

Role of Usability in E-Government and E-Commerce Portals: An Empirical Study of Pakistan

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Abstract: E-government and E-Commerce facilities help citizens to benefit from governmental services and shopping facilities while being at home. Website design is an essential part of e-government and e-commerce infrastructures. Usability aspects can enhance the user experience and lack of usability can de-motivate users and eventually they may leave that portal. In this paper we present the results of our research on Pakistani E-government and E-commerce websites. Although, Pakistan is digitally not so advanced country but still government and business enterprises are focusing to use online dimension. We have carried out two studies, in first study we evaluated three e-government websites and in second study we evaluated three e-commerce websites in Pakistan. We found that these websites have some usability issues and improvement in these issues can significantly improve the user experience. The results are helpful for web designers, practitioners and policy makers for fostering successful adoption of E-government and E-commerce frameworks.

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78

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1. Introduction

Internet has revolutionized the human life. It has brought new business processes and new ways of working. E-government and E-commerce services are new ways of providing governmental services and shopping facilities to citizen by utilizing modern information technology services. In order to be successful, these E-government/E-commerce websites need to attract more and more users. An important factor which can make the experience of user more pleasant while exploring the website is usability. Usability deals with the issues which make website use easy for end users. If the interface is difficult to comprehend, then the users may not be willing to browse that website and ultimately leave the website without performing their task.

Adoption speed of E-government and E-commerce websites by governments and users is not uniform and has created a digital divide. In Pakistan E-governance and E-commerce are not very popular. There are many factors which contribute to this aspect e.g. low internet rates, trust, user skills, user preferences etc. In this paper we want to analyze how E-government and E-commerce websites are maintained in Pakistan. What is the usability level of these websites? Which problems are being faced by the end users?

The remainder of this paper is organized as follows: Section 2 explains the related work and section 3 describes the methodology used to answer questions. Section 4 and 5 discuss both case studies which were under consideration. Section 6 is

comprised of discussion which is followed by a conclusion.

2. Related Work

There has been some literature related to E-Governance/E-commerce implications for Pakistan. Nasir (2004) discussed legal implications of E-commerce. Seyal et al., (2004) analyzed small and medium scale enterprises (SMEs) in Pakistan and found that there is a need for strategic planning to improve E-commerce adoption in Pakistan. Mushtaq et al., (2009) discussed an e-advertisement adoption model to improve the e-commerce websites in Pakistan. Hani and Qureshi (2012) highlighted studies e-commerce websites in Karachi, Pakistan and found that website response plays major role in customer satisfaction. Rehman et al. (2011) concluded that people want to do online shopping but privacy, psychological, social and emotional factors affect online shopping in Pakistan. Similarly, Nazir et al. (2012) conducted a study in Pakistan to understand the consumer buying behavior is affected by online shopping. Despite the fact that there is no clear work highlighting the usability implications for the success/failure of E-governance/E-commerce applications, the purpose of this study is to highlight those usability issues which keep users away from using such websites. We analyze how efficiently these websites are working. How users feel and think about it. Do these websites provide user satisfaction? It is advisable to create usable websites for better e-government/e-commerce.

3. Empirical Study-I

We conducted a survey in order to understand the usability issues in e-governance/e-business websites in Pakistan. We monitored four important e-government websites of Pakistan in our survey, which were Ministry of Commerce, Ministry of Finance, Ministry of Foreign Affairs and Ministry of Defense. They are coded as A, B, C and D respectively in rest of paper. For this research we had 45 participants, 23 were male and 22 were female. We distributed questionnaires among participants having diverse background. 25 were university students, 9 office workers, and 5 laymen citizens. We had 60 questionnaires filled from these 45 participants, and we had 15 questionnaires for each of the website. Most of the questions were based on Jakob Nielson's heuristics (cf. Nielson, 1994). All users had prior knowledge of computer and internet and no one had disability. We have combination of choices like excellent, good, fair, poor and very poor in our questionnaire.

The visibility of characters on website is an important attribute. It is important that it should be easy to read characters from screen. We got response of 13 participants out of 15 that website A has good visibility of characters. We got 2 responses of fair choice. Whereas, 11 out of 15 responses graded website B as good, 1 response excellent and 3 responses fair. Website C got 9 responses of good 6 responses that visibility of characters was fair. Website D got 14 responses of good choice and got 1 excellent choice response as shown in figure 1.

