Abstract

There have been many studies conducted on the issue of website usability. However, majority of these studies had generally concentrated on the main issues that website developers should consider. These studies had defined general guidelines aimed for making website usable initially. This paper introduces the concept of incremental or repeated usability for the e-banking part of e-commerce and suggests new specific usability guidelines. It is very important for e-commerce applications to be usable in a long term measure, where this needs a number of specific factors to be considered and defined. The most important of these factors are being a set of more specific usability guidelines. Applying these guidelines will result in the long-term usability of the site and the proper differentiation between sites can be achieved and measured. This study was applied on some banks in Bahrain by reviewing their internet sites and applications available within these sites. The analysis applied and the results obtained support the use of our suggested usability guidelines for long-term usability. This study reviews the concept of usability and explores the customer total experience in using websites and their application to generate the new guidelines.

Keywords: Usability, Usability Guidelines, Specific Usability Guidelines, E-Banking, Long-Term Usability.

Introduction

With the alarming increase in number of websites available, users have more choices than ever. As a result of this overwhelming choice and the ease of going elsewhere, web users now exhibit a remarkable impatience and insistence on instant gratification. If they cannot figure out how to use a website in a minute or so, they conclude that it will not be worth their time and they leave [1].

Usability has assumed a much greater importance in the internet economy than it has in the past. In traditional physical product development, consumers did not get to experience the usability of the product until after they had already bought and paid for it. The challenge for e-commerce is that users experience the usability of a site before they have committed to using it and before they have spent any money on potential purchases. In product design and software design, customers pay first and experience
usability later. On the web, users experience usability first and pay later [1]. There has been a great deal of research conducted on how to design usable websites. What most of these studies fail to do is look at the specifics of a particular e-commerce application. It must be acknowledged that an internet banking application will be different to an online bookstore application [2]. In addition, one factor that many of the studies do not consider is the issue of repeated usability. With an internet banking application the issue of usability is slightly different from that discussed in most existing research and studies. Most of the research that exists aims to look at how we can make a customer visit a site for the first time and stay there for some period of time. In the case of an internet banking application, in the context that this research discusses, the challenge is how to make an existing bank customer move to using online banking instead of conventional banking and not change their mind by moving back to the branch and ATM [3]. The main challenge for the bank is trying to convince the customer to use internet banking in the first place. Once the customer has made the brave decision to use this new service delivery channel, the bank must ensure it makes the online experience as easy and convenient as possible and ensure the repeated usability.

As figure1 reveals, the general usability characteristics will be crucial to the design and development phase of the website application. Here usability is still to be tested and is in its early stages. However, from an early stage it is important to ensure that the specific usability guidelines are also kept in mind as they will ensure a smooth transition to repeated usability. In addition, the designers of the internet banking application should ensure that the application is continually developed and maintained to ensure that there will be continuous incremental improvements in usability [5]. Usability for the total customer experience can be achieved by keeping in mind both of the general usability guidelines and the specific ones.

![Figure (1): Stages of Usability - The Usability Life Cycle](image-url)
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Related Work

We will begin this section by briefly summarizing some of the usability studies specifically aimed at Internet Banking Sites. Later, we will review some of the Internet banking research carried out in Bahrain and the Middle East.

Usability Studies Specifically Aimed of E-Banking Sites

For all types of internet banking applications, the major problem has been in holding the users' interest in order to make them return to the online portal frequently [4]. According to Santhanam [14], the most common reasons for users not preferring online portals are slow access, non standard/non user-centric design, poor content organization, and poor customer support. A study by Chin-Shan [11], reveals that there is a gap between user expectations and actual performance of internet banking websites. Although content and ease of use are the two most important categories for website users, banks are devoted to promote themselves to attract customers to visit. According to Becker [19] usability is likely to be a key and proximal metric for evaluating the success of an organization's web presence. Diniz [12] presented a survey on websites of banks in USA, and indicated that banks have much to improve in their websites, and that they are only in the very beginning in terms of functionality. The Diniz [12] study tests the different sites based on a number of different categories with related subsections:

1. Content (sub-categories are relevance, media use, depth/breadth and current information)
2. Ease of use (sub-categories are goals, structure and feedback)
3. Promotion
4. Made-for-the-medium (sub-categories are community, personalization, and refinement)
5. Emotion (sub-categories are challenge, plot, character strength and pace)

In an independent study, Serco Usability Services [13] evaluated a range of well known banking and insurance websites with potential customers. The study provides the following guidelines: user’s main reason for using banking and insurance online is the speed of service, avoid the use of ambiguous terminology, provide interactive features that add value, users must have confidence in your site, users expect to find more than an online leaflet, online transactions and know your target audience [8]. Hence the Serco study [13] helps shed light on the fact that internet banking usability needs a more specific set of guidelines.

