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THE IMPACT OF WEB DEVELOPMENT ON BUSINESSES AND CONSUMERS

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Bachelor's thesis
Spring 2024
Degree Programme in Information
Technology
Oulu University of Applied Sciences

ABSTRACT

Oulu University of Applied Sciences
Degree programme in Information Technologies, Option of Web Development

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Title of the thesis: The Impact of Web Development on Businesses and Consumers
Thesis examiner(s): Jukka Jauhiainen
Term and year of thesis completion: Spring 2024   Pages: 35 + 2

It is crucial to have a thorough understanding of how exactly modern websites and applications should be designed and implemented that it is most beneficial for business and convenient to use for consumers.

This thesis investigates the multifaceted impact of Web Development on both businesses and consumers, focusing on crucial factors such as UI/UX design decisions, code performance, and professionalism. Through a comprehensive analysis, the study aims to illuminate the intricate dynamics that underpin the digital realm and its influence on contemporary commerce and possible consumer behavior.

The purpose of this thesis is to underscores the indispensable nature of effective web development practices to facilitate successful business-consumer interactions and ensure sustainable growth in the digital marketplace. By providing actionable insights and development proposals, this thesis contributes to advancing our understanding of the complex interplay between web development, businesses, and consumers in the contemporary era.

Keywords: Web Development, UI/UX design, Business, Profit, Automation, Performance, Testing, Creativity, Competitiveness.

CONTENTS

1 INTRODUCTION

In the vast field of online marketing, the role of web development becomes crucial, having a profound impact on the digital landscape and the overall customer experience. Every element of a website - from its visual appeal to its performance - certainly confirms the success of a business in the virtual realm. The interplay between design, usability, and functionality underpins the complex web of interactions between businesses and consumers, shaping perceptions, behaviours, and ultimately, outcomes. (Shirey 2024)

The dynamism inherent in web development is undeniable, characterized by an endless cycle of innovation and evolution. Web development trends are constantly changing, spurred by technological advancements, shifting consumer preferences, and emerging market dynamics. For businesses and developers alike, staying on top of these trends is not only beneficial but essential for maintaining relevance and competitiveness in an ever-evolving digital landscape.

Adopting the latest trends gives companies the opportunity to harness the full potential of digital platforms to reach and engage their target audience. Whether it is the seamless integration of progressive web applications, or the leveraging of AI-driven optimization strategies, the ability to anticipate and respond to emerging trends is a hallmark of success in the digital age.

Furthermore, a clear understanding of user expectations and preferences is paramount for effective web development implementation. Understanding the evolving needs and behaviours of users enables developers to tailor their creations to resonate authentically with their target audience. By using insights gained from user experience research, usability testing, and data analytics, developers can refine their designs and functionality to provide consumers with an unparalleled experience.

Therefore, the purpose of this thesis is to investigate how web development influences businesses and determine what constitutes effective web development that provides maximum business benefit and consumers satisfaction.

2 UI/UX DESIGN

"Do not judge a book by its cover" is a well-known saying, yet it seems that in the digital age, the appearance of a webpage is often the first criterion by which most of the users decide whether they find it appealing. Undoubtedly, this initial impression can significantly influence their further interactions with the website.

Nowadays, UI/UX design is crucial not only for businesses aiming to strengthen their market presence but also for consumers who navigate these digital environments. A well-designed interface that aligns with user expectations can enhance brand perception, foster loyalty, and ultimately drive conversions. (Gosain 2021)

Effective UI/UX design simplifies the user journey on a website, making it easier for users to accomplish their goals, whether it is purchasing a product or finding information. This not only boosts user or even employee satisfaction but also supports the business's objectives by increasing the likelihood of return visits and recommendations. It would be erroneous to assume that a business's concern ends with the sheer volume of one-time visitors to their platform. Rather, the priority is to develop strong relationships with users, encouraging repeat interactions that build brand loyalty and support long-term profitability.

For consumers, good UI/UX design means a smoother and more enjoyable browsing experience. This minimizes the navigational confusion and cognitive load that users experience when interacting with a poorly designed website. And of course, a well-designed webpage ensures accessibility for all users on all devices, thereby increasing its reach and inclusivity through responsive design.

2.1 Responsive design

Responsive web design is one of the most important aspects of web page implementation. It is an approach in which a website is displayed correctly on any device, from a smartphone to a TV, which means that all page elements will be shown correctly regardless of the device screen size.

Some websites look the same on both a computer and a smartphone. In that case, it is difficult to use them from a phone: the font is small, it is impossible to hit the button, the content extends beyond the screen, and advertising overlaps the text. This problem did not arise in times when the popular, if not the only, way to visit websites was through a computer. But the situation has changed. Research shows that the number of users visiting web pages from mobile devices is growing every year. At the beginning of 2015, the percentage of daily internet activity around the world was around 31.16%, but today this figure has doubled and is approximately 61.21%. (Kemp 2023). This means that more than 60% of all daily Internet traffic around the world comes from mobile phones. (Howarth 2024)

This suggests that using responsive design for websites is extremely important nowadays, since it is certainly important for businesses to build on what the majority of users need. As mentioned earlier, the first impression is an important indicator of user engagement, influencing their further interaction with the website.

Thus, it is important for businesses to make sure that users who visit their web page do not leave simply due to the fact that the page elements are not displayed correctly on the screen of their devices. Good responsive page design is the key to a good impression, which in turn affects the desire of users to revisit the page. And in this case, the business conversion will increase, as will the trust factor.

