

# Tales of the user experiences on Bangladesh's leading mobile banking system: bKash

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## 1 PROBLEM (THE SYSTEM) AND ITS STATEMENT

Before the popularity of the mobile banking system, money transferring was impossible at the time of emergency. Even if people go to the bank physically for money transactions, it is very time-consuming as they have to wait in a queue for a long period of time (Figure 1) and it's most of the takes a big toll from our day to day busy schedules. Paying bills are as much as time-consuming like money transaction system.



Fig. 1. Time consuming transaction process

More than 70% of the population of Bangladesh lives in rural areas. Access to formal financial services is quite difficult for them (Figure 2). Yet these are the people who are in most need of such services, either for receiving funds from any organization/ individual, receiving monetary

help from loved ones living in distant locations, or for accessing financial tools to improve their economic condition.



Fig. 2. Less banking facilities in remote and village areas

Moreover, less than 15% of Bangladeshis are connected to the formal banking system whereas over 68% have mobile phones. bKash Limited (bKash) (Figure 3) is a Bank-led Mobile Financial Service Provider in Bangladesh operating under the license and approval of the Central Bank (Bangladesh Bank) as a subsidiary of BRAC Bank Limited who was conceived primarily to utilize these mobile devices and the omnipresent telecom networks to extend financial services in a secure manner to the under-served remote population of Bangladesh. bKash provides safe, convenient, and easy ways to make payments and money transfer services via mobile phones to both the unbanked and the banked people of Bangladesh.

## 2 RELATED STUDIES

We now present our work in the body of other related works. At first, we show how the heuristic evaluation method has been used in the field of web-systems/ software systems. Then we show some related studies on the usability of e-Banking and mobile-banking platforms. Finally, we present studies that focus solely on bKash in this era of e-Banking system.

### 2.1 Heuristic evaluation and usability study of e-Banking systems

It is very important for e-Banking applications to be usable in a long term measure, where this needs a number of specific factors to be considered and defined. The studies introduce the concept



Fig. 3. bKash Limited

of incremental or repeated usability for the e-banking part of e-commerce and suggests new specific usability guidelines [1]. Researchers view the conflict between ease of use and security in the context of usable security, a concept that is intended to match security principles and demands against user knowledge and motivation. Instruction is the main approach of the systems evaluated; automation relieves the user from involvement in security, as far as possible. Some studies discuss the pros and cons of automation and understanding as alternative approaches to the design of web-based e-banking systems [2]. Now a days, customer loyalty and positive word-of-mouth (WOM) are two main goals aimed at by managers. The importance of these concepts is even greater due to the increasing competence in electronic commerce. Thus, the purpose of another study [3] is to characterize both concepts in the e-banking context.

Most e-government activities to date have failed to achieve their maximum capacity, since they are progressively tormented by usability issues. Therefore, there have been expanding calls for assessing the usability of e-government sites, as they are broadly viewed as the essential stage for government communication with citizens. A study [4], therefore seeks to extend knowledge by assessing the usability of Malaysian e-government site concentrating on the e-participation. A total of 10 participants volunteered in this study that employed System Usability Scale method. Analysis of the survey demonstrated that the usability of the chosen site was marginal with all the average usability score was below 70% .

## 2.2 Usability study of mobile banking systems

Usability is one of the factors affecting in construction and development of software that leads to improved efficiency and quality of them. Many of the existing usability evaluation models for mobile applications have not been evaluated to determine their usefulness, accuracy and applicability in a real world environment. Researchers report on the implementation and development of a banking application, based on the proposed new usability obtained from the study and analysis of

usability previous models has focused [5]. Later, a model for evaluating the usability of mobile banking applications interface is developed in response to usability practitioners and m-banking applications developers' needs. The experts implemented the model using various m-banking application platforms through heuristic evaluation method. A study show that the model is useful, accurate and can be used for evaluating the usability of m-banking applications interface [6].

### 2.3 User experiences on using bKash

There are some related works on bKash to understand the customers' interaction with the platform. The purpose of one of the papers [7] is to investigate the relationship between service quality and customer satisfaction to use bKash through structural equation modelling. Another study has been conducted based on the field survey to draw the effects of mobile banking in developing country like Bangladesh [8]. A self administrated questionnaire had been developed and distributed among 40 subscribers of bKash limited at Rajshahi City. The study has been conducted to analyze the customers motivating factors such as service charge, nature of the security and trust on the mobile banking operation of bKash. Besides with, this study reveals to assess the customers' satisfaction of the availability and speediness of the mobile banking bKash.