At present, research suggests that the customer’s perception of security and privacy of their financial and personal data from their immediate experience with an e-commerce site and that attitude of potential customers towards these issues are crucial to the success of e-commerce sites. Chatpratchart [15] recommend the choice of a TCE profile that consists of information content, graphics, formatting and layout, navigation, system performance, terminology, legal issues, security and privacy issues, customer service, help and error messages. Mattila [16] assessed usability in e-banking using five usability
attributes: learnability, efficiency of use, memorability, satisfaction and errors. Research has attempted to see usability in a larger scale and therefore the term *seamless use experience* was used which refers to the service as a whole. What is hindering the usage of the services?, what do customers really want to accomplish with the service?, what are the ultimate goals of the customers?, are they really satisfied with the service level? and so on. A website should reflect the value proposition which satisfies the customer needs to ensure repeat visits [17]. It has been found that the design of a website will affect customers’ decisions to include online shopping as a channel option [18]. As the marketer takes a more customer-centric approach and focuses on the consumer rather than the channel, many of the multi-channel challenges fade away [16].

Becker [19] represents Web usability as the sum of eleven factors which are navigation, design standards, personalization, design layout, performance, customer satisfaction, design consistency, reliability, security, information content and accessibility. Wallace et al [20] has stated that design methodologies for websites should start with the human factors rather than the technical issues. In addition, focus should be given to the communication aspects in the development of electronic business systems.

In the context of online banking, the most important criteria to compare is the time it takes for first-time user to perform a set of tasks which include the time it takes to understand and hesitation time [21]. Time to accomplish tasks for first time users is a reliable and replicable indicator to compare the ease of understanding how to use site features across multiple online banking sites [6]. This in turn is a good indicator of ease of use, for non-frequent, non-mandatory usage. Rating a website’s ease of use by employing usability heuristics is not reliable. Time measurement to accomplish specific task across a sample of application allows for the discovery of best practices. Government and industry organizations have declared information privacy and security to be major obstacles in the development of consumer-related e-commerce. Risk perceptions regarding Internet privacy and security have been identified as issues for both new and experienced users of Internet technology [22]. The 29 most prominent usability guidelines already available that would apply to an e-banking site are as follows [23]:

1. Role of the homepage.
2. Effectiveness of the logo.
3. Tag line effectiveness.
4. Emphasis on high priority tasks.
5. Distinct home page (different from other screens on website).
7. Availability of a clear 'contact us' link.
8. Existence of feedback mechanism.
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10. Use customer-focused language. Label sections and categories according to the value they hold for the customer, not according to what they do for your company.
11. Consistent capitalization and other style standards.
12. Easy to understand abbreviations, initialisms and acronyms.
13. Use of exclamation marks.
14. Clear use of links and link colors for visited/unvisited sites (for example use of blue for unvisited links).
15. Primary navigation area.
16. Availability of clear search feature.
17. Careful use of animation.
18. Limit font styles and other text formatting, such as sizes, colors, and so forth.
19. Use high-contrast text and background colors so that type is as legible as possible.
20. No horizontal scrolling at 800 × 600.
21. Most critical page elements visible 'above the fold' (in the first screen of content, without scrolling).
22. Use liquid layout so homepage size adjusts to different screen resolutions.
23. Avoid using multiple text entry boxes on the homepage, especially in the upper part of the page where people tend to look for the search feature.
24. Drop down menus used appropriately.
27. Easy url's--homepages for commercial websites should have the url http://www.company.com (or an equivalent for your company or non-commercial top-level domain).
28. Effectiveness of communicating technical problems and handling emergencies.
29. Show dates and times for time sensitive information only – such as news items, live chats, stock quotes, and so forth.

