



***FinTech in Saudi Arabia:
A user experience analysis of FinTech platforms***

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Abstract— The global FinTech industry has experienced significant growth, with key projects developing the financial sector. In Saudi Arabia, startups have used technology to offer FinTech services. In this area, it is important to investigate the usability of platforms that offer FinTech services. This research aims to examine the usability of samples of Saudi FinTech websites and identify design issues impacting user experience. Usability testing was conducted on the websites of two FinTech firms identified design issues, including navigation problems on the homepage and a lack of transparency in displaying investment details, negatively impacting end users. Employing usability methods can assist in enhancing the development of FinTech platforms and addressing these issues. This study contributes to a deeper understanding of FinTech usability problems and the user experience, enabling advancements in the industry.

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Keywords— FinTech; human computer interactions; users experience; usability methods; user testing.

1. INTRODUCTION

FinTech is recognized as any innovative ideas that enhance financial service operations by providing technological solutions tailored to various company circumstances (Leong et al., 2018). The scope of FinTech has broadened to encompass a diverse range of services, including financing, payment methods (e.g., electronic wallets, crowdfunding), and cryptocurrencies like Bitcoin. In addition, FinTech represents a multidisciplinary field that integrates finance, technology management, and innovation management (Barbu et al. 2021; Suryono et al., 2020; Abad-Segura et al., 2020). Arner et al. (2015) identified three stages of FinTech development, which include: FinTech 1.0 (1866-1967) beginning with the construction of the transatlantic telegraph wire, this was a critical step toward establishing a global financial system; FinTech 2.0 (1967-2008), characterized by a shift to fully digital banking, where technology was leveraged for competitive advantage; and FinTech 3.0 (2008 – Present). Currently, FinTech startups are emerging and reshaping the financial services industry. In particular, FinTech should be recognized as an opportunity to enhance commercial prospects through various technological platforms, such as websites and mobile applications (Stewart & Jürjens, 2018), so FinTech can add value to enterprises. This study examines the usability of FinTech websites in Saudi Arabia, with implications for the ongoing development of such platforms.

The structure of this study is as follows: Section 2 presents related works in FinTech and its relationship with usability, and states the research questions of the study. Section 3 addresses the research methodology and illustrates the results obtained from the usability testing. This is followed by a discussion of the results in Section 4. Finally, Section 5 draws the conclusion of this study.

2. RELATED WORKS

Leong and Sung (2018) diverse FinTech applications into four broad categories: payment, advice service, finance, and compliance. It is crucial in this area to understand how to discover and develop innovative FinTech solutions (Mention, 2019; Leong & Sung, 2018). Assisting policymakers, regulators, and FinTech owners in understanding user demands is critical for the development of enhanced services and policies. These demands can be evaluated using usability assessment methods, which fall under the umbrella of user experience. The following subsections explore user experience, its relationship with FinTech, and specifically address the context of FinTech in Saudi Arabia.

2.1. User experience

User experience (UX) is a crucial component of product design (applications or websites), and significantly influences a product's success (Mention, 2019; Leong & Sung, 2018). Recommendations and guidelines for enhancing UX on websites often include directives such as avoiding extensive scrolling, limiting images, and

Currently, the Saudi Central Bank has authorized twenty-two FinTech firms (Saudi Central Bank, 2022). These firms are categorized into six types, as shown in Table 1, which also includes the number of firms in each category. This research will specifically focus on samples from the eight firms operating in the Debt

TABLE 1: FINTECH TYPES IN SAUDI ARABIA

#	FinTech Type	Number of firms
1	Digital savings Solutions	1
2	Debt – Crowd Funding Platform	8
3	Digital Payments	6
4	Consumable Micro-lending	2
5	Financial Information Aggregation.	1
6	Digital Savings association	3

2.3. Research Questions:

To date, no study has examined the usability of FinTech in Saudi Arabia. Given the significance of this issue, it is crucial to evaluate the design of FinTech websites, considering the perspectives and expectations of end users or investors who utilize these platforms. The evaluation will be conducted on a sample of FinTech firms authorized by the Saudi Central Bank (Saudi Central Bank, 2022). This research aims to answer the following question: What are the common usability issues in the website design of authorized FinTech firms in Saudi Arabia as perceived by their users, and how do these issues impact user experience and satisfaction?

