

A Usability Study on the Online Retail Platform of Local Pharmacies in the Philippines

Michaella Alyssa T. Aquino, Leonard Rasell S. Manlapas, Ashley Marie N. Margate, Piolo Miguel B. Rivera, and Josephine D. German

School of Industrial Engineering and Engineering Management

Mapúa University

Intramuros, Manila, Philippines

mataquino@mymail.mapua.edu.ph, lrsmanlapas@mymail.mapua.edu.ph,

amnmargin@mymail.mapua.edu.ph, pmrivera@mymail.mapua.edu.ph,

jdgerman@mapua.edu.ph

Abstract

Technology advancements have also turned pharmacies in developing their digital strategies. The usability and user interface are vital to establishing a more robust end-to-end service with the customers. This study assessed the e-commerce platform of one of the leading pharmacies in the Philippines. The assessment was made on the context of usability to determine whether the pharmacy's website contains the preferred features of the consumers. A total of 156 respondents evaluated the website of an online pharmacy through an online survey questionnaire. The study utilized the multiple regression analysis to determine which among the key features from the usability test based on Nielsen's Heuristics has a significant impact on the pharmaceutical website. The results showed that the critical elements of a pharmaceutical website are a user-friendly interface, simple and recognizable interface, prevention of errors, and ease of transaction. The findings of the evaluation specified that most of the users were not generally satisfied with the pharmacy's current website design because it was too complex and cannot be easily identified as a pharmaceutical e-commerce website. The study also proposes a new website design that has a simplified feature to identify and navigate the website easily and removal of unessential features including adjustment of the font colors and background. The improvement on the pharmacy's website design will help attract more customers, build trust, and influence customer loyalty.

Keywords

Usability, Pharmaceutical e-commerce, User-friendly interface, E-commerce website

1. Introduction

Electronic Commerce (e-commerce) describes the process of conducting business transactions, such as buying, selling, transferring, or exchanging products and services, through the Internet (Chai, Holak, & Cole, 2021). E-commerce benefits both the organizations and society by making exchanging and delivering information, products, and services easy and convenient as it enables more efficient use of resources and gives easier access to national and international markets. The Philippines' e-commerce market increases at 17.2% a year, from 2016-2022, where the value of the business-to-consumer (B2C) market was \$1.1 billion and is projected to reach \$2.6 billion in year 2022.

With the continuous development of technology, healthcare has also been evolving, as online pharmacies increase in popularity (Mäkinen et al., 2005). Today, online purchasing of pharmaceutical products is a principal activity. Online pharmacies can operate by selling pharmaceutical drugs, including prescription-only ones. Yet, such phenomenon is said to be uncommon as most of these online pharmacies work in areas that are remote and can be said as countries where legal bases and business practices are not very accessible to international research compared to other progressive, more developed countries (Orizio et al., 2011). Despite that, however, it is notable how the evolution of technology opens more opportunities for healthcare to improve around the world, leading to pharmacists improving patient care as they can communicate information about pharmaceutical products to a wider variety of people online. Pharmacists are also responsible for assuring the maximum therapeutic benefit from their treatments with their customers' medicines. Therefore, they must continue to keep up with the changes in pharmaceutical sciences and the other developments in knowledge and technology concerning pharmacy practice.

The COVID-19 global pandemic limited the access to traditional means of purchasing goods and services and paved the way for digital channels, making consumers shift their behavior to alternative methods in purchasing their daily necessities, which increased online consumer activity. As illustrated in Figure 1, the search volume of Filipino consumers with regards to online pharmacies increase during the start of the COVID-19 pandemic, signifying those consumers have looked for an alternative, by online means, to satisfy their medical needs. These new online habits will not disappear anytime soon, so e-commerce must continue to fulfill product demands. To keep up with the competitive market, famous consumer health companies in the Philippines such as Watsons, Mercury Drug, SouthStar Drugstore, and The Generics Pharmacy have developed digital strategies to continue catering to their customers. The lockdown period of the pandemic in 2020 increased the search trends in e-commerce pharmacies, as presented in Figure 2 (Miranda, 2020). This finding shows that e-commerce pharmacies should establish a more robust online end-to-end service and better present their website's user interface. The reason for this may also be the same in the study of Lostakova et al. (2012), where they found that customers visit their preferred online pharmacy based on the online presence of the website, price, and visual presentation of the product.