In addition, it is interesting to note that Nielsen and Tahir came up with 113 different guidelines that aimed to cover all types of site [23]. The 29 characteristics above are the ones we considered as most important to a discussion of usability relating to an internet banking site. Hence, there is a different subset of requirements that apply to the actual use of the internet banking application. Nielsen and other authors concentrated mainly on the user's first impressions. They did not discuss in detail the factors that would ensure continuity of use of a website. Here many issues are involved rather than a simple discussion of usability. For example the usability of an e-banking
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Internet Banking in Bahrain and the Middle East

This paper evaluates the e-banking usability in Bahrain. This is due to Bahrain position as a centre for many national and international banks in the Middle East. A number of banks in Bahrain have successfully launched e-banking applications for their retail and corporate customers. Internet penetration in Bahrain is the second highest in the Arab world. The number of Internet users in Bahrain is estimated at 402,900 users out of the 728,709 population which equals to 55.3% penetration [7].

The banking system in Bahrain consists of around 23 commercial banks, 36 investment banks, 51 offshore banking units (OBUs) and two specialized banks. There are also approximately 29 representative offices of foreign banks. E-banking is rapidly increasing in popularity in Bahrain, although its usage remains limited. There is no independent e-banking standard in Bahrain. Most systems provide companies with balance and transaction reporting and transaction initiation services. E-banking is becoming increasingly popular among retail users and small companies. Many of these banks are also embracing the latest technology to provide the full range of services to the customer. Hence, many banks in Bahrain have started to embrace the e-commerce field [8]. According to the Economist Intelligence Unit [9], only around 45% of the region’s top banks offer online transactions partly due to low internet usage. Furthermore, 23% of the region’s internet users are now registered to e-banking compared to 34% in the US. Three GCC countries namely Bahrain (36%), the UAE (37%) and Kuwait (39%) have adoption rates higher or equivalent to that of US. According to a report issued by Nielsen Online in 2010 [7], internet penetration in the GCC countries is more than fifteen times that of the Middle East and North Africa and higher by 3% than the rest of the world as a whole even though the Gulf hosts only 12% of the total Middle East population [10]. This disparity is largely due to higher income and education levels of GCC countries.

The Aim of the Study

This paper will set forward a more specific set of guidelines for how any bank should ensure 'repeated usability' of an e-banking site. These specific guidelines will need to be taken into account at the design stage of any e-banking application together with the more generally accepted guidelines. In addition, we also argue that the ultimate online experience for many applications like banking are not just determined by the customer's online experience but also by a number of factors that the customer experiences 'before' he moves online and also after. For example, many discussions of websites assume that the user will never have to do more than log on to a site, sign up and start using on-line facilities. For example, if registration instructions or customer service at a particular bank is very bad this may affect a customer actually using the internet banking site. Hence, it will be argued that a true online banking experience can be affected by factors other than the actual design of a site. Any business that is aiming to ensure a truly successful e-commerce application has to take all these factors into account. The main argument of this research is that the usability guidelines that so many different researchers have discussed are only useful up to the design stage as they simply
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tell designers what they should do to deliver a truly usable site that meets accepted
guidelines of design and accepted usability. In order to give evidence to the argument
regarding the need to use a more specific set of guidelines for assessing the usability of
e-banking sites, a number of exercises were carried out to support this argument.

Creating the Specific Usability Guidelines for E-banking

In order to come up with a set of more specific usability guidelines for internet
banking, the best place to start is with feedback from existing online banking users. In
addition, to give more evidence to the argument that a separate set of guidelines need to
be looked at, we compiled a survey of all complaints relating to e-banking received by a
bank since the introduction of its internet banking service to date. This survey helped to
highlight the most important usability problems facing e-banking users at all stages of
use and also validated the argument that a more specific set of guidelines are required in
order for an e-banking site to be usable in the long-term. In addition, this survey helps
validate the idea of the total customer experience and that all external factors affecting
the usability of the application must be considered. The bank under review launched its
internet banking application in Bahrain in October 2002. The application had already
been introduced by the bank in other countries and Bahrain was not the first country
where it was implemented. Hence, the bank had already learnt from its experience in
other countries but it did not mean it would not face problems locally.