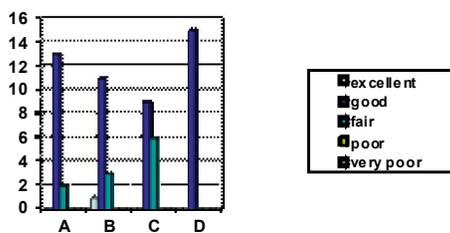


Figure 1. Visibility of Characters

The consistency in color and font size is also very important for the users. Layout of a website should attract its users. The success of website also depends on attractiveness of layout. Color scheme of the pages should visually appeal users. Layout should not be complex. It must be simple. For website A we got 4 responses of participants that it had good layout. 2 said it was fair. And most responses we got that it had poor layout. Website B had also unpleasant layout because we got 12 responses that it had poor layout. For website C, 3 responses were of poor choice. 4 responses we got said that it was fair. 2 were of good choice and 6 said it had poor layout. 3

said it was very poor whereas website D also had the same problem. 5 were good. 6 were fair and 4 users said it was poor. None of these websites were aesthetically good.

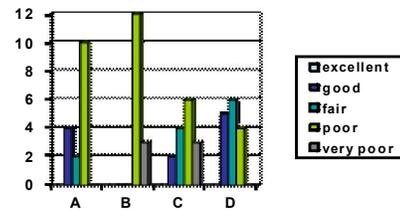


Figure 2. Consistency in Colors and Fonts

We also asked about information organization on screen. The participants said website A has very poor organization of information. In our survey website A got 4 responses that it was fair. 7 responses we got that it provided poor organization of information. 2 said good and also 2 said it was excellent. For website B we got 2 responses that it had not well organized information. 4 responses of fair and 9 were poor. In website C we got responses like 3 for good, 6 for fair, 4 for poor and 2 very poor. For website D we had 2 responses of good choice, 9 for fair and, 1 was excellent and 3 were poor. From this analysis it's obvious that Website A is poorly organized website and better website in organization of information is website D.

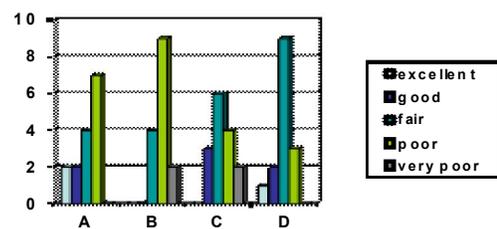


Figure 3. Information Organization

Users always like an interactive website. This is another important attribute of usability that it tells you what's going on and where you are on website. In our survey for website A got 8 responses that it was poor. 4 responses we got were that it was very poor at providing status of a website. Website B got 7 responses of good, 7 responses of fair and 1 was excellent. In website C, 2 responses were excellent, 8 good and 5 fair. For website D, 9 responses were good, 3 fair, 1 excellent and 1 was poor. From this analysis it's obvious that website A is poor in giving status to its users and better website is D because it lets user to know where they are on the website.

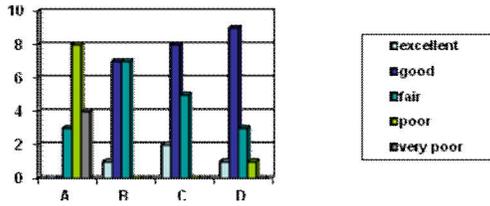


Figure 5. Status Visibility of Website

Terminology used throughout the website must be consistent. Terminology was confusing in website. In our survey website A got 3 responses that it was fair. 5 responses we got were that it was poor at consistency among the website. 6 participants rated it as good and one response from user said it was excellent. For website B we got 5 responses of good, 5 responses of fair and 2 were poor. 2 said its excellent and 1 response was is that had very poor choice. In website C 1 response were excellent, 7 for good, 4 for fair, 3 for poor. For website D, 3 responses were about good, 7 for fair and 3 were excellent and 2 are poor. From this analysis it's obvious that Website A has not consistent terminology whereas website D has.

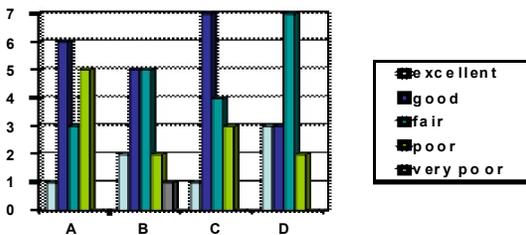


Figure 6. Consistent Terminology Usage

Website must work faster because users don't wait more than few seconds. In our research we got 8 good responses, 6 fair and 1 was poor for website A. For website B, 1 response was excellent, 9 were good, 4 were fair and 1 was poor. Website B got 9 good responses, 4 fair, 1 excellent and 1 was poor. Website C got 2 responses of excellent, 7 good, 3 fair, 2 poor and 1 was very poor. Website D had 5 good responses, 6 were fair and 4 were poor. Similarly, A website should be used by all types of users. We can say a website is usable if users like novice or intermediate level and also expert users can use it easily. Website A got 14 responses that it is good. 1 response is that it was excellent. For website B we got 12 responses of good, 2 responses of fair and 1 was poor. In website C 12 responses were good, 2 for fair, 1 for poor. For website D, 7 responses were about good, 7 for fair and 1 was that

it's poor. From this analysis, it is obvious that users find not that much difficulty in using these websites.

