of ecommerce business takes place when a government entity uses the products or services of a business. For instance, a government entity can use an online platform to promote its cause. Many governments are using online platforms like Facebook, twitter to promote their cause and to reach the public. Many government entities are using internet services provided by a business to run their day to day work. Example; Based on the PPDA act, GOU has rolled out an eProcurement system that requires government agencies to buy goods and services through electronic

methods, primarily the internet. Tender information is available to bidders on the PPDA websitewww.ppda.go.ug Technically businesses have to go on the PPDA website and look for bids. This seeks to improve participation in procurement of goods and services. Improve efficiency as well as eliminate corruption by promoting transparency.

Consumer-to-Business (C2B): In this model, consumers (individuals) create value and businesses consume that value. In other words, a consumer sells or contributes monetary value to a business. For example; When a consumer writes reviews or when a consumer gives useful ideas for new product development then that consumer is creating value for the business if the business adopts the input. This is attributed mostly to the power the internet has put in the hands of consumers. Customers are now starting to realize the power they wield and are looking to leverage that power for profits. For instance; companies know that people read reviews before they buy products online. Therefore, they pay influencers (someone who has his or her own audience and the ability to influence what that audience buys or does) to write positive reviews about their products and to give a good rating. This will boost sales of their products and the influencers who write reviews earn money for their services. In Uganda we have many celebrities marketing company products online (Rema Namakula markets for Jesa on her Facebook page, Sheila Gashumba-Yokuku Chicken, Spice Diana-chippa cash).

Government-to-Business (G2B): G2B is an online commercial interaction between government authorities and private corporations. This type of e-commerce business is where one party involved in the business transaction is government or official authority, and another party involved in the business transaction is business or enterprises. As a rule, a G2B model gives companies a convenient way to deal with payments and legal procedures, like document renewal, payments for government goods and services and other fees online. This cuts down significantly on bureaucratic tendencies and paper work. A classic G2B example is a government website where businesses go to pay taxes using the internet. URA portal-ura.go.ug (businesses are able to pay their taxes through the URA portal), EFRIS system by URA, also online businesses are required to pay internet tax for using the internet to sell goods and services and to run their business.

PLATFORMS ON WHICH ECOMMERCE BUSINESSES OPERATE.

This looks at where and how e-commerce takes place. Platforms include;

- Online storefronts
- Online market places

- Social media

Online storefronts: Also known as electronic storefront. It is an ecommerce solution for merchants who want to host a website that advertises their products or services and for which consumer transactions are generated online. They are ecommerce platforms that provide various software applications or tools that merchants can use to launch their businesses and start selling to their customers, wherever they are. The software apps include; electronic shopping carts, product display, online ordering software, inventory management applications, billing and secure online payment system and payment processing software. When obtaining a storefront account, users typically pay a one-time setup fee and then pay either annual or monthly fees. Examples include; BigCommerce, Shopify, Wix, 3dcart, WooCommerce, Volusion, Prestashop, Weebly, Squarespace, Magento.

Online market places: These are ecommerce sites that offer many different products or services from different sellers. Examples include; Amazon, eBay, Walmart, Etsy, Alibaba.com, Google Express, Jumia etc. Many online marketplaces don't own inventory, rather they just connect buyers and sellers and give then a platform on which to do business.

Social Media: Many companies use social media platforms with the aim of creating leads, boosting their sales and spreading brand awareness digitally. Social media has the ability to increase sales because strong online presence on sites such as Facebook, Pinterest, twitter provide a cost effective way to interact directly with prospective consumers. Many of these platforms are used to market ecommerce stores and also show case their merchandise. A sale can be facilitated by directing shoppers to a merchant's ecommerce site, or users can buy directly on the platform. Example; Fresh peaches, market day on bloggers pages/Mama Tendo.

VALUE DELIVERY METHODS FOR ECOMMERCE INNOVATIONS

White and private labels: To "white label" is to write your name on a product bought from a distributor while in "private labelling" a retailer pays a manufacturer to produce a product for them to sell exclusively. With both labelling, you can stay lean on investments on design and production and look for an opportunity in marketing and technology. For Example; white label- https://shop.abryanz.com/?v=1db208cbcff2

Wholesaling: This is the process of selling goods online, in bulk at a discounted price. For example; Kikuubo online is a platform that sells products in bulk. Wholesaling is a

B2B practice but some retailers are taking advantage of it as part of being budget-conscious which is making it look like a B2C ecommerce type.

Drop shipping: This is the fastest growing method of all the value delivery methods for ecommerce. Drop shipping is a kind of value delivery method in which a product or products are shipped to a third party through ecommerce sites like aliexpress, Jumia. Drop shippers stand as middlemen between the manufacturers and the buyers. The buyer will place orders through the middleman and the middleman will place the order to the manufacturer with the buyer's address and the manufacturer will ship the product to the buyer. In this case the middlemen don't see the products at all.

Subscription services: Subscription works in such a way that a customer pays a fixed amount weekly, monthly or yearly to have access to a service for a particular period of time paid for by the customer. Subscription services have been known to help customers save more money than on subscription services around the world. Even with digital products and services, subscription is taking over the ecommerce industry from the mobile phone data, to TV subscription and even digital information products.

D2C- Direct to Consumer: Here a business sells directly to its customers. This method has helped so many consumer brands built trust and loyalty followed with a very fast growth in the process. It also cuts out the middlemen for example; Café Javas app, Safeboda app etc.

E-COMMERCE ADVANTAGES AND DISADVANTAGES

ADVANTAGES TO CONSUMERS

Wide range of products and services: E-commerce Provides users with more options. Customers are able to choose a product or service of their choice from any vendor anywhere in the world. This is so because a business is able to stock a lot of goods in a virtual store without considering inventory costs.

Convenience: Customers can buy any product from anywhere in the world without moving away from their workplace or home but through internet. Bad weather might stop a person from making the drive to a mall, or paying a visit to your local business, but it won't limit a visit to an online store. E-commerce provides convenience to buy goods or services without causing any physical constraints to the consumers.

More informed decision making: Information is literally at your fingertips when buying online. Through the internet, customers are able to search for product information, compare the prices and benefits and then make a decision whether to purchase the

product or not based on its value. Information such as reviews from real customers (this is probably the most effective), product descriptions, usage videos, product guides, social validations etc. guide customers before making a final purchase. Customers are also able to get their queries clarified and track their delivery status when the goods are being sent to them. If any doubts arise while handling the products, the customers can easily contact the business through the internet.

E-commerce saves money: Costs incurred by a provider of products or services in cooperation with an intermediary are paid by the customer. When there are no middlemen, the customer may not have to spend so much money. Products offered over the Internet are generally cheaper than those in the shops. It also increases the competition among businesses and as a result, organizations provide substantial discounts to customers. Shoppers don't have to pay travel costs in order to make a purchase.

E-commerce saves time: Saving time is one of the major benefits of online shopping. The time required to choose, buy, and pay for an online product is not more than 15 minutes! Products are delivered to customers within a week. If you order goods that are heavier, you do not have to worry about it. The messenger will bring them to your doorstep.