3. RESEARCH METHODOLOGY

In order to evaluate the existing FinTech websites in Saudi Arabia, this study employs a qualitative approach, with the evaluation based on qualitative data gathered through usability testing. Usability testing is employed to determine the degree of a product's usability, and in this method users typically execute specific tasks as observers monitor, listen, and take notes, helping

Crowd Funding Platforms in Saudi Arabia. These firms primarily provide their services through websites, with half of them also offering their services through mobile applications, as detailed in Table 2. The primary focus of this study is to evaluate samples of websites from these crowd funding platforms.

TABLE 2: SUMMARY OF FINTECH COMPANIES IN SAUDI ARABIA UNDER DEBT CROWD FUNDING

#	FinTech Firm name	Mobile Apps
1	Lendo: Digital Lending for Information Technology	Yes
2	Raqamyah Platform	Yes
3	Forus	Yes
4	Nayifat Finance Company	No
5	Platform Company Ltd Tameed Financing	No
6	Manafa capital	No
7	Funding Souq Company	No
8	Sahlah Company For Electronic Marketing	Yes

identify successful elements and potential problem areas (Barnum, 2020) (Wang et al., 2019). This process is driven by four steps: selecting the users, designing the tasks, performing the tests, and verifying the results:

3.1. Selecting the users

Usability testing often depends on the number of users. Early studies in usability testing suggested that a sample size of merely five participants could help uncover approximately 85% of design problems (Nielsen, 2000). In contrast, others argue that limiting the sample to five participants significantly reduces the requisite sample size to achieve practical levels of problem detection (Cazañas et al., 2017). However, considering time and cost constraints, some researchers deem a sample size of 5-6 users to be sufficient and highly effective (Barnum, 2020). For this study, seven participants with previous experience in the Saudi Arabian stock exchange markets were invited to take part in the user lab tests, implying they have prior experience with financial websites. A pre-test questionnaire was conducted to collect their background information, as detailed in Table 3.

TABLE 3: A summary of participants' profiles.

#	User no	Age of users	Gender	Work Experience in stock market	The financial size of the stock portfolio*
1	User_1	35	Female	8	SAR 100,000 = \$26,666
2	User_2	37	Male	11	SAR 280,000 = \$74,666
3	User_3	43	Male	16	SAR 1,000,000 = \$266,667
4	User_4	47	Male	15	SAR 500,000 = \$133,33
5	User_5	50	Male	18	SAR 750,000 = \$200,000
6	User_6	29	Female	7	SAR 450,000 = \$120,000
7	User_7	36	Male	14	SAR 166,000 = \$44,266

*Note: each US dollar is equivalent to 3.75 SAR (Saudi Riyals)

3.2 Select FinTech Firms and Designing the tasks

Usability testing was conducted on two Debt Crowd Funding Platforms (DCFP) that provide their services on website platforms. These platforms are:

1. Platform Company Ltd Tameed Financing
2. Sahlah Company For Electronic Marketing

These platforms provide financing solutions to small and medium-sized businesses in Saudi Arabia. These platforms connect investors with businesses seeking short-term working capital loans and invoice financing. In this study, four tasks were designed to examine the websites. These tasks included:

1. Gathering initial user reactions to the targeted websites
2. Open a new account
3. Explore investment opportunities
4. Assessing feelings after performing the previous tasks

3.3 Perform the tests

3.1.1 Gathering initial user reactions to the targeted websites

Participants were given 15 minutes to explore both websites and their contents. They were free to navigate the website and were asked to verbalize their thoughts while performing the task. The homepages of the Sahlah and Tameed platforms are displayed in Figure 2. Initially, users were able to quickly comprehend the content on both websites due to the use of images represents the contents and color schemes employed. In addition, users found several images that explain the services on both platforms. Participants also discovered indications of Islamic Sharia certification on both websites, which most participants preferred. However,

four out of seven participants spent additional time looking for more information about the council or committee that works in this area but found none. This information was missing from Tameed, while Sahlah provided an opinion on Sharia compliance intended to show that the product complies with Sharia Guidelines adopted and approved by the Shariyah Review Bureau (2023). Despite the bureau being located in Bahrain rather than Saudi Arabia, participants felt confident, as noted by only one participant, because it adheres to Islamic Sharia regulations.

Moreover, Sahlah provides a brief summary of the most recent investment opportunities on its homepage, as shown in Figure 3, whereas Tameed restricts access to the investment opportunities to registered users only. Despite the fact that this information satisfies users' needs, according to Sahlah, participants felt it was insufficient, and five of them would like to see additional details, such as when it was provided and its risk level ranking, which are not provided. However, to view the entirety of either homepage, users had to scroll down, which took more time than expected because both homepages contain multiple images explaining the services. Moreover, participants found the top menu items on the Tameed platform difficult to recognize due to their small font size and color saturation. The design of the two homepages was perceived as complicated by most users, largely due to the need for extensive scrolling and the addition of numerous images, which required additional time to comprehend. These issues represent navigation problems that need to be addressed to enhance user productivity and efficiency.