2.2   Trust factor

It is widely agreed that the trust factor is very important for business, as it directly affects the opinion and experience of users who decide to visit their website. If users develop mistrust, they will not be able to overcome their fears of using the website. A business's website plays an important role in earning the trust of visitors - it must appear convincing and appealing to entice visitors to convert.

First of all, good UI/UX design allows a business to earn the trust of users. Otherwise, if the website looks outdated, it certainly will not inspire confidence. Therefore, it is important for companies to follow web design trends and periodically update the appearance of their website so that users do not have doubts about the legitimacy of the business.

The second thing that businesses should pay attention to is the consistency of their website implementation. According to psychologist Robert Cialdini, people need to be and appear consistent. It is a very powerful weapon of social influence. This need for consistency extends to our interactions with others. People expect and appreciate consistency in other people and want as much stability as possible. It is fair to assume that the same can be said about the interaction between users and websites. (Cialdini 2009)

Consistency is seen as an aspirational attribute of any business, because it is generally associated with predictability and reliability. People tend to trust things that they believe are predictable and reliable because it reduces the likelihood that their decision will have a negative effect. The same thing happens with websites. Consistency reduces uncertainty. This reassures consumers that the features provided on the website will work properly.

Another aspect that should not be ignored is transparency. Users' expectations for transparency on the Internet are higher than in real life, since they have to trust a "faceless" seller. The more relevant information is provided, the more trust is built among consumers.

Transparency on a website involves being upfront about any information related to a purchase or company. For instance, elements such as contact information, shipping costs, taxes, and other additional fees should be stated upfront and clearly so that consumers know how much the product or service will in fact cost them. A high level of website transparency tells visitors that their concerns have been taken into account and that the information provided is clear and clarified.

2.3   Clarity

One of the most important elements of web design that is often forgotten when implementing a website is clarity. This undoubtedly has a direct impact on what is perceived as a simple, intuitive design.

The challenge is about taking things that are infinitely complex and making them simpler and more understandable (Greenberg 2018). This quote can be interpreted into many aspects of life, and in

this case even into web implementation. In web development the term "Clarity" refers to how accessible and understandable the content of a certain webpage is. Therefore, this also applies to navigation paths and website structure.

2.3.1 Navigation

There are several types of website navigation structure:

- Horizontal Navigation Bar
- Drop-down Navigation Menu
- Hamburger Navigation Menu
- Vertical Sidebar Navigation Menu
- Footer Navigation Menu

Of course, before choosing the type of navigation and filling it with elements, the list of categories should be structured as compactly as possible - some categories can be combined, some categories should be as subcategories, and some should even be removed. The most valuable thing is to make sure that the navigation is not too crowded, but most importantly, understandable to the average user. (MacDonald 2024)

As stated earlier, it is very important to have a responsive design, since the type of navigation is directly related to the screen size as well as the amount of information provided by the business. If customers visit a web page from a computer or laptop, then the navigation can be expanded or as a drop-down menu, in case if there are so many subcategories, that will not be able to be displayed correctly and appropriately on a larger screen. And if customers visit the website via mobile phone, then the hamburger menu is the choice. And naturally, with a well-structured navigation there should be a well-structured page.

2.3.2 Structure

In terms of web page structure, it is also worth mentioning user flow, since they are closely related to each other.

The website structure can be compared to architectural plan of a building. It provides an outline of how elements and pages are connected with each other. Just like when designing a building plan, the structure of a web page must also go through a series of checks, layouts, trial and errors. (Prins 2021)

User flow, on the other hand, is how people move around a web page. Structure will play a huge role in this, as other factors such as how and where web page elements are placed, as well as the quality and quantity of content, will undoubtedly affect the flow. (Prins 2021)

Before making any major changes to the structure of a website, a business should analyze how users are already using and navigating in it. This can be done, for example, using Google Analytics. There it is possible to analyze which links users clicked on most often, whether users found the information they needed using the most optimal sequence of transitions from one link to another, or which links were used less often than necessary. That information can be used to identify issues with user flow across the website as well as user experience. Also with such analytics, a business can decide to update the page structure, thereby even optimizing the performance of the web page, which in turn increases conversion.

2.4   Conversions

It is very important for a business to maintain a high conversion rate, since without this the business will not be profitable (Shirey 2024). UI/UX design can influence conversion rates in many different ways. In fact, everything that was written earlier influences the growth of conversion, but here special attention will be paid to specific aspects.

2.4.1   Colors

Understanding the psychology of color in UI/UX design is a key aspect of creating a color palette that works well for target audience. Although color is sometimes considered a purely aesthetic choice, it is actually a key component of a design's psychological impact on users.

While a mediocre palette can detract users and even prevent them from using the website, a well-designed palette is one of the most popular methods of increasing conversion rates. The general

meanings of the main colors (primary, secondary and tertiary) are quite simple. But the emotional impact of interface colors should not be overlooked. And while some colors are "universal" in UX design, such as black, white or gray, the colors they are paired with can have a huge impact on user experience and therefore conversion rates. (Chapman 2023)

The 60-30-10 rule is also considered a good practice. It is a method for creating well-balanced and visually harmonious color palettes. The idea is that one color, which is often a neutral color, makes up 60% of the palette. Secondary color makes up 30% of the palette. And accordingly, the remaining 10% will go to the use of a third color, which is usually considered an accent color. This method makes it much easier for designers to start experimenting with non-traditional color palettes. (Chapman 2023)

2.4.2 Calls-to-Actions

Calls-to-Actions (or CTAs) is a marketing term, and in Web Development it refers to the next step businesses want their visitors to take. This is a way to increase conversion, but their use and quantity should be treated with caution, since if a business resorts to excessive (or insufficient) use of CTAs, then in that case the effect will be the opposite.