The new suggested specific usability guidelines for e-banking are:

1. Initial registration process for applicant.
2. Response times (and speed of transactions).
3. Log-on process for application.
4. Range of services available on-line.
5. Updating of banking database and real-time systems.
6. Ability to apply for products and services online.
7. Level/quality of instructions for use of internet banking application.
8. Level of detail of information available online.
9. Support for on-line users (on-line help, etc.).
10. Similarity of service to a real-life banking experience – the personal touch and
    service with a virtual smile.
11. Emphasis of site on internet banking application.
12. Online security and ‘sense of security’.
13. Extra services related to third parties.
14. Integration of online banking service with wap and m-commerce.
15. Attention to cultural dimensions.
16. Consistency of service and hence reliability.
17. Clarity of error messages.
18. Ability to track on-line transactions.
19. Obtaining reference number for completed transactions.
20. Use of adaptable and simple technology.
21. Ability to customize application to individual preferences.

Methodology and Procedures
Here our true discussion is one about repeated usability rather than usability over a short period of time. Due to this the methods we used relied on a number of different both accepted and less conventional techniques. In some cases, we used variations on existing types of usability tests. An in-depth analysis of each individual site was also conducted over a month using both the more traditional usability characteristics and also based on the new specific usability guidelines. This in-depth analysis over a period of time achieved better results as some aspects of a site are difficult to pick up from simply giving a participant a questionnaire to fill in. The following are the procedures that we carried out:

A. Field Work and Observations Four of the commercial banks in Bahrain having an e-banking application were used for this field study. After opening an account at each branch and having access to the internet banking application of each bank through the internet banking password, the first part of the analysis involved assessing each site over a month long period with regards to both the existing and accepted usability guidelines and then the more specific guidelines.

In our analysis here we also focused on:

- The quality of customer service in the branch before and during the opening of the account
- The after sale branch support.
- How well banks promoted the internet banking service to the walk in customer.
- The patience of customer service staff in dealing with customer queries regarding the internet banking application.
- The level of instructions the customer was given by branch staff regarding the application.
- How easy the bank made it for customers to actually log on to the application.
- The issue of the different arrangements each bank made regarding providing the customer with an internet banking password.
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B. Heuristic Evaluation

The analysis presented in this study was based on reviewing a number of banking websites and applications to determine whether they complied with the accepted and more specific usability guidelines presented in this study. Hence, this represented a form of heuristic evaluation. In heuristic evaluation, as put forward by Nielsen [23], a number of expert judges go through a site, often with a set of usability guidelines (heuristics) as a guide or a set of sample tasks, looking for violations of the guidelines (heuristics). They note each violation and make a suggestion for fixing it. In the project under review a variation on this type of heuristic evaluation was carried out. The sites of the selected banks were evaluated first using the more accepted usability guidelines that were compiled from existing research and then using the more specific guidelines put forward in this project. Each site was analyzed separately and evaluated to see if it complied with the guidelines and whether there were any improvements that each of the sites could make to comply with the guidelines. This evaluation was very useful as its analysis revealed that not all the sites complied strictly with the more established usability guidelines. However, on average the analysis also revealed that many did try to comply with the basic design guidelines. This helps to prove that the usability guidelines that have been in use for sometime have become a common factor of many sites. In addition, each site will be analyzed to see if it complies with the more specific set of guidelines. Hence, this detailed analysis of each site helped to reveal a number of different usability issues. The heuristic evaluation of the four sites was conducted over a period of a month. This period helped ensure that all the different aspects of the sites could be studied in detail. This heuristic evaluation was conducted by us based on the 29 well established usability characteristics and then the 21 specific guidelines that this project has put forward. It is important to note that the evaluation involved a close look at both the homepage itself and all subsequent pages and links in the website. As discussed earlier, the set of more specific guidelines required a more in-depth look at both the website and the e-banking application. Hence, the analysis also involved extensive log on to the internet banking application and the carrying out of a number of different transactions on the site to fully assess the specific usability guidelines. The conducting of this analysis over a month also meant that response times and down time on each site could also be accurately assessed.