Figure 2. Homepage of Sahlah and Tameed platforms

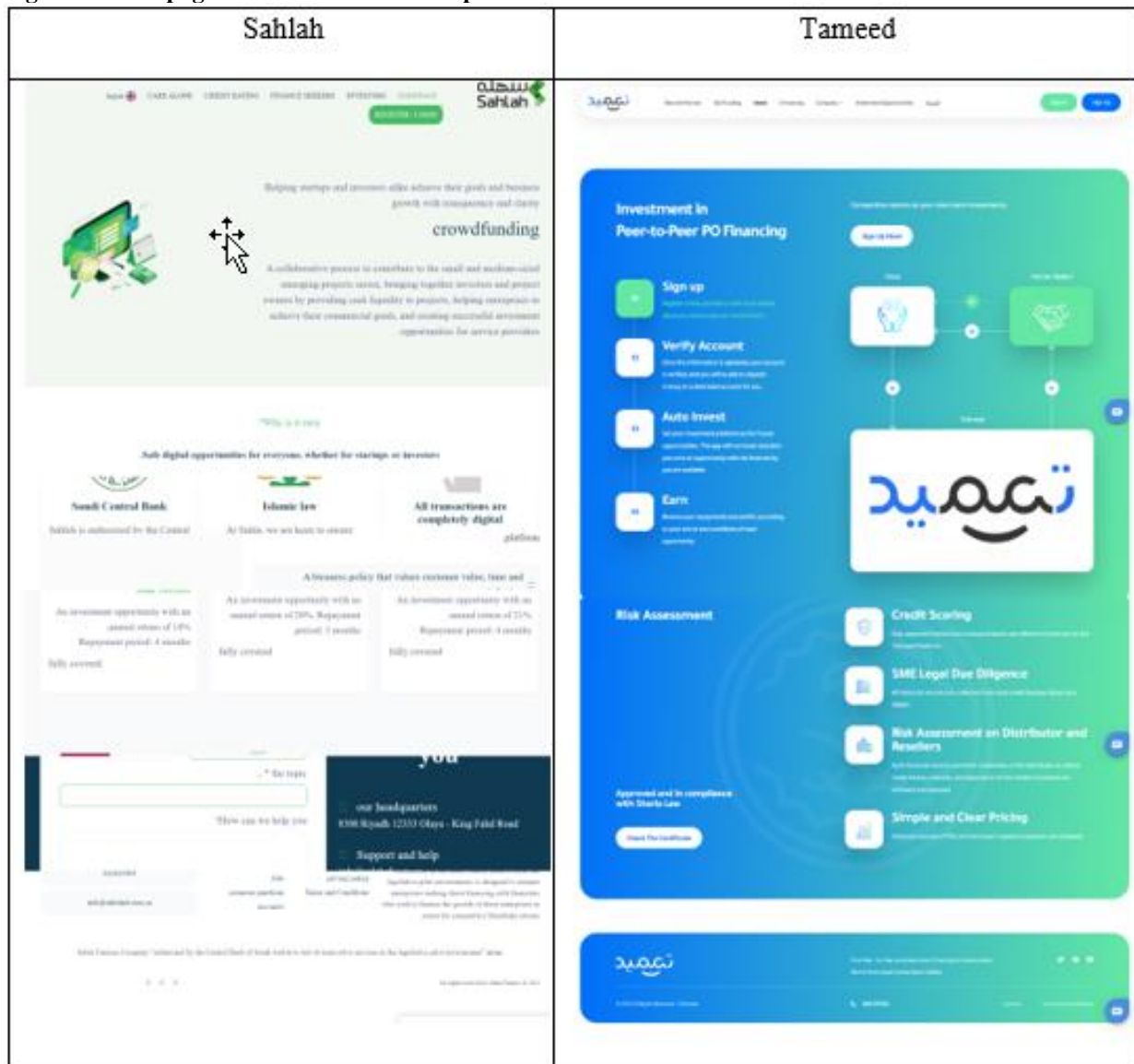


Figure 3. Sample of opportunities on Sahlah homepage.