## 3 USER ANALYSIS

. bKash can be accessed via all the mobile networks operating in Bangladesh. Currently, bKash is running a network of more than 200,000 agents throughout urban and rural areas of Bangladesh with over 50 million verified accounts. The ultimate objective of bKash is to ensure access to a broader range of financial services for the people of Bangladesh. Here we describe an example persona to better understand how bKash is handy in our day to day life:

*Mr. Karim works as an employee in a tea factory in Sylhet. His parents live in a village. He visits his parents when he goes on leave. But he gets to do it once every 4 months. While working in Sylhet, he faces much difficulties sending money to his parents. As they live in a village, there is no bank nearby. His father has to travel 4 hours to go to the town every month as he has to go to the bank to get the money sent by his son. He has a phone but he uses it only for communication. So, this is quite cumbersome for him.*

bKash has a special focus to serve the low-income masses of the country to achieve broader financial inclusion by providing services that are convenient, affordable, and reliable. Nonetheless, we can divide the users of this system into a) General user, b) Agents, c) Merchants

### 3.1 General user

People from all socioeconomic classes who use bKash to transact money, pay bills, donate to different organizations via verified bKash accounts are classified as general users. Their age

group is 18 or above 18 as national ID cards are required to open a bKash account. No high-level technological proficiency is not needed to be a general user of bKash. Any kind of mobile phone user (feature or smartphone) can be the bKash general user. But to operate the bKash client app, the smartphone is a must.

In addition to being able to send and receive money, the citizens can pay their BRTA fees (car license, ownership registration, tax token renewal, and various other fees) and NID fees through bKash and receive their tax tokens at the comfort of their homes. It's a lot easier just to follow some steps to register and users can pay these fees in one tap.

bKash has built a bridge between the general users and humanitarian organizations who want to donate by providing service of donations via this platform.

### **3.2 Agent**

bKash also provides the one-stop solution for managing the day-to-day activities and transactions of a bKash Agent. People from all socioeconomic classes whose age is 18 or above 18 can apply for a bKash agent account. No high-level technological proficiency is not needed to be a bKash agent.

Agents help the general users to cash out money. If someone who does not have a bKash account, wants to send money to others, agents are here to help. Agents get profit for being this helping hand to the general people.

### **3.3 Merchant**

To help in the growth of a business bKash provides the facility to have payments from the general users via bKash merchant accounts. People from any socio-economic background having small to large businesses and aged above or equal 18 can open a bKash merchant account by providing proper information about the business.

Nowadays, almost all shops use the bKash merchant account as their money transferring tool. It has made the task a lot easier for both the merchants and the customers. Customers can make payments from anywhere at any given time with simply one tap via the bKash app or the USSD system.

## **4 TASK ANALYSIS**

The tasks that can be performed using bKash is shown in Figure 4.

### **4.1 Exceptional task**

The exceptional task that can be done using bKash is availing different offers from different operators (Figure 5)

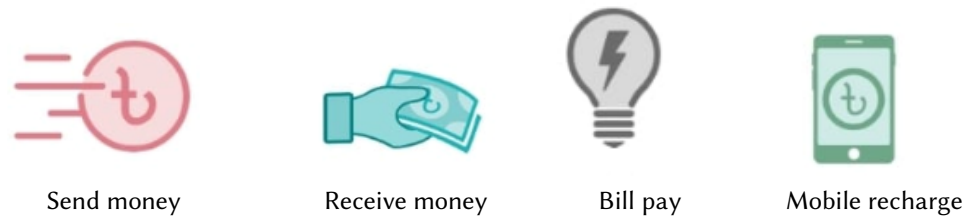


Fig. 4. Main functionalities



Fig. 5. Integrating offers with mobile operators

#### 4.2 Emergency task

We can transfer money from our bank account to bKash . We can also take loans from bKash in the time of emergency (Figure 6 )

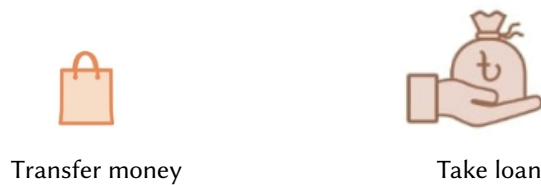


Fig. 6. Emergency task

#### 4.3 Send money

For sending money using bKash app, we first need to go to the home page. Then select the send money option and enter receiver's account number and amount to transfer. After tapping on the send money button, money will be transferred to the recipient (Figure 7).



