

E-Commerce

Assignment 1

Unit 08

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Introduction

I have been asked by the Hockley Watch Emporium to create documentation regarding the benefits and drawbacks of e-commerce before they switch into the e-commerce system. I will also be looking into ways to promote their e-commerce system.

Task 1

Advantages to E-Commerce

There are many benefits of using an e-commerce system, both for Hockley Watch Emporium (HWE) and their customers. The main benefit of using e-commerce is access to a global marketplace.

The Global Marketplace

For me, this is the main benefit as it allows people from all over the world to discover and purchase products from HWE, removing the limitations such as products only being available to people in-store at a certain shop. This means they will be exposed to many new customers meaning they will be able to generate more revenue, along with being able to hopefully retain more customers who will buy future products.

24/7 Trading

Being able to sell watches to people 24/7 will be a huge positive for HWE. This is because everything can be automated in the backend and the customer being able to buy a product whenever they want and not having to adhere to shop opening times will be a big pro for customers as it is more convenient for them. It removes all location restrictions and works hand in hand with the global marketplace, as people from different time zones will be able to purchase without restrictions.

Low start-up and running costs

This is a major factor when it comes to finances, as running a shop online is cheaper than running an actual store, which will save HWE a great deal of money. When running a physical store, bills such as water, electricity and rent will take a massive toll on their profits. With an online store, the only bills that will be required are ones such as paying for a domain, a hosting provider, couriers and staff. Most e-commerce sites also give free trials for their service, so HWE will be able to try out many different ones and see which one they think will work the best for them without spending a penny. This also ensures the customers get the best possible experience whilst using their webstore.

Pay-per-click Advertising

Pay-per-click advertising is an alternate way to get income from people using the HWE site. Pay-per-click works by showing ads on your store page, and every time a person clicks on one of the ads, you get paid by the company who submitted the advert. If the adverts are also tailored towards the customer from sources such as big data, it will make them more likely to click the advert as it is something they would be interested in, generating more revenue. This is especially helpful if a lot of people visit your store daily, as there is more chance for people to click it. However, showing ads on your site must be carefully thought through such as the number of ads and where they will be displayed must be considered. If users find ads to invasive or that there are too many of them, it may lower HWE's reputation, and it may cause them to lose customers as the browsing experience may be too unpleasant and cluttered.

Gathering customer information

Unlike when purchasing a product in a physical store, you can ask for customer information such as name and email address to send information to them, for example receipts and promotions. This can be used to help generate more sales. This is because you can track what the customer is buying and send them promotional emails with similar products that they may be interested in, and to help bring customers back, one-time discounts could also be given. Sending recommendations makes them more likely to buy more products as the promotional material is also helping them discover new products which they may be interested to buy. Promotions such as sales can also be sent through these emails including timers until the sale ends, this adds a sense of urgency and will incline the customer to buy another product.

Search Facilities

Search facilities is the ability to enter a search term for what you are looking for and have results of that search given back to you within seconds. Compared to asking a person in a physical store, this is a lot faster as it does not require the staff member to memorise all products and their features, or where they are located within the store. It also cuts down the time it will take for the staff member to take you to the item you want and it removes thinking time by the staff member. Using a search facility will find products you search for much faster.

Drawbacks to E-Commerce

Whilst there are many benefits over a physical store, there are also many drawbacks to consider before deciding if an e-commerce platform is right for the Hockley Watch Emporium. In my opinion the main drawback to e-commerce is the lack of being able to interact with the product physically.

Lack of Physical Interaction / Product Description Problems

With an e-commerce system, there is no way to physically interact with the product and check that it is right for you. For example, there would be no way to check if the watch you were buying from HWE was comfortable on your wrist. Whilst there would need to be information such as measurements in the product description for the watch, the user would need to go through the trouble of measuring their wrist and there is always a chance for user error. If the watch was there in a physical store, they would be able to try it on.

Another drawback would be issues with the product description. The description would need to be constantly checked and updated to ensure it has the correct information and is fully up to date.

Consumer Trust

Consumer trust is a huge thing to consider when starting an e-commerce store. People are sceptical to buy from new or unknown stores in fear of fraud and often there is no protection from it unless using a service such as PayPal. A lot of time and effort must be put into ensuring good reviews are given from customers and that their experience on the site is excellent. This will help create and give HWE a better online reputation making people more likely to become customers on their site.