Figure 1. Search volume on Philippine drugstores brands before and during the COVID-19 lockdown period

The study of Hartson et al. (2001) showed that an increase of one hundred and thirty-five percent in customer usability performance was made when they worked on the usability design and modification of the website. With the context of usability testing, online pharmacies need to ensure that the online interfaces of their sites are easy to use and accessible to their consumers. It is proper that these websites are seamless, well-performing, visibly apparent, engaging, fast and responsive, consistent, and informative (Performance Lab, 2020). These characteristics are what most pharmaceutical companies aim for in their websites, as they assure that they can provide information on the various prescription drugs that are up for purchase by customers. These online pharmacies usually act as websites that offer drug information; however, it is unavoidable that different online pharmacies have other website content, which may confuse consumers. The study conducted by Iikubo et al. (2018) in Japan showed that the three critical features of an excellent website for pharmaceutical companies are "a website filled with information", "inter-company consistency regarding types of drug information available as well as the process required for obtaining drug information", and "searchability and visibility" of the user interface's structure are the user's response.

This study focused on assessing the website of one of the leading pharmacies in the Philippines as an e-commerce platform. Specifically, the assessment included identifying the key factors that customers look for in an online retail outlet and recommending an ergonomically designed website for pharmacies. The study only focused on the consumer's user interface of the pharmacy's website and does not include the overview of the administrator's responsibility and interface.

Pharmaceutical companies with an online platform will benefit from the present research since conducting a usability test for their website is much cheaper than constructing the entire site's structure and improving only the problems or lacking features, which is the cause of a large percent of unseen lost for pharmaceutical e-commerce. Moreover, the usability testing allowed for the presentation and identification of the locations or positions of the design elements, ensuring the customers will be at ease in navigating the website. Having an online platform is an advantage for pharmacies, especially with increasing online consumer activity. They can digitally provide an end-to-end service to continue catering to their customers through this platform. The results of this study benefit the pharmacy's online

customers, considering the modified and ergonomically design of the website to ease a customer's navigation of products.

2. Literatures

Research and testing are required to create usable and accessible interfaces and the heuristic method is one of the most utilized (Krawiec & Dudycz, 2020). The study of Miller et al. (2018) applied Nielsen's ten general principles for interaction design in healthcare, specifically evaluating a clinical decision support (CDS). The findings indicate that current CDS literature does not fully satisfy interaction design principles, and that, despite their widespread usage in clinical care, CDS systems are frequently useless due to poor usability. Muhanna et al. (2020) also did a heuristic evaluation in identifying the usability difficulties of Arabic interfaces. The study focused on formal heuristic evaluation as a usability inspection method, where they generated heuristics and compared them to Nielsen's heuristics on three Arabic interfaces. Results show that the Arabic Heuristics were more effective in reporting serious and catastrophic problems than the use of Nielsen's Heuristics. In another study, De Lima Salgado et al. (2020) investigated the usability criteria for the design of parental privacy controls for smart toys. They evaluated the efficiency of Nielsen's Heuristics to the IT Security Management heuristics and discovered that the IT Security Management heuristics have more enhanced coverage of usability issues.

3. Methods

The key factors that customers look for in an online retail platform were identified in the survey conducted within Manila, Philippines. A total of 156 respondents aged 18 to 60 years old were randomly selected to evaluate the website of an online pharmacy which is the subject of this study. A survey questionnaire created using Google Forms was prepared and administered online through various social media platforms to obtain the necessary data. The survey questionnaire was divided into three (3) sections. The first section consisted of the respondent's demographic profile such as age, gender, and occupation. The second section identified the issues in the design of the user interface of the pharmacy's website using the Nielsen's usability heuristics (Nielsen and Molich, 1990). This section included the ten (10) features of the usability heuristics for user interface design which are user-friendliness, simplicity and recognizability, readability of text and dialogue, navigation, user memory load, prevention of errors, availability of shortcuts, availability of exits, nonexistence of unnecessary features, and ease of transaction. The third section corresponds to the overall rating or satisfaction on the pharmacy's user interface (UI). The survey was evaluated using a 5-point Likert scale, with five (5) being the highest and one (1) as the lowest. To decide which features are the most significant, multiple regression analysis was employed, considering the overall rating of the UI as the dependent variable and the features of the Nielsen's Usability Heuristics as the independent variables.

4. Results and Discussion

4.1 Demographics

The respondents' profiles include age, gender, and employment status. Out of 156 respondents, 35.3% are young adults aged 16 to 25 years old. The second-largest percentage (20.5%) of respondents were from ages 45 to 50 years old, 14.1% of which are from ages 25-35, 10.9% are from 35-45, and 9.6% are from 55-65 years old. The minor percentage of the respondents are 50-55 years old and 65 years old and above. 51.9% of the respondents are female, while 48.1% are male respondents. For the respondents' employment status, 42.3% are employed, 32.5% are students, 12.2% are business owners, 8.3% are retired, and 5.7% are unemployed.