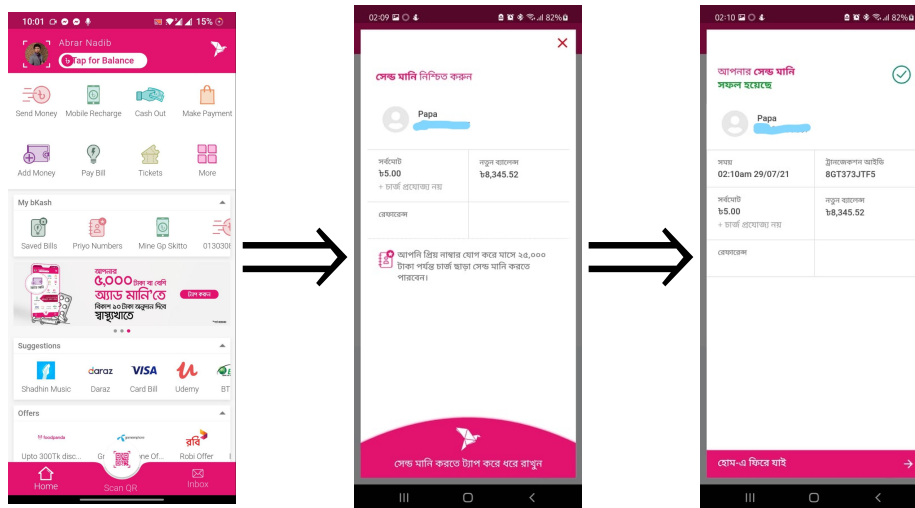


Fig. 7. Send money steps

#### 4.4 Bill pay

For paying bill using bKash app, we first need to go to the home page. Then select the pay bill option. After that we need to enter the bill name and amount (Figure 8).

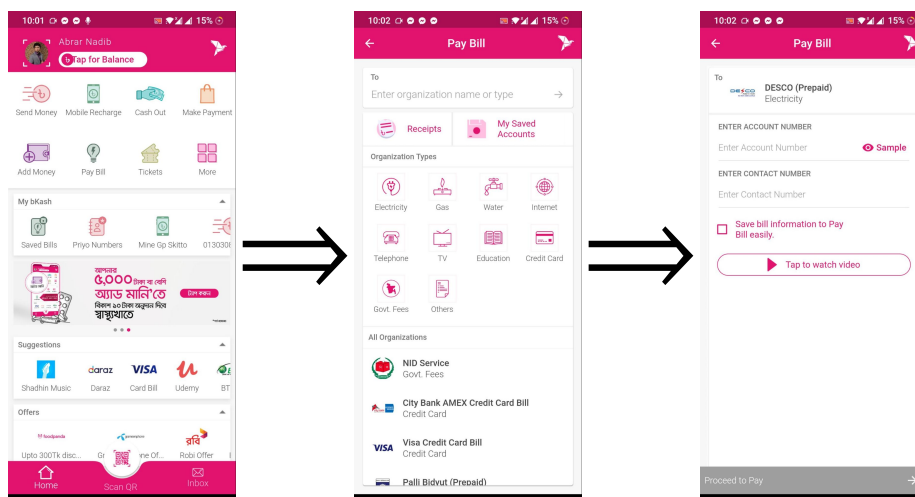


Fig. 8. Bill pay steps

#### 4.5 Mobile recharge

Anyone can recharge any mobile account using bKash. For this, one needs to select mobile recharge option and the mobile number of the desired account with the desired amount. (Figure 9).

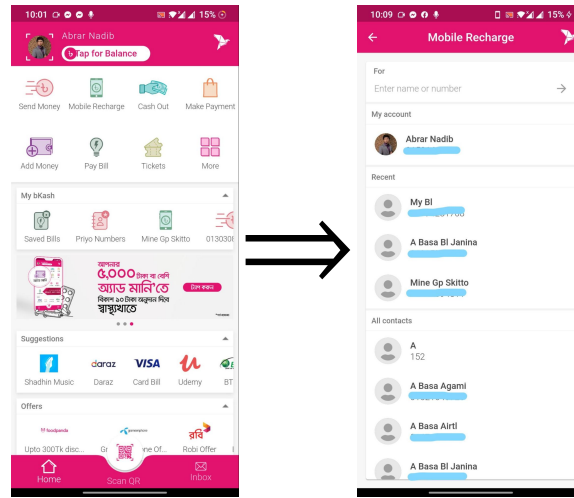


Fig. 9. Mobile recharge steps

#### 4.6 Main tasks & their problems

**4.6.1 Send money :** Sometimes a user can mistakenly send money to the wrong recipient. As there is no undo or recovery option after sending money , it becomes difficult to recover that money. Also there is a lack of showing proper error messages to the user in case of a failure. Therefore, a recovery time to undo any wrong payment would be really helpful for the end user.