Visitors will not take the intended actions due to too many calls to action, but having a few calls to action in strategic places will definitely increase conversion rate.

Calls to action should be clear, both in terms of visibility and the desired outcome. Each CTA should be easily recognizable. This can be achieved using a suitable layout design and accent color, which was explained in the previous section.

Businesses should use multiple CTA on their pages, since visitors often ignore the first call to action and then take action on the next one. For example, a registration form could be located at the top of the page, with a registration button at the bottom that takes users back to the initial registration form. (Trammell 2021)

2.4.3 KISS method

The KISS (or "Keep it Simple, Stupid") principle states that most systems function better if they are kept simple rather than overly complex. This method is used in many areas of life, but it is especially useful in web development. Its usefulness is multifaceted, from improving UI/UX design to optimizing code and increasing conversion rates. (Naor 2020)

In the web development industry, a key tenet of KISS is that companies must be customer-obsessed and make decisions that will bring convenience to their target audience. Working backwards from what clients need and want can simplify many things in web development design - scope of work, and time spent.

When a business has an easy to use and organized website, it becomes much easier for consumers to convert. This will simplify the work not only for developers, who will have to spend weeks of design and implementation to create unnecessary elements, but also for ordinary users, for whom it will be either useless or even complicating to use.

The story of the $300 million button is an ideal example of the benefits of the KISS method. (Duffy 2019)

This story happened to Jared Spool, who worked on an e-commerce website. Before paying for the purchase, website visitors had to fill out a form, which meant entering their email address and password. The form also included registration and password recovery buttons. It was expected that regular users would be able to complete their purchases faster, and new ones would register in the system.

In fact, the opposite happened. The form has proven to be a barrier for all types of buyers. New clients did not want to register, so as not to leave personal data and then receive endless letters from the company. And old clients often forgot both their password and the email they used to register.

45% of all clients registered in the system several times. Throughout the day, the system received 160 thousand password recovery requests, 75% of which did not result in a purchase. Once the decision was made to remove mandatory registration, purchases increased by 45%, generating

$15 million in profit in the first month alone. For the year, profit amounted to $300 million. This story proves that user experience should be a top priority for a business so that it can increase conversion rates from its customer base and be more profitable.

2.5 "Two types of profit"

Business profits come in two forms: increased revenue and reduced costs (Maverick 2023). It was previously described how a business can use UI/UX design to improve its website appearance, increase trust factor and conversion, and therefore increase revenue, but this section will describe in more detail exactly how this can help reduce costs.

2.5.1 Reduction in support

The more difficult a website is to use, the more questions users will have. And, accordingly, the more human resources will be needed to answer these questions.

As stated earlier, website design should be intuitive and easy to use, as this ensures that users are less likely to encounter difficulties and require assistance. Reducing the need for support is not only a matter of convenience, but also a strategic benefit for businesses, as by investing in well-thought-out UI/UX design, companies can optimize customer interactions and free up valuable resources and time for their employees.

When developing a website, it is important to remember that users must be self-sufficient. Features such as an extensive FAQ section and smart search functionality can empower users to find solutions on their own, further reducing dependence on direct support and significantly improve the user experience and, more importantly, eliminate potential confusion before it becomes a real problem. (Raghavan 2023)

Creating a chatbot assistant is also considered a good practice. This does not mean that a chatbot will completely replace technical support employees, but it will certainly be able to optimize work flow.

This may not sound worthwhile, but the savings from reduced need for technical support can be significantly beneficial in the long-term scale. And analytics obtained based on user interaction with the website can become a very useful and endless source of ideas and the need to update the website design to match the expectations of its target audience.

2.5.2 Reduction in infrastructure costs

If a web page is poorly designed, there is a high risk that users will get lost in the middle of the process and not know where they are. Every time this happens, users are forced to return to the previous page or go to any other page. This creates an additional load on the website's infrastructure. This happens especially often when using SaaS (Software as a Service) products, where each page reload additionally loads the database.

Of course, one page reload is not significant. But if a business has a large website and is visited by thousands of users, all of them together can create a noticeable load, which will significantly slow down the loading speed. And this directly affects the access of other potential users to business resources or services. And, accordingly, this also affects profits. (Duò 2023)

Thus, good web design means that users always know what they are doing and where they are. This reduces the load on servers and API bills. This also directly relates to the reduction in support: users will contact technical support less often and will free up time for company employees.

2.5.3 Reduction in employee training costs

Many companies spend large amounts of money training employees to use their software. The reason for this is that systems are often so complex that they are impossible to use without training. And this requires costs that could have been avoided.

One of the mistakes many companies make is underestimating the value of design when it comes to the software that employees will use. It is supposed to be easier to get employees to attend training to learn how to use the platform. But, in fact, organizing training events and their costs are much more expensive and are not always effective. (Experience 2017)

The easier the software is to use, the faster employees will learn it. A mid-sized electric utility company reported cost savings ranging from $300,000 to $3 million from reduced training for customer service personnel when they made their customer information system software clearer and easier to use (Phillips 2006). In addition, the simplicity of internal processes increases the opportunities for recruiting potential employees. There will be no need to look for employees who already understand narrow terminology/accepted company processes if employees can learn everything they need while working. This will also simplify the work of HR.

The bottom line is that it is better to get the solution right first, eliminating usability issues through intuitive design rather than training people to work around them.