4.2 Key Features of the Pharmacy Website based on Neilsen's Usability Heuristics

The respondents rated each feature of the website corresponding to Neilsen's Usability Heuristics. The first feature corresponds to the website's user-friendly interface, one of the critical factors in a website, and 89 out of 156 (57.1%) respondents rated 3. The second feature identifies if they can quickly identify the website's purpose at first glance, corresponding to Nielsen's Heuristic usability evaluation of the website as "simple and recognizable". 73 (57%) respondents rated a 3, 37 (23.7%) respondents rated a 4, 25 (16.7%) respondents rated a 2, 18 (11.5%) respondents rated a 5, and 2 (1.3%) respondents rated a 1. The third question asked is if the texts and dialogues are readable based on the mixture of font sizes and colors, it resulted in 81 (51.9%) respondents rating of 3, the 2 and 4 ratings both have 28 (17.9%) respondents, 15 (9.6%) respondents gave a 5, and 4 (2.6%) gave a 1. The next feature is navigation. 84 (53.8%) respondents rated a 3 as they find it average when navigating through the website. Minimizing the user's memory load is a feature that determines the complexity of the website, and the result showed that 86 (55.1%) respondents gave a 3 rating. When asked if the respondents are led to any errors while using the website, 75 (48.1%) respondents gave a rating of 3, 32 (20.5%) respondents gave a 2, 27 (17.3%) respondents gave a 4, 17 (10.9%)

respondents gave a 5. Another key feature is the ability to use shortcuts and return to a previous page, and both features resulted in 82 (52.6%) respondents giving a rating of 3. In terms of the usefulness of the features offered on the website, 75 (48.1%) respondents rated it a 3, 35 (22.4%) respondents rated it a 4, and 27 (17.3%) respondents rated it a 2. The last question asked in the survey is if the respondents could easily make a transaction if they were to buy products using the website. The result showed that 79 (50.6%) respondents gave a rating of 3, 30 (19.2%) respondents gave a 2, and 22 (14.1%) respondents gave a rating of 1.

Based on the results shown in Table 1, the critical features that the respondents look for on the pharmacy's website are user-friendly interface, recognizable and straightforward interface, prevention of errors, and ease of transaction. The features were identified based on their p-values that are less than 0.05.

Table 1. Regression Analysis on the Key Features based on Nielsen's Usability Heuristics

<i>Features</i>	<i>Coefficients</i>	<i>P-value</i>
Intercept	0.91327	0.00004
User-Friendly Interface	0.16043	0.04597
Simple and Recognizable Interface	-0.15076	0.04807
Readable Text and Dialogue	0.04838	0.50307
Navigation	0.06794	0.47728
Minimize User Memory Load	0.07208	0.36999
Prevents Errors	0.19679	0.01699
Provide Shortcuts	-0.01379	0.87080
Provide clearly marked exits	0.13210	0.08174
Nonexistence of unnecessary features	0.08513	0.24113
Ease of Transaction	0.15563	0.00484

The first significant feature is a user-friendly interface, making the interaction between the website and the user smoother and more accessible. It is essential to permit users to create their accounts on the website. This feature will allow the website to gather and store the user's data, which could be used for future transactions, and track their placed orders.

The second significant feature is the recognizable and straightforward interface, allowing the user to determine the website's central objective quickly. As shown in Figure 2, displaying the products of pharmacy as soon as they visit the website rather than posters, photos, and news, will allow users to immediately comprehend the primary purpose of the website, which is to serve as a channel where customers can buy products from the pharmacy. According to Zorko et al. (2017), previous studies concluded that texts are most readable when printed as black text and white background. Thus, on the pharmacy's current product page, the product name's red fill color and white text are replaced with a white background, black font color, and red borders to keep the pharmacy's branding. This proposed modification is shown in Figure 3.