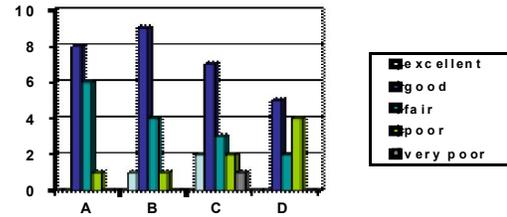


Figure 7. Website Speed

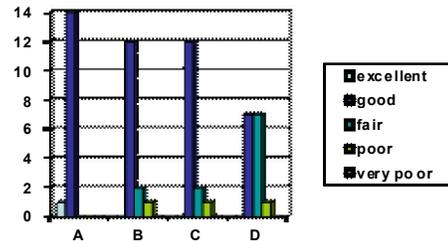


Figure 8. Website Usage Difficulty

4. Empirical Study II

In this study we focused on three E-commerce websites of Pakistan, which we termed as Website - I, Website - II and Website - III, respectively. These websites were chosen on the basis of their ratings, popularity and reviews. For this study, a questionnaire based survey is chosen as it allows collecting data simply and efficiently. The questionnaires were circulated randomly among 39 people from different zones, mostly students and other professionals which included 16 males and 23 females. 13 responses were collected for each one of them.

The questionnaire was paper based and comprised of total 24 questions; 7 questions were about the user (age, gender, profession and proficiency on internet, internet usage, everyday use and frequency of internet usage for shopping), 8 questions were related to the purchased product (its quality, appropriation, exact as ordered, delivery time, secure payment, likeness for shopping online, shopping experience and how do the users rank the product on the basis of brand, price, rating and review) and the remaining 9 were about the website (layout, relevance of information, accuracy of content, customer service, product details provided, whether the website was up-to-date, does the user recommend it, likes and dislikes about the website).

According to the survey results, 46.2% respondents fall under the age group of 36 – 45, 33.3% were in the age group 26 – 35, 17.9% were less than 25 and 2.56% were above 45. Overall our

respondents were between 25 – 45 years. The results reveal that survey mostly captured young population. Out of sample population of 39, 58.9% were employed, 20.5% of them were professionals, 17.9% were students and 2.56% were retired. So in general, there was a majority of employed people. Most (48.7%) respondents were intermediate regarding their proficiency on the internet, some of them (35.89%) were experts and few (15.4%) were novice.

Table 1. User Information

Factors	Category	Frequency (No. of Respondents)
Gender	Male	16
	Female	23
Age	15-25	7
	26-35	13
	36-45	18
	45+	1
Occupation	Employed	23
	Professional	8
	Student	7
	Retired	1
Proficiency on internet	Novice	6
	Intermediate	19
	Expert	14
Web Usage	<1 year	5
	1-2 years	4
	2-3 years	8
	>3 years	22
Use internet everyday	<1 hr	8
	1-2 hrs	3
	2-3 hrs	6
	3-4 hrs	7
	>4 hrs	15
Use internet for shopping	Very often	1
	Often	3
	Sometimes	12
	Rarely	13
	Never	10

56.4% have been using the web for more than 3 years, 20.5% were using internet for 2 – 3 years, 10.3% of them were using for 1 – 2 years and 12.8% had been using the web for less than a year. 38.5% of the total respondents used internet in their daily routine for more than 4 hours, 17.9 were using for 3 – 4 hours daily, 15.4% used for 2 – 3 hours, 7.69% used for 1 – 2 hours and 20.5% have been using internet daily for less than 1 hour. Table-2 shows complete users' demographics. Only 2.56% of the total sample population had very often used Internet for shopping, 7.69% had often shopped online, 30.8% had sometimes purchased online, 33.3% rarely did it and 25.6% purchased online, 33.3% rarely did it and 25.6% had no such experience. Total 13 responses were collected for each of the 3 websites. According to the survey, by using Website - I, 15.4% had an excellent experience

of shopping online while 23.1% had very good, 38.5% had a good experience however 23.1% were not so pleased and had a fair experience. For Website - II, no one had an excellent experience of shopping online while 23.1% had very well, 38.5% had a good experience however a same percentage of users were not so pleased and had a fair experience. The Website – III could not get much positive response as no one had an excellent experience of shopping online while only 23.1% had very well, 15.4% had a good experience however many of the users (53.8%) were not so pleased and had a fair experience including 7.7% had a poor one.