<p>SCF000001 closed</p> <p>Easy platform launches the first investment opportunity</p> <p>SAR 149,000</p> <p>An investment opportunity with an annual return of 18%</p> <p>Repayment period: 4 months</p> <p>fully covered</p>	<p>SCF000002 closed</p> <p>investment opportunity</p> <p>SAR 320,000</p> <p>An investment opportunity with an annual return of 20%. Repayment period: 3 months</p> <p>fully covered</p>	<p>SCF000003 closed</p> <p>investment opportunity</p> <p>SAR 430,000</p> <p>An investment opportunity with an annual return of 21%</p> <p>Repayment period: 4 months</p> <p>fully covered</p>
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3.3.2 Open a new account

Participants were given ten minutes to complete the task, but most finished earlier. On both websites, the account creation process was found to be straightforward, requiring only basic information such as a national ID number, date of birth, and mobile number, followed by the setting and confirmation of a password. Then, users proceeded to the next page, which requested a verification code. Two participants experienced delays in receiving this code. One user, who did not receive the code for a prolonged period, used the website's chat service to find a resolution. The chat service proved helpful and assisted the user in resolving the verification code issue. The problem arose from the code being sent to the participant's mobile number registered in the Abshir system, and the participant could not add another mobile number due to confidentiality concerns related to his work. This issue underscores the need for a minimum

amount of explanation when new users add their information; however, both websites were lacking in this aspect.

After completing the registration procedures, participants were presented with a dialog box displaying a financial authorization letter for the platform, requiring investor agreement. As shown in Figure 4, this dialog, available only in Arabic, was meant solely to authorize the platform to buy and sell on behalf of the investor. Surprisingly, all participants were taken aback by the limited content of this authorization and expected a more comprehensive contract. Some participants suggested that it should clearly state the responsibilities of both the FinTech company and the investor. Other participants believed it should require the procedure for terminating the investment and its potential consequences.

Figure 4. Investor agreement form on Sahlah platform (Translated to English)

<p>Do you agree?</p> <p>Buying and selling authorization Financier/Investor I am the undersigned: National ID No.:</p> <p>I delegate and authorize Sahla Finance Company, a Saudi company registered with Commercial Registration No. 101066704 And on the date of 4/20/1441 AH, which is licensed to practice the activity of a crowdfunding platform on debt (the company),</p> <p>Buying and selling on my behalf with the aim of participating in securitization deals for the benefit of the financing seekers through it, and for this, the company has the right to select suppliers, negotiate with them, conclude sales and purchase contracts with the securitization seekers, sign on my behalf, deliver and receive the price, and deliver and receive the goods.</p> <p>Approval: This authorization has been approved electronically and is valid once you click on the (I agree) option below.</p> <p>I agree</p>	<p>هل أنت موافق؟</p>  <p>تفويض شراء وبيع (ممول/مستثمر) أنا الموقع أدناه/ هوية وطنية رقم أوكل وأفوض شركة سهله للتمويل، شركة سعودية المقيدة بالسجل التجاري رقم 101066704 وتاريخ 20/04/1441 هـ والمرخصة بمزاولة نشاط منصة تمويل جماعي بالدين (الشركة)، بالشراء والبيع بالنيابة عني بهدف المشاركة في صفقات التورق لمصلحة طالبي التمويل من خلالها، وللشركة في سبيل ذلك حق اختيار الموردين والتفاوض معهم وإبرام عقود البيع والشراء مع طالبي التورق والتوقيع بالنيابة عني، وتسليم الثمن واستلامه، وتسليم البضاعة وتسليمها. الموافقة: لقد تمت الموافقة على هذا التفويض إلكترونياً، ويعتبر ساري بمجرد النقر على خيار (أوافق) أدناه.</p> <p><input type="button" value="أوافق"/></p>
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After logging into any of the platforms, the menu displays the contract item and gives the investor the ability to view the contract. All participants disagreed with the procedure of not being able to read and accept the contract before proceeding. Six participants maintained that it was the investor's right, and every platform must allow the user to read the contract and await their acceptance.

3.3.3 Explore investment opportunities

This task was allocated twenty-five minutes, although most participants completed it earlier. Both websites restrict the detailed viewing of all investment opportunities to registered users only. As showed in Figure 5, Tameed offers 96 opportunities, divided into four categories: Outstanding (30), Repaid (63), Delayed

(3), and Available (0). A majority of participants concurred that the history of investment opportunities is significant, aiding both new and existing investors in assessing the platform's quality. However, this feature was exclusively available on Tameed, and reading its content required more time due to the need to navigate from page to page and the small font used on these pages.