Around-the-clock availability: Online businesses are always open. Customers are able to buy products/ services from online shops 24/7 given the different time zones in different locations. It doesn't involve waiting for a weekend or a half day in order to do the necessary shopping. Unrestricted by working hours, ecommerce businesses can serve customers 24/7-365 days. A potential customer can roll over in bed at 4 AM, think of something they want to buy, search for it on your site and make the purchase instantly. Even better, the small business owner doesn't have to pay for the resources to physically keep a store open 24 hours a day.

ADVANTAGES TO BUSINESSES

Increase in revenues: Many e-commerce businesses strive to look for tactics that help them to increase their revenue. They are able to apply tips such as focusing on repeat customers, providing mobile-friendly experiences, reducing product returns, utilizing social media and reducing cart abandon rates which in turn boosts their revenue. Increase in sales help the business to enjoy greater profits. The business being open 365 x 24 x 7, fetches revenues throughout the year. This is because orders are not restricted.

Global market: A physical store will always be limited by a geographical area it can serve. An online store, or any other type of eCommerce business for that matter, has the

whole world as its market. Businesses are able to go from a local customer base to a global market at no additional costs. E-commerce helps to attract customers and business clients from anywhere in the world due to global reach of the internet. By using multiple online touchpoints, you can access customers from all angles by going where they already are, such as social media, forums, and Google search. E-commerce has enabled rural areas to access services and products, which are otherwise not available to them.

Easier to scale up: Scaling up or growing a physical store requires more floor space (and the expense that comes with it!), employees, and shelf space. In contrast, it's very simple to grow an online store. All you need is more inventory, a few digital twists, and possibly more storage space, which is far less costly than storefront space. Being online also eliminates the need for opening a new store in another location as you're already within the reach of a global marketplace.

Reduced costs; ECommerce businesses benefit from significantly lower running costs/store maintenance costs. As there's no need to hire sales staff or maintain a physical storefront, the major eCommerce costs go to warehousing and product storage. Digital sellers can launch online stores with minimal startup and operating costs. As merchants are able to save on operational costs, they can offer better deals and discounts to their customers. It also reduces the need for hiring people for sales along with easy and quick targeted marketing.

Gain Access to Customer Data Easily allowing for a customized user experience: You can easily gain customer's data like their email address, contact number and home address which makes it easy to communicate with the customers. If you ask them to create an account, you can obtain even more information from them to better serve them. Moreover, you will be able to collect data on how long your customers stay on your site, what they look at, and how they go about making purchases. That gives you direct insight into what's making them click "Buy" or what's stopping them. Data about a customer's past purchases and online activity offer insight into their interests which can be used to deliver a personalized experience. Sharing products targeted to a shopper's tastes is a way to appeal to customers with a deeper level of familiarity.

Able to Process High Number of Orders: As your business continues to grow, you might choose to hire employees to help with order processing. With drop shipping you don't need to physically have the product in order to sell it to a customer, therefore you do not have to worry about stock control like physical stores have to. In retail stores, long queues can deter people from shopping. With ecommerce, there's no waiting time. A customer

can place orders on his or her own schedule with no delays allowing you to accept a high number of orders.

Automation minimizes human error: the majority of store operations are integrated into your e-commerce platform and set up to perform automatically. It is really great as it diminishes the probability of a mistake like a misplaced order or an incorrectly charged bill. Moreover, there are no consultants at an online store (at least, not physically present). And there is something good about it as they won't confuse or downright your customers creating a negative reputation. We do not recommend leaving your customers completely unsupported. But e-commerce has a solution- create an FAQ page and use virtual assistance.

More affordable and effective marketing: Promoting a physical store, you use a set of traditional marketing practices. They include means of mass communication like print, radio, TV commercials, direct mail and telephone. Traditional marketing means and strategies used to be effective in a time when there were no advanced digital technologies. At the moment, these types of product promotion offer little interaction with the audience and yield poor conversion ratio. Ecommerce works with the more advanced level of marketing technologies – digital marketing. The pros of digital marketing are its broader scope of operation and bigger number of activities that it includes: content marketing, SEO, affiliate marketing, email marketing, pay-per-click and social media marketing. Each of them uses the Internet as the media, which makes these activities less expensive and provides great global marketing advantages. Moreover, it directly interacts with numerous people who use social networks non-stop.

You can retarget the customers: It often happens at brick-and-mortars that even these customers who are genuinely interested in the item leave the store without purchasing it. Especially if its price is high. It happens because many people need time to think over the purchase and only then make a decision. But a lot of them may forget about it by the end of the day. Unfortunately, there is no chance you can remind them of this item and how great it is. Online, you can do it. Retargeting is an advertisement technology that shows the product ads on web pages that the customer viewed at your online store before. It helps to unobtrusively remind customers of the product they used to like and perhaps still desire, urging them to come back to your store and reconsider. There is no doubt that it is one of the greatest ecommerce benefits.

DISADVANTAGES TO CONSUMERS

Customers have concerns about privacy and security: Some consumers are still wary about giving out personal information, especially credit and debit cards, to online sources. The fact is, instances of fraud have increased with the growth of the ecommerce sector, so online stores have to have secure systems, encrypted payment software and other safeguards against online fraud.

E-commerce Delays Goods/Late delivery: Unless you are using a website to order a pizza, e-commerce website delivery takes a lot longer to get the goods into your hands. Any goods you would want to use instantly you cannot buy them off an e-commerce website. (Pen, candy, a book that you want to read tonight, a birthday gift that you need this evening etc.). But, an exception to this rule is in the case of digital goods, e.g., an eBook or a music file. In this case, e-commerce might be faster than purchasing goods from a physical store.

Compulsory registration: Sometimes a customer needs to register at the website to complete an order. And the problem here is that many people do not want to register. Due to the increased frequency of hacker attacks, it is understandable why some customers are reluctant to submit their name, last name, address, email address and other private data to an online store. Also, there are those who make purchases in a hurry and do not want to spend time for a rather lengthy process of registration.

Some items are hard to purchase online: You can't deny that almost all kinds of products can be sold online. However, there are certain limits of ecommerce capabilities – products which are difficult to select correctly or make sure they will suit you. Among such products are high-heels, prom dresses, some other types of clothing, luxury items and others. The most progressive retailers successfully implement Augmented Reality technologies to their web stores. But this is still a very rare practice. Another type of products which are unpopular in online retail are the ones that need a related service to accompany their purchase, like a roof luggage rack for a car.