Security Issues

When selling online, you will require customer information such as their card details, address, email address, name and more. If this data is saved into a user account, there must be great effort to ensure this data is secure and not at risk of a data breach. If a data breach occurs, it would be devastating for HWE, and they would lose the trust of many customers and it would severely harm their reputation. Customers won't want to buy from a company that doesn't keep their personal data safe and secure, as a data breach would expose their information for anyone on the internet to see.

Delivery of the Product

As the customer is buying a product online, HWE will be responsible for making sure it gets to them in a timely fashion – customers aren't going to want a massive wait to receive their product. HWE will need to consider the costs of shipping their products and ensuring the courier they are using is reliable and can operate to the standards HWE have in terms of the time it will take to deliver. If there are any issues during shipping, or the product gets damaged, HWE would need to ship a new one, losing money on that sale. Trust would be lost in the company if this was a regular occurrence and it would be viewed that HWE don't care about their customers.

Methods to Promote your E-Commerce System

An e-commerce system is no use if you don't have customers, so promoting the system is a major factor if the Hockley Watch Emporium's site wants to become successful.

Pay-per-click Advertising

The HWE can use Pay-per-click (PPC) advertising to get cheap advertising for their new e-commerce system as they will only have to pay for the clicks they receive, making it very affordable. Unlike typical advertising on platforms such as YouTube, PPC has the potential to be exposed on more websites as PPC is not bound to a specific website. Any site can integrate it meaning their advert can be exposed to more people giving them a higher chance of it being clicked, and therefore getting more customers.

Social Media Advertising

Social media adverts are the short videos you see at the start of YouTube videos and the promoted posts you see whilst scrolling sites like Instagram and Twitter. The HWE can create short promotional videos that will be seen by thousands of people a day. Whilst this is more expensive than PPC as you will have to pay, even if you don't get any clicks, the advert will be harder to miss because on YouTube users would need to wait at least 5 seconds before skipping the advert. This means viewers must watch it. With sites like Instagram and Twitter it will appear in their feeds making customers more likely to see the advert as they would read everything in their feed. This makes it arguably better than PCC as the user is forced to view it, with PPC there is every chance they might not see it.

Direct Marketing

With both PPC and social media advertising, direct marketing can be used to personalise who the adverts are seen by, there is no point showing watch adverts to someone who has no interest in them. Direct marketing is only showing adverts to people who might be interested in the product. This is often done through buying 'big data' from tech giants such as Google. From this, the HWE can find people who might be interested in buying their watches and show them their adverts. This

makes it more likely for people to click the advert as it is something they are interested in. This in turn will help expose the HWE to the correct audience who will be interested in their products.

Search Engine Optimisation

Search Engine Optimisation (SEO) is a method used to get your website higher up on the list of results from a search engine such as Google or Bing. For example, when searching for 'premium watches', the HWE would want their site to be at the top of the results, or at least high up on the first page of results. This can be done in many ways, such as including keywords and to-the-point title tags in your website's content, or create a sitemap of your website so that search engines know what to include in the search results.

Crawlers

When search engines are looking to crawl a website, they first look for a 'robots.txt' file. This tells the crawler what they can and can't scan through. This helps refine what appears on the results page and makes results based on what you want to be seen.

Task 2

Risk to Running an E-Commerce Platform

Whilst running an e-commerce platform has its fair share of pros and cons, a major consideration should be the security risks of running an e-commerce platform. If not setup correctly, the platform could be vulnerable to attack, and it could be customer details / trust / reputation at risk. I will go over the potential security risk to the Hockley Watch Emporium (HWE) and then how the company can prevent them.

Hacking

Hacking is where someone attempts to break into a computer network with the malicious intent to damage the system or to access sensitive data. This is done via finding and exploiting a weakness or vulnerability in the network. Hackers usually do this to hold companies ransom with sensitive data or to protest about something.

Viruses

There are many types of viruses that the HWE could be infected with if the proper security measures are not taken:

Virus

Viruses are self-replicating software that causes either damage to a computer system or steals data. It is often baked into software such as pirated games, emails and downloaded files.

Worm

A virus that duplicates itself and spreads itself throughout a network using open network shares, email or Internet Relay Chat.

Trojan

A trojan is a type of malware that disguises itself as another application, and once executed causes havoc on the system. It can often provide a 'back door' into the system for hackers to use later to steal data or do even more damage.

Identity Theft

Identity theft is where a fraudster has so much information on a person, they can impersonate them to the point where it is hard to tell the difference. People often do this to steal from a person or get benefits from that person.

Social Engineering

Social engineering is when an attacker tricks a user into giving them sensitive information, such as banking details or giving them access to a network. They trick people by gaining their trust and then use it against them to ask for important details.