In contrast, as displayed in Figure 5, Sahlah had only three active opportunities. Despite the fewer opportunities on Sahlah, participants felt more

comfortable with the information provided, such as profit per installment, period, payment date, and credit score. Notably, additional financial details about the company seeking funding were accessible only on the Sahlah platform by clicking the button in the top left corner. All participants agreed that this level of transparency was a crucial factor that any investor would appreciate. Furthermore, as shown in Figure 6, participants were pleased with the specific details of potential profit installments provided by Sahlah, as they felt it allowed them to better structure their investments.

Figure 5. Opportunities list and details on Tameed

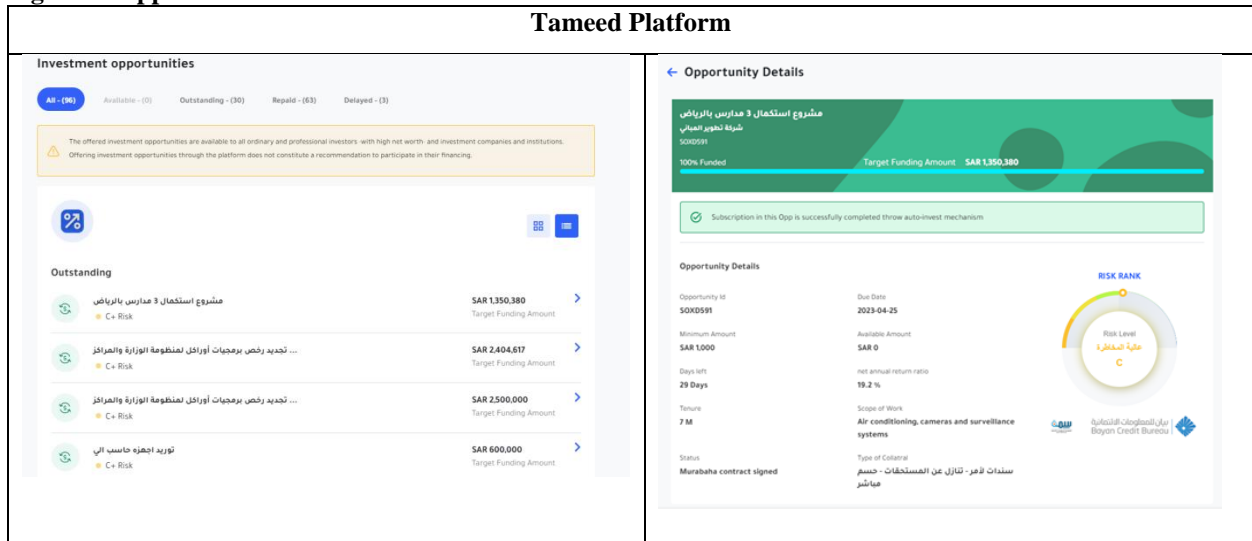


Figure 6. Opportunities list and details on Sahlah



3.4 Assessing feelings after performing the previous tasks

After finishing their exploration of the two platforms, participants were asked how they felt; this process took 15 minutes. Initially, participants expressed that both websites had some appealing design elements, including the use of graphs and images to explain content, as well as the convenience of offering financial services online. However, participants felt that visitors to both websites

had to spend too much time browsing to understand both the content and the services offered. They suggested that both websites should concentrate more on clearly presenting their services. There were also concerns about certain information being absent from both platforms. Specifically, five participants noted the absence of a comprehensive report on all offered opportunities. They suggested that such a report should be readily accessible to all users, as it would help

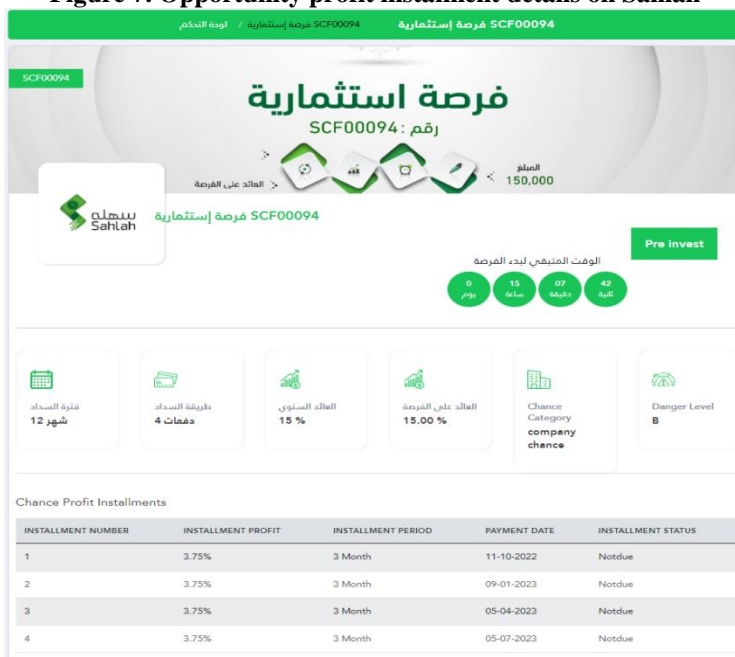
investors evaluate the performance of the platform and previous offers.