DISADVANTAGES TO BUSINESSES

Increased competition: With the relative ease of starting an online store, the eCommerce industry is highly competitive. With e-commerce not only potential customers increase, but also direct competitors. Customers can also easily and quickly compare prices between stores, urging vendors to always keep up with the state of the market. Getting the right online visibility within the industry is therefore neither easy nor for granted. The more competitive a niche is the more expensive ads for that niche are. If all your customers are being targeted by competitors through Facebook ads, try to use a strong

SEO (search engine optimization) and inbound marketing strategy to bring visitors to the website, above all with a good investment on google AdWords and Social Networks campaigns. If all your competitors are using Pinterest, you might try Instagram marketing if your audiences are very visual beings. And there's always the battle for who has the lowest prices. Setting yourself apart from the competition means finding different marketing perspectives and building a strong brand identity.

Complex taxation guidelines: As a store owner, you may be most willing to sell your products worldwide. However, it means you need to comply with the taxation guidelines adopted in each country where you aim to deliver. This could create a lot of complexities in accounting, compliance, and taxation. Apart from the effort to study them all and make sure you can comply with them, you will need to deal with the question of cost-effectiveness for your enterprise.

Lack of in-store engagement with customers: Especially for some certain industries like apparel, nothing can replace the personal experience that a brick-and-mortar store offers. In-store engagement with customers is something many businesses are trying to preserve, even as technology continues to change the retail space. The ability to speak with a sales assistant about your needs and issues is often more helpful than trying to find or compare products on your own. Of all the advantages and disadvantages of eCommerce, losing the ability to look your customer in the eye and explain to them the value of your goods is the biggest loss. Also, online shopping only provides a handful of pictures of the product and information on size/fit/fabric. If you're lucky, you might see a video. Many shoppers still need more information available to make choices. Tactile considerations, such as how an item feels or how the textured come into play, as well as how clothing will fit, all make a big difference when it comes to consumer purchases. You cannot touch the fabric of the garment you want to buy. You cannot check how the shoe feels on your feet. You cannot "test" the perfume that you want to buy. Yet, in many cases, customers want to experience the product before purchase. E-commerce does not allow that. If you buy a music system, you cannot play it online to check if it sounds right.

E-COMMERCE PAYMENT SYSTEMS

An e-payment system is a system that allows your customers to pay for products and services online. This mechanism works with the purchaser, merchant, purchaser's bank, merchant's bank, payment processor and payment gateway. Below are some of the modes of electronic payments;

Bank transfers: Bank transfers allow us to move money from one bank account to another. Funds are transferred between bank accounts without physically handling the money. Customers who use internet banking can do a bank transfer to pay for online purchases. A bank transfer assures customers that their funds are safely used, since each transaction needs to be authenticated and approved first by the customer's internet banking credentials before a purchase happens. When a customer places an order in an online store and chooses payment by bank transfer, they are sent an order number which must be detailed as reference. Once the e-commerce store sees the payment on its bank account and its details match a current order, it checks the order as "paid" and proceeds to ship the goods.

Mobile money payments: This is a regulated money payment made for a product or service through a portable electronic device such as a tablet or cell phone. Mobile payments are secure; all payment procedures are encrypted. Mobile payments include; (mobile wallets and mobile money transfers). Mpesa, MTN mobile money transfer, Airtel money etc.

Credit/debit Card Payment: These are cards for cashless payments in internet stores. They include; Debit, credit, smart cards such as Visa, MasterCard, American express etc. When using payment cards, a customer loads his or her online shopping cart, enters his or her card details and clicks the "buy" button. Within seconds, both the e-merchant and the customer receive confirmation of the successful sale.

Prepaid card payments: An alternative for credit/debit cards. These are cards used to make purchases and they come with a balance that acts as your spending limit. Once you have spent the balance, the card becomes unusable until you add more money to it.

A key thing that differentiates prepaid cards is that they aren't linked to a bank account like a debit card is, and they aren't linked to a line of credit like a credit card is. When you use a prepaid card, you're only using the money that you've loaded onto it. You aren't borrowing any money and the card doesn't have the ability to draw from any other financial accounts you may have. That's why you need to reload an empty card with more money if you want to continue using it.

Digital wallets: A digital wallet (or e-wallet) is a software –based system that securely stores users' payment information and passwords for numerous payment methods and websites. This software may be included in a bank's mobile app, or as a payments platform. By using a digital wallet, users can complete purchases easily and quickly with NFC (Near field communications) technology. They can also create stronger passwords

without worrying about whether they will be able to remember them later. Digital wallets or e-wallets allow customers to pay without having to carry their card. A customer just needs to link his/her bank account to the e-wallet once, following which the details are stored and remain secure inside that wallet. This eliminates the need to enter the card details every single time, hence encouraging a quick checkout. Some of the popular digital wallets are-PayPal, Amazon pay, Apple Pay, Google pay, Easy Pay (Easypay.co.ug), Samsung pay, android pay.

Cash on delivery: This is the system of paying for goods when they are delivered. Cash is often used for physical goods and cash-on-delivery transactions. It comes with risks, such as no guarantee of an actual sale during delivery and theft. Needless to say nowadays, cash on delivery does not necessarily mean customers pay with cash (they can use cards, mobile payments as payment terminals are often available with delivery agents.

Cryptocurrencies: A cryptocurrency, crypto-currency, crypto, or coin is a digital currency designed to work as a medium of exchange through a computer network that is not reliant on any central authority, such as a government or bank, to uphold or maintain it. Individual coin ownership records are stored in a digital ledger, which is a computerized database using strong cryptography to secure transaction records, to control the creation of additional coins, and to verify the transfer of coin ownership. Cryptocurrency does not exist in physical form (like paper money) and is typically not issued by a central authority. A cryptocurrency is a tradable digital asset or digital form of money, built on block chain technology that only exists online. Cryptocurrencies use encryption to authenticate and protect transactions, hence their name. Stores that accept Bitcoin and cryptocurrency include shopify, WooCommerce, BigCommerce, Magento, spe-taxi-cab in Uganda etc.

https://bitcoinke.io/2019/08/accepting-bitcoin-for-payment-in-kampala-uganda-a-chat-with-mark-karamira-ceo-spe-taxi-cab/

E-COMMERCE BUSINESS APPLICATIONS

The following are some of the major business application areas where e-commerce is widely used;

Online marketing and purchasing: Ecommerce marketing is the act of driving awareness and action towards a business that sells its product or service electronically. Ecommerce websites can be used as a marketing tool to promote a product or service and grow a

business. Data collection about customer behavior, preferences, needs and buying patterns is possible through Web and e-commerce. This helps marketing activities such as price fixation, negotiation, product feature enhancement and customer relationships to be strengthened, which in turn provides users an enhanced and customized shopping experience that encourages repeat purchases as well as attracting new customers.

Online Banking: Online Banking is also known as electronic banking, net banking, virtual banking and internet banking online banking is defined as automated delivery of new and traditional banking products and services through electronic and interactive communication channels. It is an ecommerce application that has simplified time consuming and complex banking processes for people. It enables bank users to perform transactions easily online without having to wait in long queues in banks. Customers can access online banking services by using electronic devices like personal computer, laptop, palmtop, ATM, kiosks etc. Banks and other financial institutions use ecommerce significantly in their operations. Trips to a physical bank are no longer necessary by utilizing the vast array of online services offered by major banks. Every major bank has its own online application today to provide virtual banking services to its customers. Customers can check account balances, process a loan, transfer money, pay bills online, pay insurance premiums and many other convenient banking services. Financial service companies that compete with banks can offer many things, besides basic banking, to their customers online. With online stock trading, people are able to carry out trading electronically by giving information about stocks such as performance reports, analysis, charts etc. through websites. Ecommerce has enabled individuals and businesses to

undertake financial activities at their convenience, which helps to achieve their economic goals and objectives.