2.5.4   Increased employee productivity

All three previous points form the last one - increasing employee productivity.

On the one hand, there is a difference between users and employees. While users are using the website or software interface, employees must work with them. But on the other hand, users and employees should be viewed from the same angle. In other words, a carefully designed EX (UX, but employee experience) increases employee satisfaction and therefore increases productivity. Maximizing customer satisfaction ultimately starts with keeping employees satisfied too. (Parker 2021)

With this greater reliance on software-based tools comes a host of issues that, left unaddressed, can increase employee frustration and reduce productivity. (Lesser, Mertens, Barrientos, Singer 2016)

This EX means that all unnecessary elements have been removed from internal business processes. This means that all processes are as convenient as possible for employees.

3 PROFESSIONALISM

The term professionalism is very closely related to the trust factor which was described in the previous section from a UI/UX design perspective. But it goes beyond the visual aesthetics of a design and encompasses the overall experience and interaction of users with a website. Professionalism sets the tone for the authority and trustworthiness of a business, creating a sense of trust before visitors even begin to engage with the content. (Shirey 2024)

It is important for business management to leave the impression that their business is modern and respectable. This impression is largely based on the desire to become more presentable.

3.1 "About Us"

The About Us page plays a crucial role in the idea of a website, serving as the link between a business and its visitors. This is an opportunity for a business to present itself, its goals, achievements and relevance, and also an opportunity for customers to find out more about who they are going to be doing business with. This helps establish the personality of the business and provides a narrative that can build trust and connection with visitors and set a professional tone for the business. (Johnson 2013)

In the "About Us" section, users must be able to find convincing answers to many questions that interest them, such as:

- Is it a private, public or family business?
- Is this a big company or a small one?
- What are the company's core values?
- What is the history of the company?
- Who is the owner of the company?
- What makes a company special?

All information should not be presented in too much detail, but most importantly, it should be informative.

3.2   Management team photos

As stated earlier, users' expectations on the Internet are higher than in real life, since they have to trust a "faceless" seller. And in order to make the business more vibrant, businesses need to add photos of their employees. This gives the business a more serious and purposeful style.

This is explained by the desire of users to know the people behind the business. Photos of team members or at least some key employees along with a brief description of their role and experience is a huge key of professionalism. (Davydov 2022)

3.3   Certificates and awards

If a business specializes in selling products, then it is worth considering adding documents and certificates confirming their quality. Thus, user confidence in the products and the website will only grow. And if a business specializes in providing a service, certifications can validate quality expertise and encourage users to consider the business for potential collaboration. (Davydov 2022)

The same goes for any awards. Recognitions, ratings or achievements can have an extremely positive impact on reputation and enhance professionalism.

3.4   Customer results

If the business is client-focused, then publishing customer results on a website is considered a powerful way to demonstrate professionalism. This is a concrete example and proof that a company is not only able to deliver on its promises, but is also committed to the satisfaction and success of its customers. (Shirey 2024)

Displaying customer results on a website can be in the form of testimonials, case studies, or before-and-after comparisons. This way, new visitors will have a real idea of the quality of products or services that the company provides. This will certainly help build a positive reputation and encourage further interaction.

It is also a source of inspiration and confirmation for new visitors. When users initially visit a page, they do not have any information about the company, as well as any expectations, but when they read about how the business has helped others achieve their goals, solve problems, or overcome challenges, it creates a sense of connection and confidence. This can be especially effective in industries where results speak louder than words, such as consulting or healthcare.

4   PERFOMANCE

Nowadays, modern websites must not only have good web design, but also be well written in terms of code. This applies to loading speed and functionality. These two metrics have a massive impact on user engagement, conversion, and overall brand perception (Hadžić 2021). Therefore, it is very important for companies to pay special attention and make their websites or software as efficient and engaging as possible.

4.1   Load time

Website loading speed is critical. A delay of just a few seconds can cause users to lose interest and likely leave the website. Slow websites not only negatively impact user engagement, conversions, and overall brand perception, but they can also be significantly expensive due to the resources required to load them. (Hadžić 2021)

Businesses need to monitor how their website loads and figure out why loading time is slow if that is the case.

Increasing website speed is important not only for users, but also for search engine rankings. In April 2010, Google announced that they were now incorporating website speed into their search ranking algorithms (Singhal & Cutts 2010). Thus, the better the loading speed indicators, the more likely it shows better result in the search ranking algorithm, and this directly affects the popularity of the brand and the conversion rate.

But before developers can start fixing the problems, they need to figure out what is causing the slow loading time. The first step is to analyze current page speed. This will allow the company's developers to track improvements and ensure that any changes they make will improve website load time (Craig 2011). There are many tools for checking website loading time, but the most basic one can be considered Lighthouse developed by Google.

Lighthouse can be launched in the browser's DevTools, from the command line, or as a Node module. Lighthouse runs a series of tests on the page, and then generates a report on how well

the page performed. After this, failed checks will be displayed which will serve as indicators of how to improve the page. Each audit comes with a background document that explains why the audit is important and how to fix it.

Below are the most popular audits for slow load time.

4.1.1   Image size optimization

Many websites make extensive use of images on their websites. This is considered the most common cause of slow page loading. The reason is the image format. If the images are not compressed or have too high resolution, it will slow down the website's performance, which will make user experience worse.

For example, 2x or even 3x resolution images are sometimes used in websites and display well on high-density displays. But if most users do not have such displays, then bandwidth is wasted and loading time for visitors increase, especially if they are using a slow mobile data connection. (Hadžić 2021)

Therefore, it is important to use the right image format. For instance, JPEG is used for images with a big number of colors, while PNG is used for simpler graphics.