Additionally, two participants observed that a large number of investors were associated with each investment opportunity on the Sahlah platform, which they found strange. These participants believed that the opportunities were profitable, with a tenure of 12 months and a 14.00% net annual return ratio on Sahlah. In contrast, Tameed displayed opportunities with a 3-month tenure offering a 9-18.24% net annual return ratio but did not disclose the number of investors. As Figure 7 shows, Sahlah had 122-39 investors for each opportunity. From these observations, two participants inferred that Sahlah might limit the investment amount

for each investor. This raised transparency concerns since there was no mention of this limitation in the contract or on the website. In fact, six participants agreed that enhancing transparency is an issue that FinTech platforms need to address.

Furthermore, four participants expressed privacy concerns about the FinTech platforms. These platforms did not provide sufficient information until an investor registered, leading to the collection of substantial data from all users. Such practice could compromise users' privacy by sending text messages to their mobile phone numbers and emails. Participants suggested that data collection should focus only on actual investors participating in opportunities.

Figure 7. Opportunity profit instalment details on Sahlah



4. DISCUSSION

The evaluation of usability in website technologies opens up unprecedented opportunities for both firms and FinTech investors. Moreover, conducting usability studies on platforms that offer FinTech services can lead to significant shifts in the industry. However, there is a lack of in-depth knowledge concerning the usability strategies appropriate for the FinTech sector. Therefore, this study aims to evaluate a sample of FinTech websites in Saudi Arabia using a usability testing methodology.

The research question investigates the usability issues present in the website design of authorized FinTech firms in Saudi Arabia, as perceived by their users, and explores how these issues affect user experience and

satisfaction. The results highlight several design issues that affect the investors of both examined websites. The usability testing methodology used has revealed a series of notable difficulties experienced during the evaluated tasks:

- (1) Design issues: A variety of usability issues were revealed in the design of both websites. Notably, the homepages were cluttered due to the extensive use of images and small font sizes, resulting in users struggling to comprehend the content, so this contributed to existing navigation problems. According to research in the field of web usability Akgül (2021) and Alonso-Virgós et al. (2019),

- improvements in website design elements such as accessibility, usability, quality, and readability can enhance user experience. This supports extended use of services and meets user needs and expectations.
- (2) There was a lack of explanation about several subjects on both platforms. This includes limited explanation during account creation, limited content in authorization, a lack of termination details, and the absence of clear previous investment opportunities. These problems can create difficulties for investors in understanding the nature, risks, and potential returns of investments, as well as assessing and contrasting various investment options, potentially leading to poor investment decisions. FinTech websites should provide detailed and easily accessible information about the previous investment opportunities, including underlying assets or securities, investment strategies, expected returns, and associated risks or fees (Roh et al., 2022). Additionally, materials like graphs, charts, and tables should be used to support this information so that investors can make educated investment decisions. In order to increase user satisfaction and ease of learning and use, a system must be effective, safe, practical, and user-friendly, and this is a usability issue (Issa & Isaias, 2022).
- (3) Considering the issue of late contract display, it's important to note that a contract between an investor and a FinTech company is a legally binding document detailing the terms and conditions of the investment. This includes key aspects such as roles and responsibilities, confidentiality, termination, dispute resolution, and governing law (Atikah, 2020). A potential problem that may emerge in the investor-FinTech company relationship is the practice of delaying the contract's display until after the investor has registered and provided personal data. This could foster mistrust and suspicion and potentially lead to legal complications if the investor disagrees with the contract's terms.