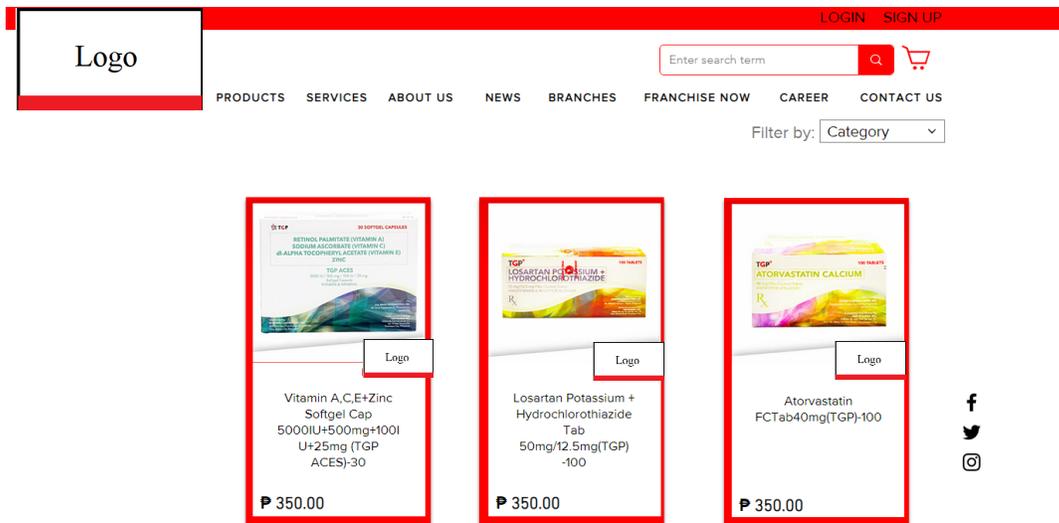


Figure 2. Proposed Pharmacy Product Page

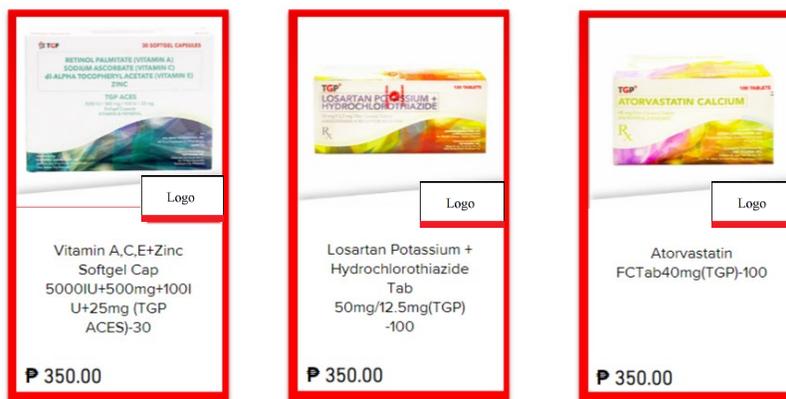


Figure 3. Display of Pharmacy Products

In the existing website of the pharmacy, the Our Products Menu composes of the Products and Services, but as seen in Figure 4, "products and services" from the navigation bar that is found on the top part of the webpage were proposed to be made into two separate buttons to allow users to locate the products and service page quickly. It can also be seen that the proposed menu bar removed the unnecessary visual noise such as the "filter by product name" and "list of products" found on their products page. In addition, as displayed in Figure 5, the drop-down option of the "Filter by" is a feature that allows the product to be filtered by category, alphabetical, price: lowest to highest, and cost: highest to lowest, and is placed on the above the products. This way, it can further highlight its effects by removing distractions and any visual noise surrounding them.



Figure 4. Pharmacy Navigation Bar

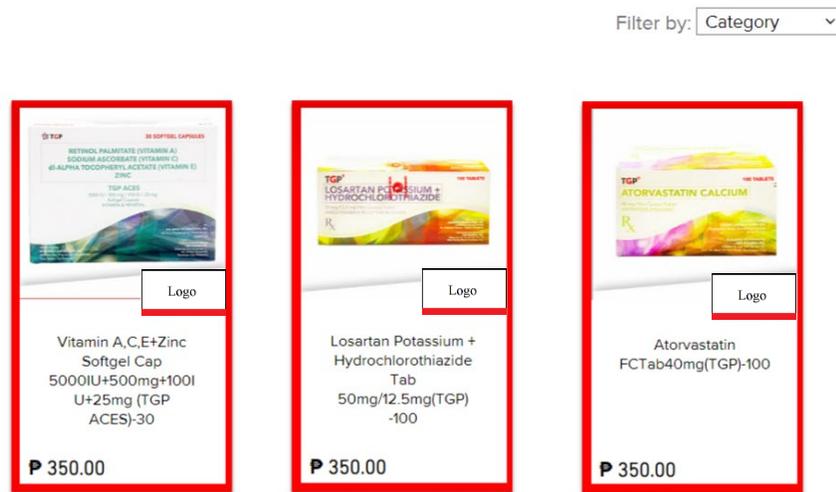


Figure 5. Filtering of Pharmacy Products

The third significant feature is the prevention of errors. To prevent users from experiencing errors as they interact with the website, the magnifying glass icon found on the website is proposed to be replaced by a search bar to help customers locate the products they want to view. Figure 6 shows the proposed search bar of the pharmacy's website.