For the heuristic evaluation a computer was used that was stand alone and not connected to a server. The computer had windows XP operating system and was connected to the internet via an ADSL connection to ensure that response times were not affected by a slow dial up connection. For some of the other characteristics such as the point on liquid layout, computers with different screen sizes and also a mobile phone using WAP were also used to help test the ability of each website to adapt to different screen resolutions.

C- Use of Questionnaires

In order to further validate the findings of our study, two types of questionnaires were used.

1. Usability Characteristics Questionnaire
This questionnaire was devised for participants to evaluate a number of different usability characteristics. A user questionnaire was devised that would ask a range of users to rate both the characteristics put forward by Nielsen and other researches [1], [3], [14] and [23] and the more specific guidelines we put across relating to usability of internet banking sites. The questionnaire consists of two sections of 21 questions each. The first section asks users to rate the importance of the main guidelines to usability on a scale from 1 to 5. The second part of the questionnaire asks users to assess how important they feel each of the more specific usability guidelines are to the usability of an internet banking application. A sample of 20 participants was asked to take part in the questionnaire. These 20 participants were a mix of both highly personal computers (PC) literate users and also fairly average PC users. However, in order to get a better understanding of questions, it was ensured that all the participants had some prior exposure to homepages, the web and more specifically internet banking sites and applications in order for them to be better able to judge the characteristics.

2. Transaction Evaluation Questionnaire

It will be noticed that the previous questionnaire simply asked users to give their opinion regarding a set of characteristics/guidelines related to usability. Many studies have revealed that users need to really use a site and carry out a number of transactions and tasks before they can truly evaluate a site and application. This is very true for an e-banking application. It is only on using an actual application and carrying out a number of transactions that we can truly analyze the usability of a site and also discover any possible problems with usability. In addition, it is only upon using an internet banking site that a user can truly understand the importance of the more specific guidelines relating to usability as a less experienced user may not fully realize the importance. Due to this a second questionnaire was devised. This second questionnaire asked participants to carry out a number of transactions on each of three banking sites and then evaluate their satisfaction with each transaction based on a number of characteristics. Hence, each participant had to answer three different questionnaires. Each questionnaire asked the user to carry out five different transactions on each site. The five transactions that the user had to carry out on each site were:

1. Logging on to application using username and password.
2. After logging on, access balance information for main account.
3. Obtain a statement of account for month of May 2004 for main account.
4. Carry out BHD 5 transfer from main account to Batelco account.
5. Log off from site.

Each participant had to evaluate each transaction (on a scale from 1 to 5 where 1 was lowest in terms of the usability characteristic and 5 was the highest in terms of the usability characteristic) based on a set of three characteristics which included: Ease of login to application, response times (speed of transactions), support for on-line users, ability to complete task successfully first time, level of detail of information, and updating of bank database and sense of real-time. For updating of bank database and
sense of real-time, the participants were given ability to access their utility bill account online (through the Batelco website) to see if the payment had updated in real time.

D. Response Time Tasting

As discussed, response times and speed of transactions is one of the most important characteristics for the usability of an internet banking application. Due to this, two types of response time tests were conducted to evaluate response times for each of the four sites.

1. Homepage Response Times

For each of the four sites that we have examined in detail a simple test was done to arrive at the average response times for each site. This was done by monitoring the sites with a stopwatch at nine different times each day over a period of one week. The first test was done to reveal how long it took for the main homepage to load once we press go after typing in the URL for the site. The site was monitored during the following times each day: 08:00, 10:00, 12:00, 14:00, 16:00, 18:00, 20:00, 22:00 and 24:00. Once a page is downloaded once it becomes quicker to download. Hence, this test was done daily over a week. Each time the test was conducted the computer being used was rebooted to ensure that the homepage would have to load completely again. Then the average for the period was taken each day and then for the whole week. Delays due to downtime of actual internet service were excluded. Of course the test results may not be a 100% accurate due to the method used but it does give an indication of response times for each site as a pattern usually emerges.

2. Transactions Response Times

This test was done as part of the Transaction Evaluation Questionnaire where each participant conducted a number of transactions on each banking site. Each participant was timed with a stopwatch as they performed the five transactions on each of the three sites. The response times for each type of transaction for each individual site were then averaged to arrive at the results. Each participant conducted the usability test for all three sites an hour apart commencing from 9.00 am to 1.00 pm over one day. The spreading of participants over different times helped us to monitor response times at different times during the day.