**4.6.2 Giving offer :** bKash does not update the offer section regularly. As a result there is no guarantee for a user to avail the latest offers from other operators.Regular update of this section can solve this problem.

**4.6.3 Service feedback :** There is only scope for mail and live chat (which will redirect to customer care). If a user does not has a mail account, then he cannot complain about his problems. Also he cannot make a call if he has zero mobile balance. So there should be alternatives for letting the bKash customer care know about user's problems.

### 5 INTERACTION IDENTIFICATION

The userbase of bKash can be classified into three main categories- General users, Agents and merchants.



### 5.1 Interaction with the system

The General users have the functionality to send as well as receive money on the Bkash app (Figure 10), while bKash Agents mainly accept cash-out requests by the general users (Figure 11). The Merchants can receive money via the app from their customers (Figure 12).

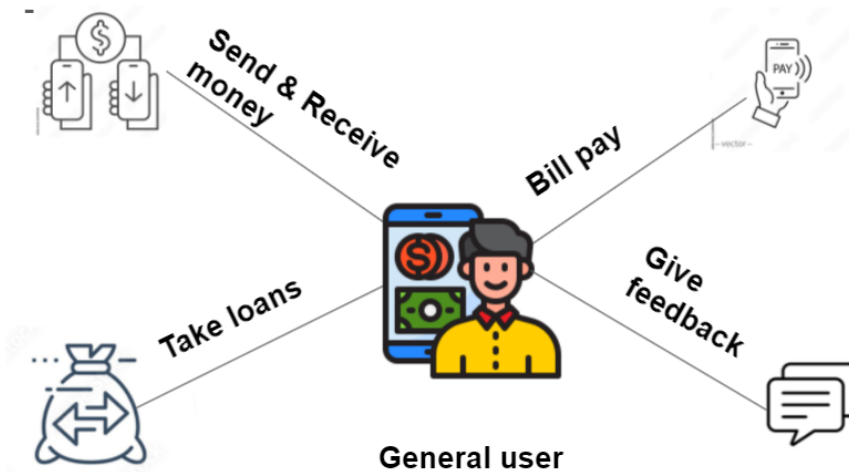


Fig. 10. Users interacting with system

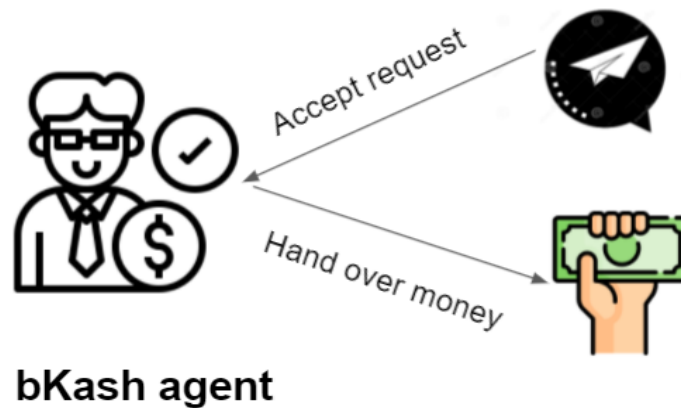


Fig. 11. Agents interacting with system



## Bkash Merchant

Fig. 12. Merchants interacting with system

### 5.2 Interaction with the stakeholders

Interaction of all the stakeholders are visually explained in Figure 13

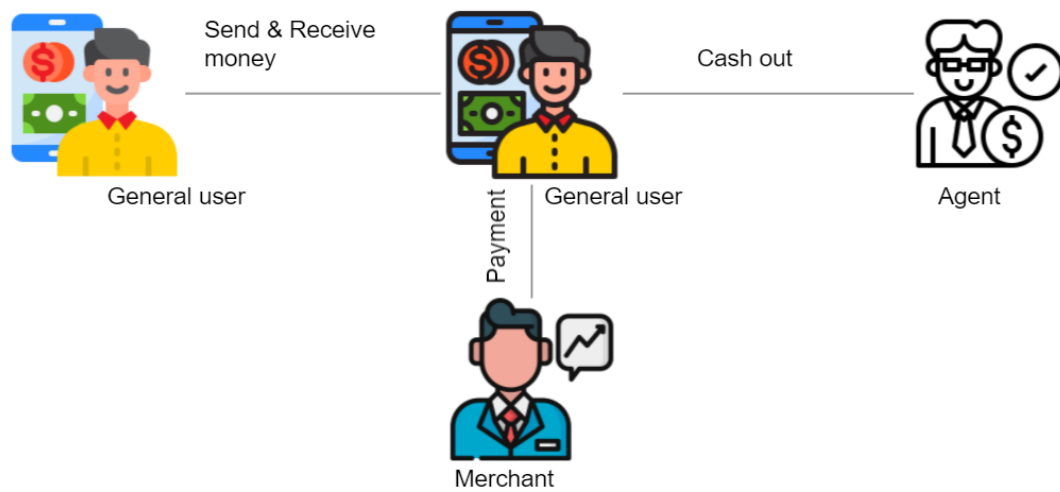


Fig. 13. Interaction with stakeholders

### 5.3 Interaction metaphors

The metaphors for used for user interactions are-