Denial of Service

Denial of Service is where a web server is flooded with requests from a specific machine or a group of zombie machines. The number of requests overloads the server causing them to crash or take a very long time to respond to requests.

Brute Force

Brute force is when an attacker tries numerous different passwords to guess their password and get into their account. This is often done to steal data or take benefits the account has.

How could the Hockley Watch Emporium be Vulnerable?

If the HWE wants to avoid the security risks mentioned previously, they first need to know how they are vulnerable to them.

Hacking

The HWE could be vulnerable to hacking if they do not configure their security settings properly, leave software out-of-date or leave any vulnerable ports open on their network. Hackers can take advantage of this and then breach the network.

Viruses

The HWE could be vulnerable to viruses and malware if their employees act carefree on the internet, as they could be at risk of visiting an infected website or downloading a virus.

Identity Theft

The HWE could make their customers vulnerable to identity theft if they do not make their website secure by using HTTPS and a secure socket layer.

Social Engineering

The HWE could be vulnerable to social engineering if their employees aren't properly trained to notice the warning signs.

Brute Force

The HWE could be vulnerable to a brute force attack on customers if there isn't a strong password policy or users are allowed an unlimited number of attempts before being locked out.

Preventing the Risks

Now the HWE know the risks and how they could be vulnerable, here are my suggestions on how these risks can be mitigated.

Hacking Prevention

To mitigate the risk of hacking, it is recommended that the HWE hires a penetration tester to attempt to break into their network. If successful, the pen tester will generate a report and from that report the HWE can implement the fixes the pen tester suggests. This can often involve using a firewall (see below) to close ports and to keep all their software up to date, so they have the latest security patches.

Virus Prevention

To mitigate the risk of infecting their network with a virus, the HWE should install proper anti-virus software on all their servers and machines. To stay up to date with the latest malware, this software should be regularly updated. It is also recommended to give the employees training on being safe on the internet to further lower the risk of a malware attack happening.

Identity Theft Protection

To mitigate the risk of a customer of the HWE getting their identity stolen, they should make sure their website is secured with HTTPS and SSL. This ensures that all data sent to and from the customers machine is encrypted meaning hackers cannot read sensitive data such as their credit card information or address.

What is a Secure Socket Layer? (SSL)

An SSL is a cryptographic protocol that secures packets sent over the internet. This means both the client and server must be authenticated before they can read any data sent. This is often done through RSA certificates.

RSA Certificates

An RSA certificate is a public key certificate that encrypts data using a cryptographic algorithm. This protects data being sent to and from the server and client. These can only be decrypted using a private key.

Social Engineering Prevention

To mitigate the risk of an employee getting socially engineered, all employees should be trained on the warning signs of social engineering, so they know not to fall for the scam.

Use a Firewall / DoS Prevention

Using a firewall allows you to filter the requests that enter your network, meaning that any malicious requests can be blocked. This also applies to stopping DoS attacks as the firewall can filter large number of requests sent from the same person within a short amount of time. However, using a firewall can also hinder performance as it must scan every request that enters the network to check for threats. This may slow the server's response time down; however, in the long run it would be worth it as it prevents attacks, and the performance margin will only be minor.

Brute Force / Strong Passwords

To mitigate the risk of a user's account getting hacked via brute force, the HWE should implement a strong password policy. For example: contain both upper case and lowercase, letters and numbers, symbols and use more than 8 characters. They should also implement an attempt limit. If there are too many failed attempts, the account should be locked, and the user should be sent an email advising them about the attack.

Task 3

Technologies Required for an E-Commerce

Hardware

The hardware is the physical components that make up an e-commerce platform that is often found inside servers. The hardware component that will be used to run the platform is a web server. The web server handles requests sent via HTTP(S) and return the information requested by the browser (such as a home page).

Software

The software is the applications that run on top of the hardware through the Operating System that allows the web server to complete its functions (e.g., responding to web requests).

- Server software – these are web serving softwares such as Apache 2 and Nginx on Linux and IIS on Windows. These softwares handle all the web requests and respond to them.
- Web Authoring Tools – these are tools that help you create the different pages on a website. An example of this software is Adobe Dreamweaver, which helps visualise and create your webpage through the HTML code and its interface.
- Database system – this is where all data such as user data, stock data, transaction data, and more is stored. Examples of database software are phpMyAdmin, MongoDB and Redis.