The right balance between image size and resolution requires careful attention from developers. The higher the resolution, the larger the file size will be.

Undoubtedly, it is important to understand that when it comes to images, "size" is a relative term. The optimal file size is the number of bytes that the file occupies on the computer. An image of 15 MB (megabytes) is huge, but 225 KB (kilobytes) is much more reasonable. If the file size is too large, it means that either the image dimensions are too large or the resolution is too high.

Resolution is the quality or density of an image, measured in dots per inch (dpi). Most computer or laptop monitor resolution is around 100-200 dpi (depending on the screen size) while mobile phone screens are more condensed and range from 300-600 dpi. Responsive design plays an important role here. Very often, developers forget about image resolution when creating responsive design

for a website. It would be best to use several different resolutions of the same image, depending on the responsive design being created for different display sizes. Otherwise, one image resolution will look and display well on mobile devices, but will be prohibitively large (in terms of resolution) on larger displays, again negatively impacting loading speeds.

4.1.2   Reducing redirects

Here it would be useful to once again touch on the topic of page reloads, which negatively affects infrastructure costs. It was said that if the page was reloaded frequently, the page loading speed could deteriorate, especially if such reloads occur multiple times from many users over a specific period of time. The same thing happens with redirection.

A website can have seriously long loading times if redirected too often. Every time a page is redirected somewhere else, it prolongs the HTTP request and response process.

Of course, in some cases a redirect may be required, for example when moving to a new domain. But in some cases, redirects are completely unnecessary, and by eliminating them, it would be possible to reduce page loading time.

There are a few different ways to reduce the number of redirects. One of them is to rethink the structure and replace some redirections with dynamic content. Thus, it will not be necessary to redirect users every time from one page to another to show information that could be displayed on the same page. (Duò 2023)

Another example is to identify redirects that lead to pages that no longer exist or have been moved, or in other words 404 errors (Fitzgerald 2023). This then causes double harm - once users encounter a 404 error, not only it will slow down loading time, but also, they are unlikely to continue on the website again, meaning the business will lose potential customers.

4.1.3   Code reduction

Code can also be considered a common cause of slow loading. The reasons are as follows: very often the same behavior can be achieved by writing different codes. On a small scale, the effect

may not be noticeable, but if the structure of the entire website consists of multi-level chains of code, this can cause a significant slowdown.

Improvements can be achieved if the code can be reduced or redistributed. But it also depends on the form in which the code is written. Of course, a website consists of styling files (e.g., CSS) and scripts (e.g., JavaScript). These files can be loaded either synchronously or asynchronously. Synchronously means that the files are loaded one at a time in the order they appear on a website. With this method, when the browser encounters a script, it stops loading other elements on the page until that file is completely loaded first. In this case, it is better not to place parts of the page that take a long time to load on the initial screen. (Duò 2023)

Conversely, asynchronous loading allows multiple files to be loaded simultaneously, which can improve page performance and loading time.

JavaScript and CSS files are some of the largest files on a website. They are also considered separate HTTP requests. If possible, sets of JavaScript or CSS files can be combined, it can reduce the number of steps required to fully load a website. (Fitzgerald 2023)

Fast loading can also be achieved by reducing the file size. This is a minimization method. This method involves removing all unnecessary code, such as spaces, line breaks, comments and extra semicolons, unused functions and variables, or long CSS selectors that could be shortened. Again, on a small scale the difference may not be noticeable, but if it is hundreds or thousands of lines of code, then it can make some improvements.

4.1.4   Database structure

Perhaps at first glance it may seem that databases have no effect on the loading speed of websites, but in fact this is not the case. There can be two types of data in a database: dynamic and static. Databases can contain different types of data depending on their purpose, in other words, depending on what kind of business the company is doing. If this is consulting, then user data will be considered dynamic data, and if e-commerce, then this will be product data, a user "cart" or a "wish list of purchases".

Thus, dynamic data can be considered to be data that can change frequently. For example, users can update their phone number, address, or profile photo. But static data can be data that will either never change, or data that will be updated very rarely. It is worth noting that regular users usually do not have the ability to interact with static data in any way, because usually such data can be a company's contact information, address, logo, and stock images.

First, it is worth double-checking any static data added to the database. During development, it is very common when decisions are made to modify or remove entire elements or sections, but often the data that was used for this is forgotten to be removed from the database (Sickler 2020). Because of this, this data may still be loaded from the database, but not being used anywhere. And this of course affects the loading time.

Secondly, it is worth paying attention not only to the images that were added to the database as static data, but also to where exactly and with what logic they were added there. The explanation is quite clear. As discussed earlier, it is worth compressing images so they do not take up a lot of memory. But it is possible to go further.

For example, very often tables in a database can be designed in such a way that all data is located together, including images (and there may be several of them, for example, if it is a table of posts or their comments). In the case where developers write code to retrieve data from a table, it will load everything that is in it, again, including possibly a large number of photos. It is necessary to fetch this data separately, and only when these elements should be displayed upon user click.

In this case, it is worth creating a separate sub table with images for the main table. With this approach, it would be possible to retrieve these images separately, and only when necessary. It is a small detail and it happens behind the scenes, but it has a huge impact on loading speed.

4.2   Functionalities

When planning and implementing a website, it is necessary to review each web page to ensure that all the desired features are implemented (Ganoe 2024). This is necessary in order to provide users with the best possible experience when using a web page or platform.

To ensure maximum functionality of a website, there are a number of elements that need to be taken into account.