Online Auctioning: An online auction is an auction which is held over the internet. The main objective is to break down and remove the physical limitations of traditional auctions such as geography, presence, time, space and a small target audience.

Applying e-commerce to auctions takes it to a more significant level where people can participate without any geographical boundaries. The seller sells the product or service to the person who bids the highest price. That leads to more participation, more negotiation, and helps to make auctions successful. For sellers, online auctions open up new sales channels for new products and offer buyers favorable purchasing conditions.

Retail and Wholesale: E-commerce has a number of applications in retail and wholesale. E-retailing or online retailing refers to the selling of goods and services through online stores from businesses to consumers. E-retailing is basically a B2C sale of goods and services through online stores designed using virtual shopping carts and electronic catalogs. Through e-commerce, retailers are able to offer customers an equally engaging shopping experience. It enables retailers to offer different products and services at one internet location. The customer and the seller are attracted into one virtual space through a web browser. The best ecommerce trends have slipped into the retail world and most of the retail shops either have or will have an online presence soon. Retailers are adopting new technologies that enable potential customers to access the listed products anytime, anywhere. This helps to bring in more customers to the website and generate sales. Wholesale ecommerce is a business-to-business (B2B ecommerce) model where, instead of selling your products individually to consumers, you sell them in bulk and at a discount to other businesses like retailers. Within the supply chain, you're basically the intermediary between the manufacturer and the distributor or retailer. Wholesale ecommerce is growing in popularity as more traditional B2B businesses move their operations online. Wholesale businesses can benefit from ecommerce through increased brand awareness, more efficient processes (enhanced control over supply), higher average order values (AOV) and higher retention leading to more growth.

Real Estate Market: An electronic version of the real estate industry. Internet real estate is the concept of publishing housing estates for sale or rent online, and for consumers seeking to buy or rent properties through such platforms. Online real estate services are provided by websites that show listing of houses, shops and flats put up for sale and rent. Online real estate sites play a supporting role for property dealers. With an informed-rich website that is user-friendly, or by helping customers navigate easily through the showcased properties and products, or by offering incentives that may encourage the customers to make sales decisions, the real estate broker's marketing efforts are

simplified and market-targeted. With e-commerce, builders can use virtual reality technology on their website to demonstrate three dimensional floor plans to buyers. This helps real estate companies to attract buyers. So transactions normally can be initiated online but materialize offline in a face to face contact of parties.

Import and Export: The internet has simplified the import and export business.

E-exporting is the practice of receiving and processing orders online from customers located in foreign countries. Through the internet, exporters are able to reach a large number of potential customers from around the globe without needing to establish a physical presence in other countries. Exporters can also make enquiries about suitable customers. E-importing involves bringing products or services (made elsewhere) that have been ordered online into a country for sale. By using E-commerce importers can make enquiries about the products, their manufacturers, price, quality, other terms and conditions etc. Electronic payments are playing a great role in import and export business. Payments can be made by electronic modes including digital means like internet payment or internet money transfer.

Manufacturing: A manufacturer is a company, producing goods for sale from raw materials and afterward, selling them to customers, wholesales, or distributors. In manufacturing, e-commerce forms a medium for companies to execute the electronic exchange. Combined buying and selling, sharing market status, inventory check information etc., enable groups of companies to efficiently carry out their operations. A B2B eCommerce platform helps manufacturers and suppliers with an opportunity to meet constantly changing customers' requirements. Many customers rely that buying from a website is more convenient than buying from a sales representative, and prefer to buy online. When a manufacturer provides a convenient and informative online buying experience for their B2B customers, the customers make that manufacturer their go to supplier. B2B ecommerce storefronts help manufacturers improve their revenue stream by opening new sales opportunities and set them apart from their competition. By providing an easy ordering process, these participating companies and manufacturers build profitable relationships.

Online shopping: Ecommerce has had a major impact on customers. Consumer shopping habits have changed drastically over the last few years thanks to the explosion of ecommerce. Online shopping is quickly becoming a preferred way to shop for consumers around the globe rather than in-store. The growth of ecommerce has not only changed the way customers shop, but also their expectations of how brands approach customer service, personalize communications and give customers choices. Ecommerce has revolutionized consumer shopping. Consumers no longer have to move out to go shopping. Ecommerce has brought the shopping experience to their fingertips via

computers and mobile devices, completely changing the way consumers shop. This makes online shopping comfortable, convenient and at most times cost effective.

Mobile and Web applications: Popularly called mobile commerce or m-commerce applications, this is a subset of retail e-commerce. Mobile or web application development has become a staple for brands to showcase their business capabilities. The consumer carries out purchases through mobile or web applications that are optimized for the retailer. These applications also ensure payment security through safe e-payment methods.

Online Booking: Travel and tourism is a thriving industry today, and online booking is an ecommerce application that is growing as a result of it. Online booking helps people book travel essential services like train/flight tickets, hotel rooms, tourism packages, transportation services, etc. It makes travel very convenient and easy for people as everything can be set from the tip of the fingers.

Online Publishing: Digital magazines and e-books are slowly replacing traditional printed books. It has several advantages such as portability, lightweight, accessible from everywhere, etc. They are also environment friendly as they help in reducing paper and saving trees. Due to these reasons, online publishing or e-publishing has been seeing a rise in popularity.

E-COMMERCE CHALLENGES AND SOLUTIONS

Cyber and Data Security threats: Security breaches are one of the biggest challenges faced in ecommerce. Many ecommerce businesses store confidential information/data about their customers such as credit card details, addresses and phone numbers on their sites. Hackers usually take advantage of a site's security loopholes to gain access to the site, disrupt business and also steal confidential customer information. At the same time, consumers are becoming smarter and more concerned with data privacy and are increasingly weary of security threats like credit card fraud, account acquisition, e-skimming and malware. Consumers expect that their transactions are secure, so one data breach could destroy your reputation and end your customer's loyalty. Cyber criminals can cause severe damage to the online business as well as brand image because they cannot only infect your website with viruses, but they can also expose confidential data.

Case
https://www.uscybersecurity.net/cyberNews/macys-data-breach/
https://securityboulevard.com/2019/11/macys-com-checkout-page-hacked-customers-advised-to-be-vigilant-of-fraud/

Solution: Management at e-commerce companies must make protecting and encrypting its customers' data a top priority. Additionally, they need to ensure that their business is taking the appropriate precautions to safeguard its website or app against cyber-attacks. There is need to be vigilant and look out for any malicious activity on your site. Make sure your ecommerce website is hosted on a standalone server dedicated only to you. Regularly back up your data in case it gets stolen. Install security plugins and safety components into your website to prevent hack attacks. Update your ecommerce platform regularly with official patches, plugins etc. This will help your teams to work actively on identifying current threats and create solutions to stop them in their tracks.