- Physical transactions: The Cash-out or Send money options draw inspirations from transactions occurred in physical banks(Figure 14).

- Deposit: When any sum of money is received on a user's bKash account, that translates to money being deposited on a bank account(Figure 15).
- Greeting cards: Greeting cards or gift cards that are used in real life are also simulated on bKash app's Gift functionality inside the Send money option. Optional notes can be added to the gift card, along with the specified amount of money(Figure 16).

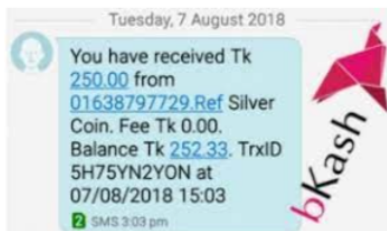


Send money & cash out from bKash account



Send money and cash out money from bank account

Fig. 14. Interaction metaphor: Physical transaction with bank



Receive money in bKash account



Money deposit in bank account

Fig. 15. Interaction metaphor: Deposit

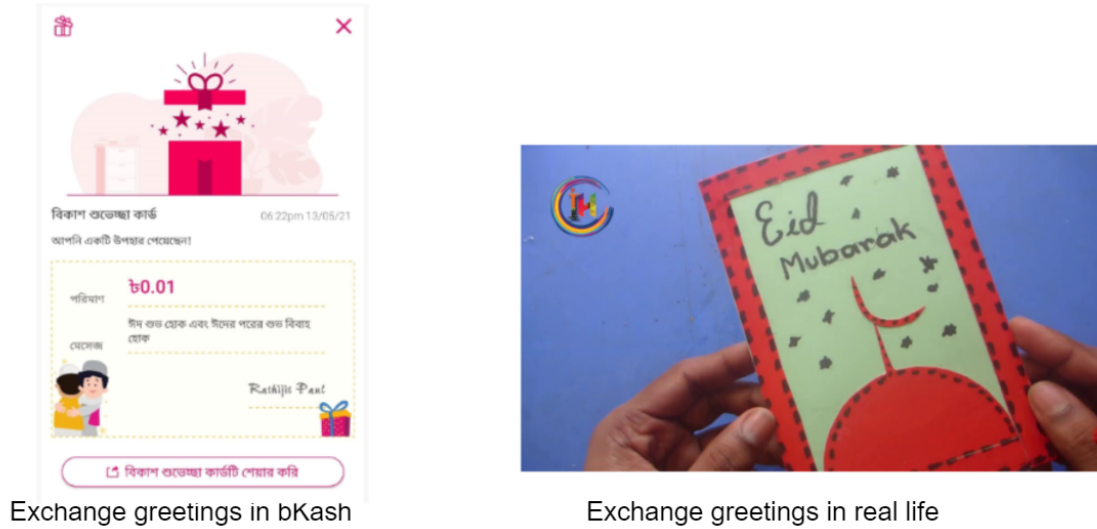


Fig. 16. Interaction metaphor: Greetings

## 6 HEURISTIC EVALUATION AND PROTOTYPE REVISION

In this section, we have done some the heuristic evaluations (Nielsen's ten heuristics) and assessed the severity of each usability problems. We have given a severity rating in a scale of 0-4 as follows:

0 = I don't agree that this is a usability problem at all

1 = Cosmetic problem only: need not be fixed unless extra time is available on project

2 = Minor usability problem: fixing this should be given low priority

3 = Major usability problem: important to fix, so should be given high priority

4 = Usability catastrophe: imperative to fix this before product can be released (Nielsen)(cosmetic, minor, major, catastrophic).