Results and Analysis

In order to support our arguments, the analysis will look at the website using the 29 most important characteristics taken from Nielsen [49]. The same website will then be examined based on the suggested ‘specific’ e-banking usability characteristics.

This analysis will help to show that not all the usability characteristics put forward by Nielsen [49] will necessarily apply to a bank. For example, one criticism of the generalization of comments made by Nielsen is that homepages should not have a welcome sign. However, in the case of banks and in order to comply with the requirement to make the site more customer friendly, a welcome message on the homepage would be useful. Once again we should not over generalize when we wish to discuss issues of usability.
The analysis will aim to prove that despite the comprehensive set of guidelines put forth by Nielsen [49] for discussing usability, they are not enough. These characteristics simply scratch the surface in any true discussion of usability. The discussion will aim to highlight that to truly tackle the issue of usability we need to also look at the more 'specific' characteristics relating to e-banking.

The four banks used in our analysis are:

1. Bank of Bahrain and Kuwait – BBK.
2. AL Shamil Bank.
3. HSBC.
4. AL-Ahly Bank.

The following are the analysis of results:

1. Analysis of Usability Characteristics

The first questionnaire consisted of two sections with 21 questions each:

- **Section A**: contain characteristics largely derived from the research of Nielsen and other prominent usability researchers.
- **Section B**: contain the more specific guidelines that have been put forward by us.

Those who answered the questionnaire were 10 users with IT experience and 10 users who were not highly PC literate. As shown in Figure 2, 60% of the participants achieved a higher score on section B of the questionnaire which related to the more specific set of guidelines. Hence, 60% of the participants felt that the more specific guidelines relating to internet banking in section B were more relevant to the usability of the application as a whole.

The results overall have the majority of participants giving a higher score for Section B than Section A which indicates that most users felt the characteristics in Section B were more relevant to a discussion of usability relating specifically to internet banking. Figure 3 shows the results for the 10 experienced users where 90% achieved a higher score on Section B than Section A. This indicates that they felt that the more specific characteristics in Section B were more relevant to the usability of an internet banking site.
Figure 2: Comparison of Scores for Section A and B.

Figure 3: Comparison of Scores for Experienced Users.

Figure 4 shows the results for the 10 less PC literate users where 60% gave Section A a marginally higher score, 30% gave Section B a higher score and 10% gave Section A and Section B an equal score. It is interesting to note that for the 60% of participants giving Section A a higher score, the scores for both sections are nearly equal. As figure 4 reveals, there was very little divergence in the scores for Sections A and B. The average divergence in scores for all participants was 1.96%. The highest level of divergence in the responses of any one participant was 14.45%. This indicates that the less experienced users, who may not have used an internet banking application to conduct actual transactions, regarded the characteristics in Sections A and B as having a nearly equal level of importance for usability.
Of the 42 characteristics analyzed, an analysis was done to see which characteristics got the highest average scores, i.e., the average score closest to 5 after responses for all 20 participants were averaged for each characteristic. Of the 42 characteristics, the characteristics achieving a higher score were predominantly located in Section B. Hence, this helps to further reveal that users on average felt that the characteristics in Section B related to usability more specifically. However, Section A also had a number of high scorers. The highest score went to response times as this has been documented in recent research literature as being a very important factor in usability. Here we give a list of the top ten characteristics:

1. Response times (speed of transactions).
2. Support for on-line users (on-line help, availability of contact numbers customers can call for help, etc.).
3. Updating of bank database and sense of real time.
4. Level of detail of information available online (for e.g., detailed account statement, etc.).
5. Online security and sense of security.
6. A clear ‘contact us’ link.
7. Consistency of service.
8. Level/quality of instructions for use of internet banking application.
9. Log-in process for application (how easy to find link to log on and actual log on process).
10. Ease of initial registration process for internet banking application (i.e., service in the branch).