It was particularly noted that a majority of users have concerns about trust and transparency in such FinTech services. This issue is highlighted by several examples,

such as unclear instructions in the provided opportunities, lack of clear financial results, and absence of detailed results from previous investments. Trust significantly influences both organizations' and end-users' willingness to adopt FinTech services (Stewart & Jürjens, 2018). Numerous research studies have explored the challenges associated with trust, including data security, consumer trust, and FinTech promotion. Specifically, customers expect greater responsibility and transparency (Blakstad & Allen, 2018). Several factors influence consumers' decision to use FinTech services, the most significant of which are trust, transparency, and financial competence (Jünger & Mietzner, 2020).

As explored in this study, usability testing is a qualitative method that is able to focus on specific issues, and therefore this approach is able to provide a holistic, and more in-depth, evaluation of FinTech websites. In fact, organizations in the FinTech industry need to incorporate customer experience into their business strategies (Barbu et al, 2021). The result of this research shows the need for the Saudi Bank to adopt usability methods in their strategy for evaluating the FinTech businesses websites.

5. CONCLUSION AND FUTURE WORKS

The global rise of FinTech has produced significant changes in the financial sector and in particular in the wide range of services provided. These services delivered through websites and mobile applications, have seen rapid adoption in Saudi Arabia, where startups have employed technology to cater to their customer base. However, the user experience with these FinTech platforms necessitates further exploration, particularly in the context of Saudi Arabia.

This research focused on the usability of selected Saudi FinTech websites, aiming to uncover the challenges and issues encountered by users. Through usability testing of two FinTech firms, this study identified several usability problems that impact end users. The most prominent of these issues include design issues such as the extensive scrolling required on the homepage, and the inappropriate font used. Also, there is a lack of transparency in displaying details of past and current investment opportunities. These findings emphasize the importance of usability in the design and development of FinTech platforms. It is clear that while FinTech has the potential to revolutionize the financial sector, its success is dependent on the user experience. Therefore, it is crucial for FinTech firms to address these usability issues to ensure a perfect and efficient user experience. This will not only enhance user satisfaction but also promote trust and encourage wider adoption of these platforms.

Future work should expand the scope of this research. While this study focused on representative samples of Saudi Arabian FinTech firms offering crowd funding platforms, the other types of FinTech enterprises require further investigation. Furthermore, only half of the examined FinTech companies provide services via mobile applications. Therefore, future research could beneficially explore the usability of mobile applications in the FinTech sector, further enriching our understanding of user experience in this rapidly evolving field.