4.2.1 Search tool

Nowadays, most websites have a search bar or other search functionality. It has become an integral element of any web page. Search feature allows users to find relevant pages and information that interests them.

The search bar is considered part of website navigation, but it goes beyond that. The search bar feature should intelligently interpret what the user types and give them comparable results. It must be flexible to allow for misspellings, typos, and alternative phrases or wording, and be structured so that certain terms and phrases produce appropriate results. (Ganoe 2024)

The importance of adding a search feature is to allow users to find what they need faster and easier. This is especially useful if the website structure is large. As stated earlier, companies must be customer-obsessed and make decisions that will bring convenience to their target audience. And in this case, developers naturally need to be able to present themselves as an ordinary user. Yes, when implementing a website, developers may already know by heart where everything is, but ordinary users do not, and this is where the search engine function becomes very useful and necessary.

4.2.2 Cross-platform capabilities

Each browser interprets HTML and JavaScript differently. This means that a website may look great in one browser but terrible in another. When a website is programmed to work in different browsers, it is called cross-browser compatibility. Therefore, if it is important for a business to maintain high conversion rates, then it must ensure that its website works perfectly on all popular platforms.

Developers need to ensure cross-browser compatibility. Today, the most popular browsers are Google Chrome, Safari, Firefox, Opera, Vivaldi and Edge (Marshall 2024). Using cross-browser libraries and frameworks, following CSS rules, and testing the website in different browsers are

steps that will ensure that the majority of users will have the same experience on the website, no matter which browser they use (Dhillon 2020.)

5   COMPETITOR ANALYSIS

Of course, this is good when a company invests money in the web design of their website, thinks about their employees and target audience, optimizes internal processes, increases conversion rates, and strives for greater brand recognition. But perhaps one more thing that should not be forgotten is analysis of the market and competitors.

Competitor analysis is a process in which companies systematically evaluate and compare themselves to their online competitors to identify strengths, weaknesses, opportunities and threats, or often abbreviated as SWOT. This analysis helps companies understand their competitive environment, analyze strategies of their competitors, and informs strategic decisions (Zhukova 2023).

This section is dedicated to analyzing competitors from a web development point of view, and the following points can be highlighted.

5.1   Imitation of competitors

By copying a competitor's website, a business will not receive the same lead flow or sales volume needed to grow. This is due to the fact that it is unknown what kind of conversion and how many targeted applications a competitor receives from it. Perhaps the company accepts only a few clients a month and conducts most of its promotions offline. (Lipen 2024)

Besides, the target audience is always different. The target audience of two companies may not be the same, even if a particular company and a competitor sell the same products or provide the same services. Accordingly, what a competitor's audience likes may not be liked by another.

Also, it is impossible to know which elements of a competitor's web page are successful and which are not. Thus, having copied a certain element, it may turn out to be "unsuccessful". Even if it is known that a particular element is very efficient for a competitor, this still does not guarantee exactly the same effect.

In general, the success or failure of competitors depends on too many variables and it is impossible to know them all. Therefore, the effectiveness of the copied website will be very unpredictable.

5.2   The pricelessness of bad practices

Successful elements of a competitor are good, but unsuccessful ones are even better. Analysis of competitors is very important, because it is possible not only to learn something good or gain inspiration, but also to understand what exactly should not be done or repeated. The phrase "It is better to learn from other people's mistakes than from your own" fits perfectly here.

Analyzing competitors is useful – it is possible to find bad practices, things that most users do not like, elements that complicate the use of a web page. It is possible to find something similar and try to improve it on own website. (Lipen 2024)

6   METHODOLOGY

Two separate anonymous surveys were used for this thesis. The first survey was designed for companies to determine how important they think web development is to their website and their customers. The second survey was designed for regular users (consumers) to determine how important specific elements in web development are to them.

The survey for companies (APPENDIX 1) consisted of 10 questions. Questions 1 to 3 are needed to determine the importance of web design and web development in general. Question 4 is to identify the methods the company uses to improve the user experience. Questions 5 and 6 are to determine the importance and methods that a company uses to improve the performance of their website. Questions 7 and 8 are needed to determine the importance and methods that a company uses to ensure its professionalism and credibility. Questions 9 and 10 are needed to determine whether the company analyzes its competitors. Most questions were a choice of one of the provided answers and were required. Open-ended questions were optional. Even if the survey was anonymous, this was done to allow companies not to share information that they consider confidential.

The survey for consumers (APPENDIX 2) also consisted of 10 questions. Question 1 is to determine how important web design is to them when using websites. Question 2 is to find out whether users believe that color scheme affects them in terms of conversion. Question 3 is designed to ask users to share whether they are overwhelmed by specific content or design of a website, and whether they would leave it if that were the case. Question 4 is designed to determine how often users use their mobile phones or tablets to access websites. Question 5 is similar to Question 3, but is designed to determine whether they have encountered websites that are difficult to use, and if so, what exactly made their experience difficult. Questions 6 and 7 are designed to determine the importance and impact of website performance in terms of loading time and functionality. Question 8 is designed to determine what exactly users think makes a website and the business behind it professional. Questions 9 and 10 are designed to identify the importance and methods that help users understand the reliability of a website and the business behind it, and what makes them trustworthy. All questions were required.

Both surveys were conducted in May 2024. A total of 6 companies and 29 users were surveyed. Different companies were selected, 4 of them operated in the field of e-commerce, and 2 in the

field of online consulting. Most of the users surveyed were students. As stated earlier, all companies and users completed the survey anonymously.