The average response times on a typical day for each of the four sites is revealed in figures 5, 6, 7 and 8. The figures show a lot of disparity relating to response times both
between sites and in relation to the sites themselves at different times of the day. The results were then averaged each day and finally an average was taken for the whole week by further using the response times for the whole period. All response times for the test at a specific time (say all responses for test at 12:00) were averaged for all days of the week. In addition, at the end of each day of the week of testing, an average was taken of all response times recorded at different times during the day.

It is interesting to note that despite the disparity there is a certain pattern that emerges in response times within the sites themselves. Of the four sites the highest average response time related to BBK at 12.05 seconds. This was due to the fact that BBK had a large number of images on the homepage (38 items need to be downloaded). Hence, homepages that have a large number of images take longer on average to download.
2. Speed of Transactions and Response Time Questionnaire

In order to further test the issue of response times and speed of transactions a second questionnaire was devised that would ask the user to enter into each site and carry out a number of transactions. For this questionnaire a smaller sample of five participants were chosen. Each participant was asked to evaluate each of the three sites. In addition, each transaction was timed to review response times. These response times for each transaction were then averaged using the response times from all five participants. In addition, each participant then filled in a questionnaire that included questions that required the participant to evaluate the transactions on each site. For each transaction the participant had to answer four questions (refer to questionnaire). The questions would ask the participant to evaluate the transaction using three different criteria and then to rate the overall satisfaction with the transaction. For each questionnaire the scores were then added up and results were analyzed to see which banking site received the highest average score as evidenced by the scores from the questionnaires the 5 participants filled in. In addition, the scores for each transaction were evaluated to highlight which site scored higher for certain transactions. The results for these tests are shown in figures 9 to 18.

These results are consistent with results for the questionnaire as a whole. It is interesting to note that HSBC had one of the slowest response times followed by BBK on many of the transactions, but it still managed to get the highest scores on the questionnaire. This helps reveal that users look at other factors in addition to response times. One of the reasons why HSBC and BBK achieved a higher score despite having slower response times for many transactions was due to users giving a higher rating to other characteristics.

For HSBC, the overall higher score achieved on the questionnaire was due to the fact that users gave a high rating to 'support for on-line users' and 'level of detail of information'. Despite the faster response times of both Shamil and BBK, these two sites did not score highly on support for on-line users. One other factor that was very important for users and which achieved a low rating for all the three sites was the updating of bank database and sense of real-time. None of the sites provided real time updating of utility accounts.

We did also other tests to find the transactions response time for different types of transactions. These results helped reveal that response times have a lot to do with the design of the application and aspects of the user interface, for example the log on process and also the number of pop up screens and windows that appear. On average however, response times for each transaction on each site follows a fairly predictable pattern.
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Figure 9: Comparison of average time for log on

Figure 10: Response Times for Log on

Figure 11: Comparison of average time for balance enquiry

Figure 12: Comparison of Response Times for Balance Enquiry

Figure 13: Comparison of response times for statement of account

Figure 14: Comparison of Average Time for Statement
The results above reveal that response times vary from one site to the next based on the type of transaction being performed. In addition, as the figures above reveal there is quite a consistent pattern on each site with regards to the average response time taken for each type of transaction. This consistency is a very important factor in the repeated usability of the site as users will expect the same transaction to take roughly the same amount of time each time they carry it out on the site. Response times and consistency go hand in hand. Users will not mind a marginally slower response time if this response time is always consistent. The results of the second questionnaire give evidence to this. Users are not only looking for response times, they are also looking for consistency and reliability.

The above tests and analysis gives the following indications which need to be further tested, these indications are:

- Users of e-commerce applications recognize the importance of a more specific set of guidelines to ensure the improvement of the total user experience.
- When assessing the usability of a site, users look at a combination of factors in making a decision regarding which site they prefer.
- Fast response times although important must come hand in hand with consistency and on-line user support.
- The design of the user interface has a large role to play in improving the usability of a site through its effect on response times and all the other specific usability characteristics.
Exploration of Specific Guidelines for Usability of E-Banking

Conclusions and Future Work

This paper aims to highlight the increasing importance of usability in differentiating one e-commerce site from another in the increasingly competitive e-commerce environment. What this paper has aimed to do is not discount the existing usability research and guidelines available but simply adds to it.