Product Return and Refund Policies: Many online shoppers look at a retailer's return policy before making a purchase. When an ecommerce site has stringent polices, it makes a shopper nervous and less likely to trust the retailer. When shopping online, customers want the flexibility of making a mistake that doesn't cost them. This presents a challenge for online retailers: how can you give your customers peace of mind knowing they can return products they aren't satisfied with, without potentially damaging the business through losses in shipment and reputation?

Case

https://www.jumia.ug/sp-terms-and-conditions/

https://www.jumia.ug/sp-returns-refunds/

Versus

https://jiji.ug/rules.html

https://suubula.com/sell-with-us/

https://kikuuboonline.com/SimbaShoppeFront/UserFront/TermsAndConditions

Solution: Have a flexible return and refund policy to allow customers make purchases without being nervous/ hesitant which results into customer satisfaction. Be transparent about your return and refund policies- Make sure customers can find detailed info on this very easily in your Terms & Conditions and FAQs pages and make sure the policies are clear. Avoid imperative phrases in your policy Wording-Phrases like "you are required" and "you must" can sound harsh and may intimidate customers. Try to soften your language in return policies. Give options-consider providing various methods of shipping, payments and refunds as well as certain bonuses such as coupons and discounts for people dissatisfied with their purchase.

Increased Competition: Online shoppers have so many options whenever they want to make a purchase. Given that there are thousands of sellers of similar products, shoppers may find it difficult to make a choice. A lot of people these days are fatigued by all the options that are out there. A simple search for something like a phone will give you thousands of options making it difficult to make a choice. From a retailer's standpoint, Retailers have to find ways to stand out from the crowd and bring shoppers to their website, instead of buying a similar product from their competitors. For example, let's take a look at Etsy, an eCommerce website that sells handmade or unique items. A quick search for "2021 calendar" shows 45,756 results! With so many shops offering similar products, you'll need to figure out how to stand out from the competition.

Case

https://www.etsy.com/search?q=2021%20calenders

https://kikuuboonline.com/CategoryMenu/4

https://www.jumia.ug/catalog/?q=cooking+oil

Solution: Always do a thorough analysis of your competitors. It is important to categorize the competitors- closely and frequently observe and assess the components of their websites, find out what products they are selling, prices of their products/services, how they are generating leads and how they keep in touch with their customers, what are the reviews on their products or even the marketing tools and techniques they use. This will help to understand their weaknesses and strengths in order to position your business better and gain a competitive edge. Make sure you stand out – be it the colors you use, the topnotch functionality of your website or amazing user experience. This will give you a competitive edge over you competitors. Offer services or products that are unique and relevant to your customer base.

Price and shipping: It is common to find same products on ecommerce sites priced differently. For example, the search on Jumia for cooking oil came up with 256 products but all priced differently, and that's the price before the cost of shipping/delivery. Such pricing can provoke customer alienation. A customer may feel cheated after buying a product and then find out that someone else is selling the same product at a lower price. This may lead to customer dissatisfaction and they tend to leave bad reviews. Building a customer's trust can take very long, but it also can be destroyed in a matter of seconds. No matter how much they love your brand, if they feel that they've been tricked, you'll see them turning their back to you. When this happens, it's always followed by increased

competition in the whole industry. More companies then tend to take your place, and eventually to take over the unsatisfied customers. Such pricing can also easily turn into a price war which can create economically unfavorable circumstances from which no ecommerce business comes out as a winner. On the issue of shipping, many online shoppers care about shipping costs and delivery methods. They expect fast delivery of their orders even if shipping is free and most cases where goods have to move across borders this might be difficult to attain hence having a huge negative impact on the business.

Case (price)

https://www.jumia.ug/catalog/?q=cooking+oil

https://www.etsy.com/search?q=2021%20calenders

Case (shipping)

https://www.jumia.ug/sp-shipping/

https://www.amazon.com/gp/help/customer/display.html?nodeId=468520&ref_=footer_shiprates

Solution: Consolidate and centralize channel management using an automated system. This will help to manage MAP (minimum advertised price) policies to remove violations, in addition to ensuring that prices remain compliant with each marketplace price agreement. It is also important to monitor competitor pricing. Online shoppers have convenient access to a myriad of brands and products. Searching for a product on a marketplace like Jumia or amazon can produce thousands of results, and if a listing is not present on the first page it will often not be seen or clicked. To give your products the best possible chance of having the right pricing, it's vital to research competitors' prices and how they fluctuate. However, analyzing data to discover price trends without visualization and benchmarking tools is a time-consuming process, so its recommend that you select an analytics tool that can provide insight into competitor pricing. Set flexible pricing systems that can adjust pricing based on sales trends. Use software tools to lower prices during slow sales periods, then increase the prices as the order frequency increases. Use deals and promotions to create awareness and attract more buyers. It is always good practice to participate in marketplace promotions whenever possible, leveraging options for free shipping, order discounts, giveaways, sales events and more.

Create competitively priced bundles. It can help appeal to customers looking to find the best price for an item and assist with converting customers that may otherwise be reluctant to purchase one of the items separately. For shipping, get creative and look beyond big-name carriers. Look into using a local delivery or courier company that will deliver the product quickly to your customers at a competitive rate. Apps like safeboda provide door-to-door delivery for just about anything at more competitive prices than major couriers. A crowd-sourcing service, it provides an innovative delivery option at a low cost. Ensure that you include shipping prices in the product prices or display prices, or live rates before checkout. Include options for fast shipping. Regardless of the shipping method used, the buyers would expect the delivery within a week. Try to choose carriers that can provide tracking service and notifications when the parcel is shipped, when it's on way, arrived near the destination, and when it will be delivered. Real-time tracking gives complete peace of mind to the customers.

Absence of proper Online identity verification: When a prospective buyer visits an e-commerce website and signs-up, the website is unaware of the customer. Verifying customers' identity is a big challenge for e-commerce businesses because it is difficult to tell if the customer is a genuine one or a fraud. The most common type of fraud causing concern for e-commerce businesses is identity theft. The customer may provide some basic information, whether the information is genuine or not remains questionable. Without online verification, you risk selling to fake buyers which can result into huge revenue losses for your business. For example, Cash-On-delivery purchases using fake addresses or contact details.

Cases

https://www.amazon.com/gp/css/homepage.html?ref_=footer_ya
https://www.jumia.ug/customer/account/login/?return=%2F
https://kikuuboonline.com/

Solution: To cope with this challenge, businesses need to have a proper identity verification system in place that identifies fake ID documents and other details offered by the customer. Incorporate biometrics, AI, single sign on, one-time password, two-factor authentication etc. Suspicious activities such as fake email IDs, zip codes, wrong addresses should be constantly monitored. Sending verification codes (two factor authentication) or a one-time password (OTP) on the customers' mobile numbers can be implemented as well as incorporation of biometrics, AI, single sign on etc. For COD

options, the brands can verify the authenticity of the users by calling them to validate their purchase and addresses.