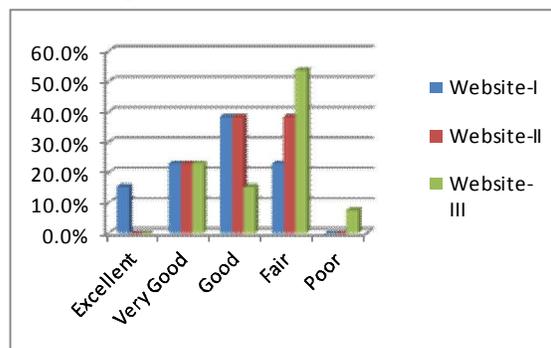


Figure 9. Online Shopping Experience

When asked about the relevance of information on websites, 30.7% were very satisfied with website - I, 61.5% were somewhat satisfied, 7.69% were somewhat dissatisfied and none was very dissatisfied. For Website - II, 38.5% of total 13 responses were very satisfied with the relevance of information provided, 30.7% were partially satisfied while same percentage of population was somewhat dissatisfied and none was very dissatisfied. For Website - III, 38.5% found it very satisfactory, 46.2% were somewhat satisfied, 15.4% were partially dissatisfied and none was very dissatisfied.

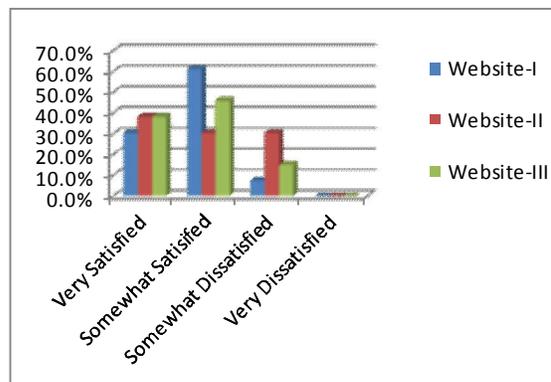


Figure 10. Relevance of Information on the website

For Website - I, 46.2% were very satisfied with layout of the website, 38.5% were somewhat satisfied, 15.3% were partially dissatisfied and none was very dissatisfied. For Website - II, 23.1% were very satisfied, 61.5% were partially satisfied with the layout, 15.3% were somewhat dissatisfied and none was very dissatisfied. 30.8% were very satisfied with Website - III layout, 46.2% were partially satisfied, 23.1% were somewhat dissatisfied and none of them was very dissatisfied.

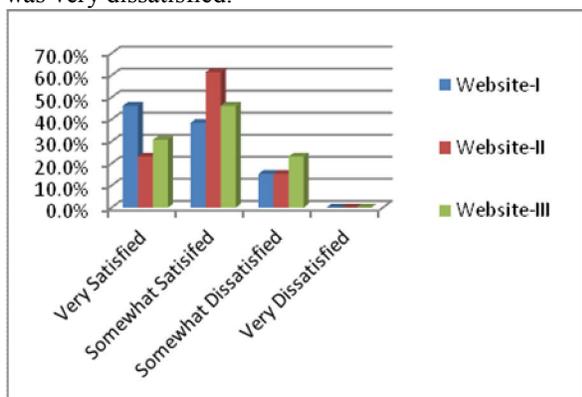


Figure 11. Layout of Websites

Accuracy of contents in the Website - I was found to be very satisfactory for 38.5% while 53.8% were partially satisfied. None was somewhat dissatisfied with the contents' accuracy and 7.69% were very dissatisfied. For Website - II, 30.8% were very satisfied, 46.2% were partially satisfied, none was somewhat dissatisfied and 23.1% were very dissatisfied. For Website - III, 23.1% were very satisfied, 46.2% were partially satisfied, 23.1% were somewhat dissatisfied and 7.69% were very dissatisfied.