One of the main arguments this paper puts forth is that a more specific set of guidelines have to be put in place to deal with the usability issues specific to each different e-business. Hence, there was a need to create a more specific set of guidelines to discuss the usability of internet banking applications. As evidenced by a number of papers and articles, to truly survive in the e-banking field developers have to turn their attention to issues like response times, quality of help on the site but also factors that affect before and after sales service in the branches.

As this paper had shown, there are huge financial rewards to be gained in the form of increased profits for businesses that are taking this usability issue one step further and looking at ensuring continued and repeated usability. This paper has helped indicate that there is more to usability than simply ensuring we follow ten accepted usability heuristics. Through the use of questionnaires, it was shown that participants more highly rated the more specific guidelines relating to usability put forth by this project.

This research has also helped touch upon one very important factor in that developers of e-banking applications have a tremendous challenge in that they should continually strive to come up with ways to recreate the personal touch and service available in a branch on the internet. One of the main reasons why users do not want to move to the internet is that they enjoy the personal touch of visiting the branch and speaking to a human being. Hence, by focusing on the issue of usability, the developers can slowly change the view of many users. If we start to truly look at specific usability issues for each e-banking application, improvements in usability will mean that this differentiation between the service in the branch and on the internet will disappear.

The paper also emphasize on the idea of long-term usability which can be applied to the design of any e-commerce application and not just internet banking. It helps highlight that incremental or repeated usability will entail looking at a more specific set of usability guidelines that will relate to the application and field at hand. This paper attempted to outline that a more specific set of characteristics are needed to truly analyze usability in online banking applications. Further work that needs to be done here to support this proposition will be the analysis of a number of other new internet banking applications in Bahrain. A number of other banks have started to introduce this service. Hence, it will be interesting to analyze how these new applications compare to the existing ones and the extent to which they have tried to deal with the more specific usability guidelines. Further work needs to be done by widening the sample size of the questionnaires. Hence, the two questionnaires presented in the paper, can be given to a much larger sample of participants.
استكشاف معايير محددة لقابلية الاستخدام في البنوك الإلكترونية

بلال أبوطة

ملخص

كثير من الدراسات السابقة قد أجريت في موضوع قابلية استخدام الشبكة الإلكترونية. لكن معظم هذه الدراسات ركزت على المواصفات العامة التي يتوجب على مصممي الشبكات الحكومية أن يأخذواها بعين الاعتبار. كما قامت هذه الدراسات بتقديم معايير عامه لأولى قابلية استخدام الشبكة الإلكترونية. أما هذا البحث فانه يقدم مفهوم قابلية الاستخدام المتناوبة أو المتكررة في البنوك الإلكترونية التابعة للتجارة الإلكترونية ويقترح معايير محددة جديدة لاستخدامها. ولهذه المسألة جدًا لتطبيق المتضاربة أو المتكررة في البنوك الإلكترونية التابعة للتجارة الإلكترونية أن تكون قابلية لاستخدامها على مدى الطويل. وهذا يفتح الباب إلى تحديد وتعريف عدد من المعايير المحددة. وأكثر هذه المعايير أهمية هي مجموعة معايير أكثر تحديدًا وخصخصًا لقابلية الاستخدام. كما أن تطبيق هذه المعايير المحددة سوف يؤدي إلى زيادة في قابلية الاستخدام للمواقع لفترة أطول على مدى الطويل وسوف يؤدي أيضًا إلى التمييز المناسب مما بين المواقع المختلفة وقياس هذا التمييز والاختلاف. هذا وقد تم تطبيق هذا البحث على بعض البنوك في مملكة البحرين من خلال استعراض مواقعها الإلكترونية وبعض التطبيقات الموجودة في هذه المواقع. وبناءً على التحليل المستخدم في هذا البحث والنتائج المستخلصة منه فان استخدام المعايير المقترحه الجديدة قد ساعد على زيادة قابلية الاستخدام في البنوك الإلكترونية على مدى الطويل. كما تم في هذا البحث مراجعة لمفهوم قابلية الاستخدام واستكشاف الخبرة الشاملة للذين في عملية استخدامه للمواقع الإلكترونية وتطبيقها من أجل استكشاف وتحديد المعايير الجديدة.

References


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