The received information was reviewed and grouped. Consequently, a comprehensive result has been obtained about the impact of web development on both businesses and consumers, which will be described in the next section.

7   RESULTS

Once the data was obtained, two separate analyzes were conducted on the two surveys. The results are as follows:

Survey for companies:

- **Question 1 results:** From all 6 surveyed companies: 4 consider web development an important part of their business, while the remaining 2 consider it very important.

- **Question 2 results:** From all 6 surveyed companies: 4 consider web design (UI/UX design) an important part of their website implementation, while the remaining 2 consider it very important.

- **Question 3 results:** All 6 companies use responsive design for their website.

- **Question 4 results:** From all 6 companies: 4 companies mentioned modern web design. 2 companies mentioned an advanced search tool. 2 companies mentioned a good navigation system. 2 companies mentioned the use of chatbots. 1 company mentioned using a special color scheme for calls to actions.

- **Question 5 results:** From all 6 surveyed companies: 5 consider website's performance an important part of their web implementation, while the remaining 1 consider it very important.

- **Question 6 results:** From all 6 companies: 5 companies mentioned code optimization. 4 companies mentioned image size optimization. 2 companies mentioned redirect reduction. and 1 company mentioned cleanup of database.

- **Question 7 results:** From all 6 surveyed companies: 5 consider professionalism and trustworthiness to be a very important part of their business, while the remaining 1 consider it important.

- **Question 8 results:** From all 6 companies: 5 companies mentioned having an "About us" section. 3 companies mentioned having customer reviews, from which 1 company mentioned also reviews from trusted and well-known sponsors. 3 companies mentioned certifications, from which 1 company also includes awards. 1 company mentioned having a detailed contact information section.

- **Question 9 results:** From all 6 surveyed companies: 3 responded that they sometimes do competitor analysis, 2 companies usually do competitor analysis, and 1 company does it occasionally.

- **Question 10 results:** 2 out of 6 companies responded that they are <u>sometimes inspired by their competitors</u>, one of which also clarified that they believe that <u>their competitors are most likely also inspired</u> by others.

Survey for users (consumers):

- **Question 1 results:** From all 29 surveyed users: 20 (69%) consider web design to be a <u>very important</u> component when visiting websites, 5 (17.2%) consider it <u>important</u>, and remaining 4 (13.8%) consider it <u>moderately important</u>.

- **Question 2 results:** From all 29 surveyed users: 16 (55.2%) believe that color scheme <u>influences</u> their decision to convert, 8 (27.6%) believe that color scheme <u>partially influences</u> their decision to convert, and the remaining 5 (17.2%) believe that color scheme <u>does not influence</u> their decision to convert.

- **Question 3 results:** From all 29 surveyed users: 27 (93.1%) <u>felt overwhelmed</u> when using websites. The reasons were: a large amount of content, difficulty in navigation, frequent use of bright and inappropriate colors and shades, difficult to read fonts, a large number of images, poor sorting algorithm, rare use of white spaces, as well as misplaced ads and elements due to non-responsive design. And the remaining 2 (6.9%) responded that they <u>did not feel overwhelmed</u> when using the website.

- **Question 4 results:** From all 29 surveyed users: 16 (55.2%) <u>usually</u> use mobile phone (or tablets) to access different websites. 10 (34.5%) do that <u>always</u>, 2 (6.9%) do that <u>sometimes</u>, and 1 (3.4%) do that <u>rarely</u>. It can be seen that the vast majority of surveyed users (those who usually and always) often use their mobile phones or tablets, which again confirms the fact that the majority of users around the world use their mobile gadgets to access the Internet.

- **Question 5 results:** From all 29 surveyed users: 24 (82.8%) <u>left a website</u> because they found it too confusing or difficult to use. The reasons were: poor functionalities, bad web (UI/UX) design, non-responsive design, unprofessional and untrustworthy design, poor content organization, difficulties with navigation, which prevented the user from quickly finding the necessary information, a large number of pop-up advertisements, inconsistent color scheme and fonts, a large number of pages, as well as bad and unreliable information. And the remaining 5 (17.2%) <u>never left a website</u> because they found it too confusing or difficult to use. It is also worth noting that 1 of those 5 people responded that even if the website was difficult to use, they still tried to stay "as positive as possible". And if the

website lacks simplicity, then they have tried to be "the perfect user" who can use what they have. It can be seen that the vast majority of surveyed users would leave the website if it was confusing or difficult to use.

- **Question 6 results:** From all 29 surveyed users: 14 (48.3%) consider loading time to be a <u>very important</u> aspect of a web page, 9 (31%) consider it <u>important</u>, and 6 (20.7%) consider it <u>moderately important</u>.

- **Question 7 results:** From all 29 surveyed users: 24 (82.8%) <u>consider website performance</u>, namely loading time and functionality, <u>to be an important aspect</u> and have also <u>left a website due to slow loading time</u>. The reasons were: no patience to wait, slow functionalities, and stuck function possibly due to poorly written code. 4 (13.8%) answered that sometimes they were not sure whether the website or their Internet was slow, and therefore they <u>had to wait a little longer, but eventually still left the website</u>. Those who left a website due to slow loading time also specified that after leaving the first website, they would visit other websites in the hope of getting similar information, but faster. It is also worth noting that one user responded that it would be convenient if there was a loading indicator that would show users how much longer they need to wait. Not knowing how long to wait will make users leave a website even faster. And only the remaining 1 (3.4%) user responded that despite the slow loading time, they would still <u>"give the website a chance"</u>. It can be seen that the vast majority of surveyed users would leave the website if it had slow loading time.