Customer loyalty and retention: Establishing a solid base of long term relationship with customers is essential for building a successful business. It is shown by the fact that customer retention is much more cost-effective than constant acquisition as it costs five times more to convert a new customer than it does to keep an existing one. Most customers say that they do not hesitate to recommend a business they trust to others. The success rate of selling to a current client is 3 -4 times higher compared to that of a new one. However, in today's digital business climate, the enterprises particularly face this challenge because the sellers and buyers neither know nor see each other. Then, the customer is robbed of the senses they would normally rely on in face to face transactions, which makes them more reluctant to make a shopping decision and then trust the store. For any business, hesitation and uncertainty are the mortal enemies of eCommerce retailers.

Solutions: To maintain customer loyalty, you MUST provide excellent customer service. Create positive experiences for your customers so they trust you. After all, if your customers are happy, it's likely they'll purchase from you again. Ensure that your processes are effective, from ordering online to shipping. Make customer service a priority over profit. Remember, it's easier to maintain an existing customer than to find a new one. Be transparent. Display your address, phone numbers, pictures of staff, customer testimonials and credibility badges on your website. Make sure it's easy for customers to find. Add a live chat option to the website. Create valuable content. Keep in touch with the customer via a method that they like – be it an email, SMS or blog posts – be sure to find out what works best for your customer. Create loyalty programs. If a customer doesn't want to lose their loyalty prizes, they need to purchase from you. Let customers know about new products, sales promotions and special coupon codes for being such loyal customers.

Retailers and manufacturers: With the rise of the internet as well as a lower barrier to e Commerce's entry, product manufacturers now are capable of challenging the old business system and sell the goods directly to the customer. We are finding that the manufacturers are now active competitors in the retail market. Of course, they want to get rid of the fact that they are supposed to do all the legwork (product development, purchasing, warehousing, etc.) while drop-ship retailers are gaining benefits oftentimes at a higher rate than the manufactures themselves make. For now, they are turning to

retail eCommerce websites in order to expand their customer base and increase sales. By selling directly to end clients, manufacturers are not only violating the trust found in manufacturer- retailer relationship by competing their customers again, but also selling goods at, below, or even nearly cost compared to MSRP (Manufactures Suggested Retail Price).

Solutions: In most of the case, if the manufacturer has already been selling online, you will have to undergo a difficult time to get them to stop if you are one of their top clients and you can threaten to stop purchasing from them. However, this seems to be only possible with small manufactures. With other big names, we still have a few tactics to tackle. Stopping manufactures selling products without passing through any third party may not be feasible, but you can narrow their playfield by offer products at a lower price or with additional benefits to increase sales. Because most manufacturers just want to boost their sales, but become a true competitor, then you can use price as a "weapon" to compete with them in this war. Besides, you are still customers of these manufacturers; you can make your own choice by giving priority to manufacturers who less likely to sell directly to customers. You should be remembered that this should be set out in the contract to make sure that they cannot violate the rules which were just by mouth.

TAKE HOME EXERCISE

1. *Discuss the challenges that hinder small businesses from adopting ecommerce.*
   - *POLITICAL*
   - *SOCIAL CULTURAL*
   - *TECHNOLOGICAL AND COMMUNICATION*
   - *ECONOMIC*
2. *Provide solutions to the above challenges.*

SECURITY THREATS TO E-COMMERCE

An Ecommerce threat is a potential negative action or event facilitated by a vulnerability that results in an unwanted impact to the targeted ecommerce site. The cyber criminals use the internet for unscrupulous means with an intention of stealing, fraud and security breach. Security threats cause serious incident to e-commerce firms such as revenue loss, reputation damage, legal consequence and loss of market share. Therefore, e-commerce companies should use proper techniques to secure their system and increase user awareness of those threats. There are various types of ecommerce threats. Some are

accidental, some are purposeful, and some of them are due to human error. The most common security threats include;

Transaction fraud: This is any type of false or illegal transaction completed by a cybercriminal in a web shop. Hackers often pose as legitimate representatives and contact credit card owners asking for sensitive information. They can easily steal this information as it is often stored and transferred digitally. They interact with the unsuspecting victims using methods such as email, texting malware to smartphones, instant messaging, rerouting traffic to fraudulent websites, phone calls or online auctions. After the information is acquired, they will either use it themselves or sell it to cyber thieves on the dark web to make fraudulent transactions. The most common types of fraud include; identity theft, friendly fraud, clean fraud, affiliate fraud, triangulation fraud, merchant fraud. Payment fraud can hurt both you and your customers. By aggressively protecting your e-commerce store against fraud, you can improve your reputation and your bottom line.

How to mitigate e-commerce fraud.

- Continually update your network security systems.
- Install Firewalls and antivirus software to act as a shield against hackers' attempts to penetrate a secure network.
- Constantly update software to ensure that your sensitive business information is safe.
- Maintain awareness of the latest fraud trends.
- Partner with a verified payment processor.
- Encrypt transactions and emails containing confidential information.
- Ensure that tokens and login credentials are regularly changed.
- Establish a policy regarding access to confidential information.
- Constantly run security checks with antivirus software.
- Require customers to log in to an individual account prior to making a purchase.

Brute force attacks: A brute force attack is when hackers use methods of trial- and –error to gain unauthorized access to website accounts. These attacks are often used by cybercriminals to crack encrypted data to steal information to be used for fraudulent activities. When an attacker wants to gain access to a website, a user account or other encrypted information, they must first do something to decrypt or unlock this information. They will use brute-force software tools to generate and try different possible password combinations until they successfully decrypt wherever they're trying

to get into. As long as the hacker has the right tools and know how, they are capable of generating thousands of possible password combinations and submitting these in a matter of seconds. Types of brute force attacks include; passwords brute-forcing, session identifiers brute-forcing, forced browsing (DirBuster), credentials stuffing. These attacks give hackers illegal access to websites that contain valuable information (like credit card credentials). Their efforts can either shut down the website entirely or gain access to user accounts (and sensitive user information).

How to prevent brute force attacks

- Longer password length (over the standard 8 characters)
- Uppercase and lowercase combination
- Alphanumeric password combination
- Adding special characters
- Limiting login attempts
- Using CAPTCHA
- Enabling two-factor authentication

Denial of Service attacks and Distributed Denial of Service (DDoS) attacks: DoS and DDoS attacks happen when attackers attempt to make it impossible for a service to be delivered. The attackers use computers to hit your server with fake traffic in order to make your website inaccessible, or unable to function properly, for legitimate users. In a DoS attack, it's one computer system that is sending the malicious data or requests, a DDoS attack comes from multiple computer systems. These attacks work by drowning a system with requests for data either by sending a web server so many requests to serve a page that it crashes under demand, or it could be a database being hit with a high volume of queries. This composed attack will overwhelm the available internet bandwidth, CPU and RAM capacity, deter the hosting of the e-commerce store and stop the website from loading your regular visitors. It will keep your website busy, so it can't focus on the visitors that really matter to your business. Types of DDoS attacks include; Volumetric attacks, Application Layer attacks, Protocol attacks. The main goal of a DDoS attack is to cause trouble to the store and spoil your reputation, as corporate disruption. More often, a DDoS attack will be coupled with a blackmail demand: pay a certain sum, and the attack will be disabled.