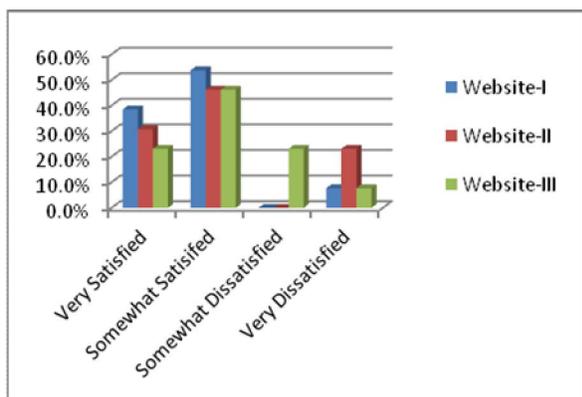


Figure 12. Accuracy of Content on Website

46.2% were very satisfied with the customer service provided by the Website - I however 38.5% were partially satisfied. 15.4% were somewhat dissatisfied and none was very dissatisfied. The

customer service provided by the Website - II was very satisfactory for 30.8% sample population while 46.2% were partially satisfied. 23.1% were somewhat dissatisfied and none was very dissatisfied. 38.5% were very satisfied with the customer service of Website - III, 53.8% were partially satisfied, 7.69% were somewhat dissatisfied and none was found to be very dissatisfied.

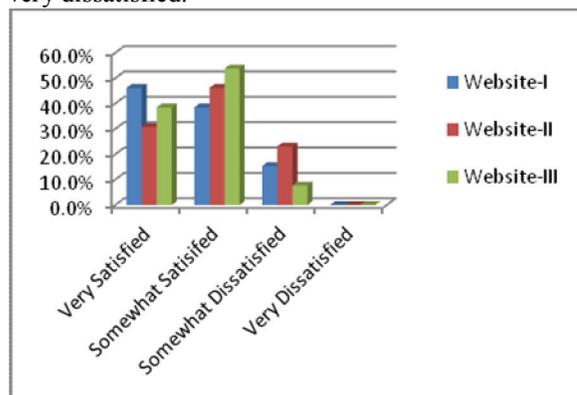


Figure 13. Customer Service

When asked about the product details, 69.2% agreed that Website - I provided complete product details while the remaining disagreed. 76.9% were satisfied with the Website - II. For Website - III, 61.5% were pleased with the complete product details. For the Website - I, 76.9% were of the view that it was up-to-date while others disagreed. 61.5% found the Website - II up-to-date but others did not. For Website - III, 69.2% gave positive response. 61.5% wanted to recommend the Website - I while others did not. For Website - II, 76.9% agreed that it should be suggested. For Website - III, 61.5% considered it to be recommended.

While asking about the products found on the websites, 76.9% were satisfied that the products displayed by Website - I were appropriate while others were dissatisfied. For Website - II, 76.9% agreed with the products appropriation. 53.8% found appropriate products on the Website - III.

84.6% got the exact product that they ordered for through Website - I while others were not satisfied. For Website - II, 69.2% agreed that they exactly got what they wanted. 38.5% were satisfied that the Website - III delivered the exact item. 76.9% were satisfied with the quality of the product delivered by the Website - I while others were not. For Website - II, 53.8% agreed that the given product's quality was up to the mark and the same percentage of the population was satisfied in case of the Website - III. For Website - I, 84.6% got the product within delivery time but the remaining could not get it. 69.2% agreed that the product was

delivered within time by the Website - II and the Website - III respectively.

Out of total sample population of 13, 76.9% found that Website - I provided secure payment method while others disagreed. For Website - II, 69.2% gave positive response and for the Website - III, 100% were satisfied with the payment method. 61.5% wanted to shop online again through the Website - I, however others did not want to do so. For Website - II, 84.6% agreed to purchase again and in case of the Website - III, only 30.8% gave positive response.

Table – II: Usability Evaluation of E-Commerce websites

Factors	Website-I	Website-II	Website-III
	Yes	Yes	Yes
Complete product details provided	69.2%	76.9%	61.5%
Website is up-to-date	76.9%	61.5%	69.2%
Recommend this website	61.5%	76.9%	61.5%
Find appropriate product	76.9%	76.9%	53.8%
Got the exact product you ordered for	84.6%	69.2%	38.5%
Satisfied with the quality of delivered product	76.9%	53.8%	53.8%
Got the product within delivery time	84.6%	69.2%	69.2%
Payment method was secure	76.9%	69.2%	100%
Like to shop online again	61.5%	84.6%	30.8%

5. Conclusion

Although internet usage has increased specifically for providing citizen services and shopping facilities but different economies have different adoption rates. This research helps us to analyze different aspects of usability in practice for developing e-commerce/e-government websites in Pakistan. This study was executed to evaluate the usability of e-government/ e-commerce websites of Pakistan. The results divulge that majority of the

subjects are already using online technologies for governance/shopping for some level. After analyzing the results, we have found that Pakistani e-government websites are not good in usability. In order to improve the user experience, it is important that websites are designed according to users' experiences and culture. Thus user adoption of modern e-government/e-commerce services will increase.

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