Networking

Networking is the technology used so devices can communicate over the internet. This is often done through protocols such as:

- TCP – Transmission Control Protocol – provides error free transmission between routers
- IP – Internet Protocol – routes packets across a Wide Area Network

When sending web requests there is always a port attached to it. This is so the web server knows what service is being requested so it can be forwarded. Some common ports and services include:

- HTTP – Handles web requests – 80
- HTTPS – Handles encrypted/secure web requests – 443
- SMTP – Handles the sending of emails to the correct mail server – 25
- POP – Handles the retrieving of emails from a mail server – 995
- IMAP – POP but you can have multiple inboxes across multiple devices – 933
- FTP – Handles file transfers between two devices – 20 and 21
- SSH – Handles the secure shell connection to a server – 22

Task 4

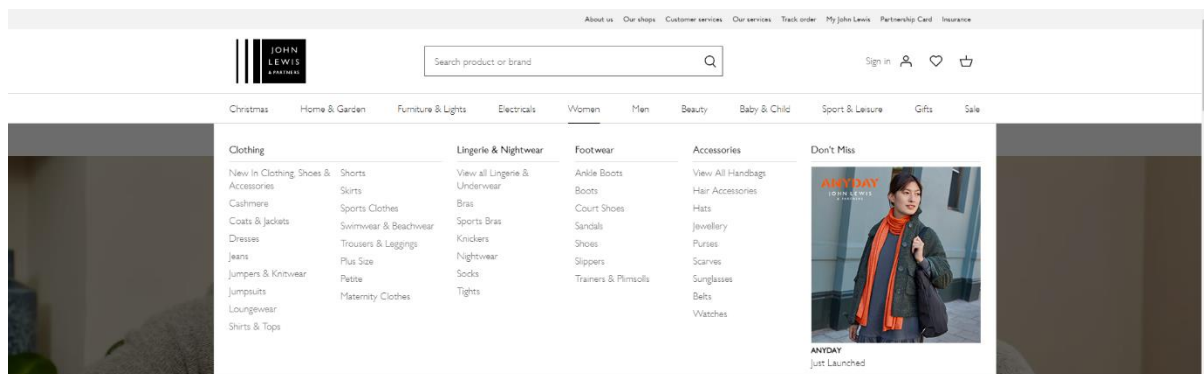
'Brick and Click' Evaluation: John Lewis

John Lewis' website has been running since 2001 and has been improving ever since to ensure the best possible customer experience for its users. This report will examine how the 'clicks' side of the company works and its key features.

Key Features

Ease of Navigation

Near the top of the website there is a menu bar with the top departments, and then under that there are all the items you can buy from the department. This means there is easy access to what you are looking for. There is also a search bar where you can search for what you are looking for and it will show you items based on the terms used. Everything can be accessed with a few clicks, and it is all easy to find.



User Accounts

John Lewis allows you to sign up to their website to save details and make your experience more tailored. You can save all your orders from their website, and it allows for them to give you personalised recommendations based on the products you have bought. You can save your card details and shipping details to further make your experience smoother and quicker as you won't need to constantly re-enter these details.

What are the advantages of having an e-commerce system as well as a physical store?

Having an e-commerce platform means you can continuously trade at all hours of the day, without needing staff to be in-store to serve customers. It also allows their customers to order what they want without needing to go into the store and they can do it at a time that is convenient for them. You can also be exposed to the global market and have people from all over the world buy from you, not just the people who are in the area of your store. This means if someone wants to buy a product from John Lewis and there isn't a store near them, they can order it online and have it delivered straight to their door.

What risks come with their e-commerce system?

There are many security risks John Lewis will have to face when running an e-commerce system. They need to ensure that all data that they store on customers (including details such as bank cards) is safe and secure from any hacking attempts on their database. They also need to be mindful of DoS attacks as these attacks will flood their servers with requests until the server becomes overloaded and eventually crashed, rendering it useless. This means no one will be able to access their e-commerce system, meaning their online sales will come to a halt causing them to lose profits. Having a security breach will scare customers into thinking the platform isn't safe, therefore John Lewis would lose their customers' trust in their e-commerce system and will further lose more money.

How is John Lewis' e-commerce doing?

Sales and Profits

This year, John Lewis has made a profit of over £131,000,000, however this is £61m less than last year due to the pandemic. If it wasn't for the 'clicks' side of their business, this number would've been substantially lower as all of their stores were closed down during the pandemic. Thanks to the 'clicks', John Lewis has been able to continue to grow, make money and serve their loyal customers. The profit earned will allow John Lewis to put more resources into their e-commerce platform to help make it more reliable and even smoother for customers to use.