DDoS Prevention

- Monitor the network. Incoming traffic should be monitored and parsed because the more you know about what normal inbound traffic looks like, the quicker you'll spot the start of a DDoS attack.
- Any visit requests considered to be fraudulent in nature should be entirely blocked which will prevent the DDoS attack from slowing the site down to a crawl, or significantly affecting its performance.

Bots: Internet bots are software applications that are designed to automate many tedious and mundane tasks online. They have become an integral part of what makes the internet tick and are used by many internet applications and tools. For example, internet search engines like google rely on bots that crawl through web content in order to index information. Bots go through millions of web pages' text to find and index terms that these pages contain. So, when a user searches for a particular term, the search engine will know which pages contain that particular information. Travel aggregators use bots to continuously check and gather information on flight details and hotel room availabilities so that they can display the most up-to-date information for users. This means that users no longer need to check different websites individually. The aggregators' bots consolidate all of the information, allowing the service to display the data all at once. Thanks to artificial intelligence and machine learning, Business intelligence services use bots to crawl through product reviews and social media comments to provide insights on how a particular brand is perceived. Bad bots pose as a threat because they are used by malicious actors to serve as tools for various hacking and fraud campaigns. They are programmed to perform tasks that will hurt your company or your website visitors. Types of bad bots include; credential stuffing bots, content scraping bots, spam bots, and click fraud bots. Bot attacks can result in poor website performance, site downtime, exposure of sensitive customer data and lost revenue.

 The solution is to protect exposed APIs and mobile apps, and examine traffic sources regularly looking for spikes, and then blocking those hosting providers and proxy services.

Malware: Malware, short for malicious software is software that is specifically designed to disrupt, damage, or gain unauthorized access to a computer system. E-commerce malware is usually malicious code that targets the e-commerce website itself. It is not intended to infect users who visit an e-commerce website. In general, these malware infections are unsophisticated, hidden in plain sight, and persistent. These programs focus on retrieving credit card information and encrypting various drives and disks, then asking for a large sum of ransom money to undo. Viruses, adware, spyware,

malvertising, ransomware, worms, Trojans are some of the common types of malware that are used by hackers to try and obtain personal and critical information on your clientele.

Implications of Malware;

- Malware breaks the network of an organization which disrupts the business operations. Significant services offered by the company may be interrupted and disabled. This will lead to huge enterprise losses.

- Personal information/identity will be retrieved and spoofed. Without your interaction, through emails or downloads, malicious software will enter into your system and tries to collect personal information. This is also called identity theft. Malware runs in the background and records each and every activity done by you. For instance, a malware records browsing history, monitors applications your using and also copies personal information like user IDs, password, bank account details etc. once the malware gets personal information, it will hold the grip on your system operations. It will send spam e-mails on behalf of a person to interrupt other connected devices in the organization. Most cases, identity theft is a concern to the banking sector as they do a number of business transactions over the internet.

- Completely breaks down the entire enterprise network infrastructure. Malware may interrupt the enterprise network by completely degrading the network performance and breaking down its infrastructure. As a result of blocking the network, business operations are affected.

- Access to sensitive information. Malware can easily access the sensitive information of a business by foraying into the server machine. This will damage the enterprise operations in the market.

- Leads to hardware failure in some cases.

- Malware can control all application executing on your device. Once downloaded along with e-mails or internet downloads, malware will control system applications. As they retrieve your personal details, the malware tries to execute risky code in your systems to interrupt device operations completely.

Solution to Malware

- Get an efficient anti-malware to detect, remove and prevent infectious software from infecting the computer and IT systems.

- Install an anti-virus software to keep viruses at bay.

Phishing: Phishing attacks are the practice of sending fraudulent communications that appear to come from a reputable source. This cyber-attack uses disguised email as a weapon. The hacker tricks the email recipient into believing that the message is something they want or need. It could be a request from their bank, or a note from someone in their company which requires them to click a link or download an attachment. The attackers masquerade as a trusted entity of some kind, often a real person or a company the victim might do business with. The goal is to steal sensitive data like credit card or login information or to install malware on the victim's machine. This technique only works when the victim follows through with the action and provides the hacker access to their login information or other personal data which the hacker can exploit as per his benefit. Types include; Spear phishing, Microsoft 365 phishing, business email compromise (BEC), whaling, social media phish, voice phishing. Phishing is a common type of cyber-attack that everyone should learn about in order to protect themselves. Phishing attacks can paralyze a business. Staff might be unable to continue their work. Data and assets might be stolen or damaged. Customers might be unable to access online services.

How to prevent phishing attacks

- Use anti-spyware and firewall settings and update the them regularly. Firewall protection prevents access to malicious files by blocking the attacks.
- Antivirus software scans every file which comes through the internet to your computer.

Spamming: Spam is a different term for junk mail. It is basically unwanted mail that you didn't ask for that can be sent from many different sources. Most of the time, spamming is commercial in nature. Spam is usually promotional and its sent to loads of people. It is used because it's cheap. It costs next to nothing for a spammer to blast emails out to anyone they can find. If only a handful of recipients respond favorably to the campaign, the spammer will easily see a return on their investment. However, it is bothersome and can be used as a malicious way to spread viruses. Types of spamming include; Email spamming, social network spamming and mobile phone spamming. Spamming not only affects your website's security, but it also damages your website speed too.

Solution

- When you use your email to sign up for something online, make sure you don't tick the option to receive more e-mails from the website as it will be most likely spam. It is often written in very small text and most people fail to see the option

or ignore it and because of this, people end up with spam getting sent to their email. This is a negative way of promoting business' online and is disliked by most people.

- Use your email client's spam-reporting function.
- Conversely, tell your email client which emails are not spam.
- Don't engage with spam in anyway.
- Don't publish your contact information.
- If you manage a website, use current software and security measures.