We have also discussed the critical incidents/ problems we have observed and we have brainstormed some solutions for those observed problems in the Table 1.

## 7 MULTI MODALITY SUPPORT

In this section, we discuss if the system supports multi modality.

- **Sight:** The system uses visual channels as primary mode of representations.
- **Sound:** No in app sound. Sometimes vibrates after sending, receiving and cashing out money.
- **Language:** Supports bangla and english. Some bangla translations are not helpful.
- **Touch:** Supports touchability.

Table 1. Heuristic evaluation: severity rating, the problems, and the solutions

Heuristics	Severity rating	Problems	Solutions
Visibility of the system status	0	-	-
Match between the system and the real world	2	In the bangla translation mode, 'Send money', 'Cash out' is not the exact translation	Using conventional bangla words such as 'Taka pathan', 'Taka tulun', 'Taka grohon korun', etc.
User control and freedom	1	No 'undo' option after tapping send money touchableopacity	Providing some delay time as Gmail to let user decide whether the user want to undo or not
Consistency and standards	0	-	-
Error prevention	3	1. No 'Alert'/'Attention' dialogue box 2. Upon error, it mostly shows 'An error has occurred, error code:xyz' instead of details/possible reasons	1. Providing caution dialogue box at every step 2. Providing proper details or probable errors in a dialogue box
Recognition rather than recall	0	-	-
Flexibility and efficiency of use	3	No customized home page option (minimalistic homepage), no sorted user preferences, no search option.	Showing most used features first, giving user access to customize own homepage, adding search options
Aesthetic and minimalist design	1	Too much information in one home page	To permit the users to customize his/her homepage as his/her preferences
Help users recognize, diagnose, and recover from the errors	3	No suggestion or guidelines is provided according to the occurred errors, and no probable problems of the errors are written	Probable errors dialogue boxes, providing short tutorials at every module
Help and documentation	2	1. The limit table doesn't provide concise information 2. Documentations are scattered	1. Limit table should be made concise 2. There should be a combined documentation section

## 8 ACCESSIBILITY OF THE SYSTEM

In this section, we discuss how could systems be made more accessible to older/children/disable in the subsequent subsections.

- **Age groups:**

- Mostly convenient for 18 to 40 years old
- Older people will not find required features easily in compact home page
- Readability is less for older people
- Extra instructions/ tutorials can be added for olders

- **Visual impairment:**

- The system does not support resizing fonts according to ease to the eyes
- Users can't zoom in to increase readability
- Hard for the middle aged users due to lack of visual comfort

- **Physical impairment (autism, dyslexia):**

- Most of the task done by typing
- Most of the commands are visual commands
- Voice to task command can be added for disable users
- Voice commands/ instructions for the disable users

- **Cultural differences:**

- Easy to use for both educated and less educated people
- Only supports bangla and english
- Not easy for the less educated tribal people as Bangla is not their language

## 9 FEEDBACK

We took some feedback from our classmates and we quote the feedback directly here:

Md. Hasibul Husain Hisham, a CSE student from Bangladesh University of Engineering and technology says, *"I can see only a fixed numbers of transaction history in my inbox tab, but sometimes I like to see a specific transaction in a specific mobile number which might be done a long time ago. bKash does not provide me that privilege."* He also added, *"The new bKash map feature is very handy to know where are the nearby agents"*

Another CSE student from the same university, Md. Shahrar Fatemi says about a vulnerability of the system, *"Suppose, some company adds automated bill pay service by connecting its user's bKash account. Now user do not want to take service from that company, but the company has not removed the bKash account information from its users list yet. There is a chance that the automated bKash pay bill system will deduct some money from the user. I am the sufferer of this problem"*

## 10 CONCLUSION

This project has helped us to develop our insights and to learn new aspects in the field of Human-Computer Interaction. We chose bKash platform as mobile banking system has started a new era in the field of e-Banking system and also in the time of global pandemic, it has got a huge amount of new users. Understanding the user interactions of the system and evaluating them from different levels was an invaluable experience for us. We have learnt the importance of the balance between the standards and the user needs which is the building block of understanding and applying Human-Computer Interaction in the real-world problems/ systems. We are now one step ahead to do better heuristic analysis on our own developed systems and it will help in a well-structured prototype revision. At the end, we thank our course teacher and our peers for helping us to complete the project successfully.

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