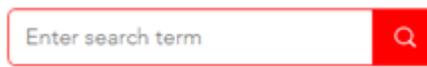


Figure 6. Pharmacy Search Bar

Lastly, the feature of ease of transaction is specifically for an e-commerce website where the respondents were asked if they experienced a smooth transaction if they were to buy products from the website. However, as seen on the current interface of the pharmacy's website, users cannot use the website to purchase products from it. Including an "add to cart" feature, shown in Figure 7, will allow customers to add multiple products from the store to their e-cart and have their orders delivered to their doorstep. This feature is a vital part of an e-commerce website since this would be the primary source of their sales.



Figure 7. Pharmacy Add to Cart Feature

Overall, most respondents found moderate complexity in navigating and transacting products through the website, where 56% answered average when navigating and 44% answered the same when transacting. As for comfortability and overall experience in using the website, most respondents, about 66%, found it moderately comfortable when using the website.

5. Conclusion

In the present generation, where technology is used in almost all aspects, it is no wonder that e-commerce pharmacies should strive to make a website with better end-to-end service and the best presentation of website interface for their potential customers. The study focused on assessing a pre-existent website created by one of the leading pharmaceutical companies in the Philippines. Usability testing, such as the application of Nielsen's Usability Heuristics, aids in evaluating the different features of a website and helps identify areas for improvement. Results obtained from the survey showed that most of the respondents were not generally satisfied with the pharmacy's current website design as they did not immediately know what the website was all about at first glance, led them to errors, and thought that there were features on the website that are not useful. Several areas that need improvement are the website's interface, which needs to be more user-friendly, simple, and recognizable, seldom presence of errors, and ease of transaction. Generally, the website needs to be vastly improved in terms of user-friendly graphic and layout design and focus on enabling customers to have an easy, stress-free transaction in buying the products they need. Identifying which features should be added or removed as they are not necessary to the transaction will help assure the customers a great experience with the pharmaceutical website. Improving the user interface with the consideration of any potential customer will benefit both the customers, whether they are new or not, and the business itself. The improvements will help attract more customers, build trust in the company, and influence customer loyalty. It is recommended for future researchers to expand the scope of this study and increase the number of respondents when conducting similar e-commerce website evaluations. It is also recommended to conduct further studies on website layout and design based on cognitive ergonomics application for pharmaceutical companies and other industries. Future researchers may also conduct usability studies that apply other theories or models not only on the pharmaceutical industry but on other consumer products.

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Biography

Michaela Alyssa T. Aquino is an Industrial Engineering Student at Mapua University, Philippines. She has presented and won the Best International Paper in the ICETAS 2020. She is active in school organizations such as the Philippine Institute of Industrial Engineers-Mapua Student Chapter (PIIE-MSA) and National Student Chapter (PIIE-NSC). Her research interests are Production and Operations Management and Ergonomics.

Leonard Rasell S. Manlapas is an Industrial Engineering Student at Mapua University, Philippines. He had many accomplishments during his college years, such as two international paper publications and an award best paper presentation. His research interests are Production and Operations Management and Ergonomics.

Ashley Marie N. Margate is an Industrial Engineering Student at Mapua University, Philippines. She has received a few awards as recognition for her outstanding performance in academics and extra-curricular activities. She has published 2 papers in an international conference. Her research interests are Ergonomics and Supply Chain Management.

Piolo Miguel B. Rivera is currently studying at Mapua University as a student in BS Industrial Engineering. He is among the top students in his batch and had many accomplishments during his college years, such as two international publications and an award for their group as best paper presentation. His research interests are Production and Operations Management and Ergonomics.

Josephine D. German is a Ph.D. in IE student and faculty member of the School of Industrial Engineering and Engineering Management at Mapua University in Manila, Philippines. She has earned her BS in Industrial Engineering and Master's in Engineering (major in IE) from the same University. She is a Professional Industrial Engineer (PIE) with over 15 years of experience and has taught several courses in IE. She has done several research projects in logistics and supply chain management, systems modeling, entrepreneurship, risk management, vulnerability assessments, and ergonomics. She has extensive experience in academic audits and accreditations. She is also a member of the Philippine Institute of Industrial Engineers (PIIE).