ECOMMERCE SECURITY SOLUTIONS

Switch to HTTPS and Secure your website with SSL certificates: Switch to HTTPS which displays the trustee green lock sign that says "secured" next to the URL bar. HTTPS protocols not only protect the sensitive information users submit, but their user data as well. Most modern browsers display a message warning the user from proceeding further because the website is insecure. Some browsers will out rightly block the user from accessing the site. Another benefit you get from upgrading to HTTPS is higher ranking on Google's search page since Google considers HTTPS as a ranking factor. This results into; Expanded opportunities for your business, getting more traffic, increases business authenticity, creates business image, builds customer trust etc. Before you make that switch, you must purchase an SSL certification from your hosting company. SSL is short for Secure Sockets Layer. An SSL certificate is a type of digital certificate that provides authentication for a website and enables an encrypted connection. This certificate is commonly used on e-commerce sites and pages that require users to submit personal or credit card information. By ensuring that all data passed between the two parties remains private and secure, SSL encryption can help to prevent hackers from stealing private information such as credit card numbers, bank information, names and addresses. SSL certificates create trust with users by verifying that websites used to track finances and make online purchases are secure and legitimate. Besides, it provides you with a certificate of ownership so hackers can't use your site as a counterfeit for phishing. Having an up-to-date SSL certificate and HTTPS protocol has become the standard, so it's crucial that you obtain them if you wish to get any considerable traffic.

Secure Your Servers and Admin Panels: Most ecommerce platforms come with default passwords that are ridiculously easy to guess. And if you don't change them you are exposing yourself to preventable hacks. Use complex password(s) and usernames and change them frequently. You can go one step further and make the panel notify you every time an unknown IP attempts to log in.

Payment Gateway Security: Payment gateway is an e-commerce software that authorizes payments for online merchants. It acts as a third party between merchants and customers that securely take the money from customers and send it to merchant's bank account. Payment gateways encrypt sensitive information and details of payment such as credit card numbers to ensure that information is passed securely between the customer and the merchant. In other words, a payment gateway encrypts, forwards and authorizes card payments placed online. If the transaction is deemed illegitimate, the gateway will reject it. If deemed "safe", it will authorize the payment. Payment gateway security uses data encryption to prevent consumer data from ending up in the wrong hands. The gateway takes a customer's credit or debit card information and immediately conceals it. The payment gateway uses their own code to turn the data into a secret message that only it can privately read. This means that, even if someone could intercept your data before it got to its final destination, they wouldn't be able to understand a single bit of it. While it may make processing payments more convenient, having credit card numbers stored on your database is a liability. It's nothing less than an open invitation for hackers where you put your brand's reputation and your customer's sensitive information on the line. If you fall victim to a security breach, and hackers get their hands on credit card data, all you can do is to say goodbye to your business because the heavy fines will force you into bankruptcy. In order to save your business from this terrible fate, you should never store credit card information on your servers and ensure your payment gateways security is not at risk. Additionally, you can use third-party payment processing systems to carry out the process off-site. Popular options include PayPal, Stripe, Skrill, and Wordplay. When it comes to e-commerce recommendations, you must obtain a Payment Card Industry Data Security Standard (PCI DSS) accreditation. A PCI DSS is a set of requirements intended to ensure that all companies that process, store, or transmit credit card information maintain a secure environment.

Install Antivirus and Anti-Malware Software: Hackers can use stolen credit card information to place orders from anywhere in the world. An antivirus or an anti-fraud software can help you with this serious ecommerce issue. They use sophisticated algorithms to flag any malicious transactions to help you take further action. They provide a fraud risk score which can help proprietors determine if a certain transaction is legitimate.

Use Firewalls: Another effective ecommerce recommendation is to use firewall software and plugins that are pocket-friendly yet effective. A firewall is a network security system that prevents unauthorized access to a network. It monitors and controls incoming and

outgoing network traffic based on predetermined security rules to identify and block threats. They keep untrusted networks at bay and regulate traffic that enters and leaves your site. It offers selective permeability by allowing only trusted traffic in. They also protect against cyber threats such as SQL injections and cross-site scripting.

Employ Multi-Layer Security: You can strengthen your security by using various layers of security. You can use a wide-spread Content Delivery Network or CDN to protect your site against DDoS attacks and malevolent incoming traffic. A CDN refers to a geographically distributed group of servers which work together to provide fast delivery of internet content. They do so by utilizing machine learning to filter out the malicious traffic from regular traffic. You can also use two-factor authentication to squeeze in an additional layer of security. Two-factor authorization requires a standard username and password combination as well as an extra code that is sent as an email to the user or as an SMS to their provided phone number. This ensures that only the user can access the service even if their username and password are at risk.

Ecommerce Security Plugins: Security plugins are a simple way to enforce security protection on your website. They provide protection against bad bots, SQLi, XSS, code injections and hundreds of other severe attacks. One of the most secure, easy to implement, feature rich security plugin is Astra. It helps automatically secure your site and virtually patch software by preventing malicious requests from ever reaching your website.

Backup Your Data: Data loss due to hardware malfunction or cyber-attacks is not uncommon. And if you don't backup your data regularly, you are at the risk of losing it for good. You should do it yourself and not trust anyone else to do it for you. Employ automatic backup service so that even if you forget to do it manually, all your data will be backed up automatically. You can go one step further and make a copy of the backup, so you will have a contingency plan available if you lose your original backup. Another option is to choose a managed ecommerce web hosting service that automatically creates backups for you, like Cloud ways.

Stay Updated: The importance of regularly updating WordPress core, security tools, and plugins can be stressful, however, install security updates and patches as soon as they release because hackers can use bots that identify which websites use outdated software. That makes outdated software a serious liability.

Opt for a Solid Ecommerce Platform: It is important that you choose a secure ecommerce platform that regularly updates itself and offers top-notch security. Ecommerce platform tools safeguard you against common threats and frequently provide you with updates. Prestashop, Magento and WooCommerce are some popular choices.

Train Your Staff Better: Your staff should be aware of laws and policies pertaining to the protection of user information. They should not share login credentials, and you should review the personnel who have access to sensitive customer information. Training tactics may include;

- Make online cybersecurity training mandatory for new employees
- Update and repeat training regularly
- Give employees a cape

Keep an Eye out for Malicious Activity: If you don't want any malicious attack to go under the red carpet, you should keep your eyes open for any suspicious activity. This can save you a lot of trouble – not to mention revenue – since you can potentially catch a fraudulent transaction before it can take place. You can utilize special monitoring software that tracks your web activities in real time and notifies you of any questionable transaction. For instance, a scammer using different cards to place multiple orders, or orders where the person using the card isn't its holder.

Educate Your Clients: Some lapses in security don't happen at your end but your client's. They might be using weak passwords or they might deliver sensitive information on phishing sites and in the hands of hackers. You can solve these ecommerce security threats by training and educating your customers through a variety of methods. Educate them about the risks associated with unsafe security practices. Use multiple delivery channels to ensure that your customers see the training throughout the year. This will also push the customers to build a strong security culture themselves. Delivery channels for cybersecurity training and education can include;

- Your business website (your own content, your policies for handling information or disclosing cyber incidents, cybersecurity news or articles, or links to other cybersecurity training)
- Posting cybersecurity resources or news on your social media channels (LinkedIn, Facebook, Instagram, etc.)
- Including cybersecurity resources with physical statements or invoices
- Providing cybersecurity resources, control suggestions (like creating strong passwords), or self-audits at the time of account opening

- Conducting periodic audits of security controls at a customer's location (especially for organizations whose products/services involve financial transactions).