REFERENCES

- [1]. Abad-Segura, E., González-Zamar, M. D., López-Meneses, E., & Vázquez-Cano, E. (2020). Financial technology: Review of trends, approaches and management. *Mathematics*, 8(6).
- [2]. Absher Platform. (2022). 26 million digital IDs in the Absher platform. Retrieved on 10/01/2023 from https://www.absher.sa/wps/portal/individuals/Home/homepublic/contents!/ut/p/z0/fy1BC4JAFIT_SheP8p6PUDtGOZFFRUG2l-WpS27Jmu5m_fy2uncZ5huGGRCQgzA86As73RpuPJ9FLGNaz6JlStn2OJ_gPksS3NAuQkQ4cA8rEP9LfkVfu05MQZStcerlIP8a42yA2IR60NWDGzviPkCjnvahHstaDypALmytevkJJY1DTENCIpb-X5bnN7VisTQ/
- [3]. Abubotain, F., & Chamakiotis, P. (2021). FinTech in the Saudi context: Implications for the industry and skills development. In *Research anthology on concepts, applications, and challenges of FinTech* (pp. 107–122). IGI Global.
- [4]. AlGhamdi, R., Nguyen, J., Nguyen, A., & Drew, S. (2012). Factors influencing e-commerce adoption by retailers in Saudi Arabia: A quantitative analysis. *International Journal of Electronic Commerce Studies*, 3(1), 83–100.
- [5]. Alonso-Virgós, L., Espada, J. P., & Crespo, R. G. (2019). Analyzing compliance and application of usability guidelines and recommendations by web developers. *Computer Standards & Interfaces*, 64, 117–132.
- [6]. Akgül, Y. (2021). Accessibility, usability, quality performance, and readability evaluation of university websites of Turkey: A comparative study of state and private universities. *Universal Access in the Information Society*, 20(1), 157–170.
- [7]. Arner, D. W., Barberis, J., & Buckley, R. P. (2015). The evolution of FinTech: A new post-crisis paradigm. *Georgetown Journal of International Law*, 47.
- [8]. Atikah, I. (2020). Consumer protection and fintech companies in Indonesia: Innovations and challenges of the financial services authority. *Jurnal Hukum dan Peradilan*, 9(1), 132–153.
- [9]. Barbu, C. M., Florea, D. L., Dabija, D. C., & Barbu, M. C. R. (2021). Customer experience in FinTech. *Journal of Theoretical and Applied Electronic Commerce Research*, 16(5), 1415–1433.
- [10]. Barnum, C. M. (2020). Usability testing essentials: Ready, set... test! *Morgan Kaufmann*.
- [11]. Blakstad, S., & Allen, R. (2018). FinTech Revolution: Universal Inclusion in the New Financial Ecosystem. *Springer*, 121–132.
- [12]. Cazañas, A., de San Miguel, A., & Parra, E. (2017). Estimating sample size for usability testing. *Enfoque UTE*, 8, 172–185.
- [13]. Communications, Space & Technology Commission (CSTC). (2022). Saudi Internet 2022. Retrieved on 04/03/2023 from <https://www.cst.gov.sa/en/mediacenter/pressreleases/Pages/2023030802.aspx>
- [14]. Issa, T., & Isaias, P. (2022). Usability and Human–Computer Interaction (HCI). In *Sustainable design: HCI, usability and environmental concerns* (pp. 23–40). Springer London.
- [15]. Leong, K., & Sung, A. (2018). FinTech (Financial Technology): What is it and how to use technologies to create business value in FinTech way? *International Journal of Innovation Management and Technology*, 9(2), 74–78.
- [16]. Lestari, D. M., Hardianto, D., & Hidayanto, A. N. (2014). Analysis of user experience quality on responsive web design from its informative perspective. *International Journal of Software Engineering and its Applications*, 8(5), 53–62.
- [17]. Lewis, J. R. (2014). Usability: Lessons learned... and yet to be learned. *International Journal of Human-Computer Interaction*, 30(9), 663–684.
- [18]. Hermawati, S., & Lawson, G. (2016). Establishing usability heuristics for heuristics evaluation in a specific domain: Is there a consensus? *Applied Ergonomics*, 56, 34–51.
- [19]. Jünger, M., & Mietzner, M. (2020). Banking goes digital: The adoption of FinTech services by German households. *Finance Research Letters*, 34, 101260.
- [20]. Mention, A. L. (2019). The future of FinTech. *Research-Technology Management*, 62(4), 59–63.
- [21]. Nielsen, J. (2000). Why you only need to test with 5 users. Retrieved on 20/12/2022 from <http://www.useit.com/alertbox/20000319.html>
- [22]. Parsazadeh, N., Ali, R., Rezaei, M., & Tehrani, S. Z. (2018). The construction and validation of a usability evaluation survey for mobile learning

- environments. *Studies in Educational Evaluation*, 58, 97–111.
- [23]. Roh, T., Yang, Y. S., Xiao, S., & Park, B. I. (2022). What makes consumers trust and adopt fintech? An empirical investigation in China. *Electronic Commerce Research*.
- [24]. Rohloff, T., Oldag, S., Renz, J., & Meinel, C. (2019). Utilizing web analytics in the context of learning analytics for large-scale online learning. In *2019 IEEE Global Engineering Education Conference (EDUCON)* (pp. 296–305). IEEE.
- [25]. Saudi Central Bank. (2022). Permitted FinTechs. Retrieved on 7/1/2023 from <https://www.sama.gov.sa/en-US/Regulatory%20Sandbox/Pages/Permitted-Fintechs.aspx>
- [26]. Shariyah Review Bureau. (2023). Certificate. Retrieved on 12/3/2023 from <https://sahlahcf.com.sa/img/certificate.pdf>
- [27]. Sivaji, A., Abdullah, A., & Downe, A. G. (2011). Usability testing methodology: Effectiveness of heuristic evaluation in E-government website development. In *2011 Fifth Asia Modelling Symposium* (pp. 68–72). IEEE.
- [28]. Suryono, R. R., Budi, I., & Purwandari, B. (2020). Challenges and trends of financial technology (FinTech): a systematic literature review. *Information*, 11(12), 590.
- [29]. Stewart, H., & Jürjens, J. (2018). Data security and consumer trust in FinTech innovation in Germany. *Information & Computer Security*, 26(1), 109-128.
- [30]. Wang, J., Antonenko, P., Celepkolu, M., Jimenez, Y., Fieldman, E., & Fieldman, A. (2019). Exploring relationships between eye tracking and traditional usability testing data. *International Journal of Human-Computer Interaction*, 35(6), 483–494.

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