Statistics source: <https://www.johnlewispartnership.co.uk/annualreport>

Reviews from Third Parties

As of 09/10/21 on Trustpilot: John Lewis' rating is 3.2 stars with 26% of reviews being excellent, 4% being great, 3% being average, 6% being poor and 61% being bad.

Some reviews from customers are:

"I bought a product that developed a fault after 10 months or so and contacted customer service. I explained the problem, and wasn't made to jump through hoops to get to a resolution. I'm very happy with the outcome and feel full confidence in buying electrical products from John Lewis in the future." – 'customer', 5/5 stars.

"Team arrived to install washing machine before it was delivered. Chaotic and difficult to rearrange. Very substandard disappointing service" – Susan, 2/5 stars.

"Great shop, prefer shopping in store though as just ordered a duvet online, delivery was very long for the prices you pay as I paid £3.95 for delivery alone! It took 6 days to come which I was expecting a lot sooner for them prices. Other than using a cheap delivery pleased with quality of my items." - Gabbie S, 4/5 stars.

"I bought a beautiful jug from this company and it was delivered all broken. ... had already complained about the packaging on the first one [order] which again had very fragile items one of my items had defects and very poorly packed with no fragile sticker on it" – Agnes Keir, 1/5 stars.

This shows that John Lewis has a mix of reviews, both regarding their 'clicks' and their 'bricks'. It has clear signs that there are major issues with the delivery of items, as there has been many instances

where the customer's items have been damaged, not arrived or delayed. This means that John Lewis, whilst great in-store, still has a lot of work to do on their e-commerce system still.

Products

John Lewis has a wide range of categories and sub-categories you can buy from. For example: Christmas, home & garden, electrical, women's, men's, and sport. All these categories have sub-categories where you can refine your search even more, for example: inside women's you pick a sub-category of skirts, jeans, socks, belts, shoes and more. This broad range of products means that they are more likely to attract customers as they are more likely to have what customers are looking for, and John Lewis has done just that.

Payment Methods

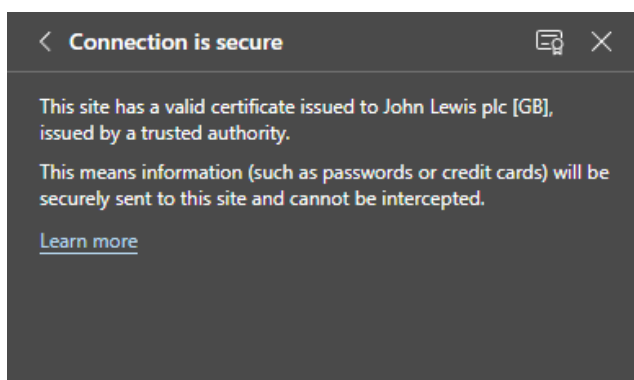
John Lewis' e-commerce site supports a wide range of payment methods, specifically:

- PayPal
- Apple Pay
- Visa
- MasterCard
- Maestro
- American Express
- John Lewis Gift cards and vouchers
- Partnership card and vouchers
- 'One 4 All' gift cards
- 'johnlewis.com money off' coupons

Supporting a variety of payment types is important for sales as it means more people from different banks can buy from you. It also allows extra privacy for customers when paying through methods such as PayPal and Apple Pay.

Security

When making an e-commerce platform, the security of your customer's data must be considered. For example, the sending of banking details between the browser and server could be intercepted if not secured properly. Therefore, John Lewis uses a Secure Socket Layer (SSL) which encrypts all the traffic sent to and from their server. This means the data is impossible to read by an interceptor as it is encrypted and only the server will be able to decrypt it.



Promotions

To catch the attention of customers, any promotions should be in large, bold text to make sure they can be easily seen. Usually, these appear towards the top of the website. John Lewis has done this below the menu as there is a ribbon in bright bold text briefly describing the promotion and it provides an easy access hyperlink to take the user directly to the promotion.



Conclusion

To conclude, John Lewis' e-commerce platform is very well thought out and is very easy for the end user to use: easy access to all their departments & categories, easy access to your basket and storing your details so they don't have to be re-entered every time. Their sales and profits show that they have been very successful with their e-commerce platform, especially over the coronavirus pandemic. However, it is apparent John Lewis has many issues with their shipping as people have experienced damages, lateness, and disorganisation. Putting that aside, without a doubt John Lewis has one of the best e-commerce platforms there is. It is very professionally made and easy to use. And with their profits growing by the day, they will have more resources to put into the platform to make it excel even more.