- **Question 8 results:** Answers will be ranked by frequency of mention: Modern and minimalistic web (UI/UX) design (11 times), responsive design (7 times), reliable URL (5 times), contact information (5 times), customers review (4 times), ease of navigation (2 times), certifications (2 times), staff pictures and short description, different payment methods, ability to select different languages, fast load time, availability of technical support, encryption standard, and availability of privacy policy.

- **Question 9 results:** From all 29 surveyed users: 20 (69%) consider trust factor <u>very important</u>, 7 (24.1%) consider it <u>important</u>, and 2 (6.9%) consider it <u>moderately important</u>.

- **Question 10 results:** Answers will be ranked by frequency of mention: customer reviews (21 times), "About Us" section (14 times), certifications (11 times), reliable URL (9 times), good web (UI/UX) design (9 times), contact information (6 times), encryption standard. It is also worth clarifying that one user said that they read and trust the "About Us" section, but only if it is not written too ambitiously. And this is due to the fact that often scam websites use information that is too ideal and ambitious to be true.

8   CONCLUSION & DISCUSSION

Using the above results of the two surveys, the following conclusion can be drawn. Web development is important to companies, and the importance is growing every year. Nowadays, it is difficult to imagine a modern business without an online presence. It is important for companies to have websites that attract new users and retain existing ones. It should look modern, follow web design standards, as well as have good functionality, which together will increase the conversion rate.

This can also be confirmed by the results of a user survey. Most users value the visual component. It is important for them to know that when entering any website, they should see a clear and easy-to-use interface, good functionality, fast loading speed, as well as aspects that strengthen their confidence in the website and the business behind it.

Many aspects and ideas presented in this thesis were mentioned not only by companies, but also by ordinary users. These include, for example, the importance of having a responsive design due to the growing ratio of mobile device usage to access the Internet, the importance of improving website performance as much as possible, due to the growing trends and expectations of the vast majority of users to see content that loads instantly. Ultimately, users will not even consider the information and content provided on a website if they leave it within seconds due to slow loading time.

Aspects such as the fundamental importance for companies to appear professional and trustworthy were also mentioned numerous times. As mentioned earlier, it is very important to earn the trust of users, because most of them will not interact with the website in any way, much less convert, if they have even a slight suspicion and mistrust. This once again proves the importance and influence the trust factor has on business management and users.

It has become possible to prove the enormous impact of web development on businesses and consumers. And it is believed that this influence will only continue to grow, due to rapidly growing trends. The objectives of this thesis have been achieved, namely a detailed study of this topic, along with the given facts, methods and practices. And what is most important is evidence of the veracity of the given facts through surveys of companies and users.

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SURVEY FOR COMPANIES

1. How important is web development of your website for you? *

	Not so important	Slightly important	Moderately important	Important	Very important
Answers:	○	○	○	○	○

2. How important is web design (User Interface / User Experience) to you? *

	Not so important	Slightly important	Moderately important	Important	Very important
Answers:	○	○	○	○	○

3. Do you use responsive web design for your website for all devices (mobile phones, tablets, wide screen devices)? *

	Yes	No	Partially
Answers:	○	○	○

4. What elements of web development do you use to create a great user experience? (For example, modern web design, good navigation, advanced search tool, calls-to-action and others)

Enter your answer

5. How important is your website's performance to you in terms of loading time and functionality? *

	Not so important	Slightly important	Moderately important	Important	Very important
Answers:	○	○	○	○	○

6. What techniques do you use to improve your website's performance? (For example, image sizes optimization, code optimization, redirects reduction, and others)

Enter your answer

7. How important is it to you (as a business) to appear professional and trustworthy to your clients? *

	Not so important	Slightly important	Moderately important	Important	Very important
Answers:	○	○	○	○	○

8. What website elements do you use to appear trustworthy to your customers? (For example, customer reviews, certificates, "About Us" section, and others)

Enter your answer

9. How often do you conduct competitor analysis? *

	Rarely	Occasionally	Sometimes	Usually	Always
Answers:	○	○	○	○	○

10. Do you often get inspired or take ideas from your competitors? If so, do you think your competitors are doing the same?

Enter your answer

Submit

1. How important is web design (User Interface / User Experience) to you when visiting a website? *

	Not so important	Slightly important	Moderately important	Important	Very Important
Answers:	○	○	○	○	○

2. When looking to make an online purchase or use a service, do you think the color schemes on a website influence your decision to convert? *

Enter your answer

3. Have you ever felt overwhelmed by a website's design or content, and if so, what specifically caused that feeling? *

Enter your answer

4. How often do you use your phone (or tablet) to access different websites? *

	Rarely	Occasionally	Sometimes	Usually	Always
Answers:	○	○	○	○	○

5. Have you ever left a website because you found it too confusing or difficult to use? If so, what specifically made it challenging to use? *

Enter your answer

6. How important is the loading time of a website you want to visit? *

	Not so important	Slightly important	Moderately important	Important	Very important
Answers:	○	○	○	○	○

7. How much does website performance, such as load time and responsiveness, affect your overall experience on a website? Have you ever abandoned a website because it was too slow? *

Enter your answer

8. What factors contribute to your sense that a website (and business behind it) is professional and credible? *

Enter your answer

9. How important is the trust factor to you when using a website? *

	Not so important	Slightly important	Moderately important	Important	Very important
Answers:	○	○	○	○	○

10. What elements of a website help you trust the business behind it? For example, do you look for customer reviews, certifications, or detailed "About Us" sections? *

Enter your answer

Submit