Module	Task Number	Assessment Type
Human Computer Interaction	Task 1	Individual Report

Usability in Mobile Application

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1. Introduction

1.1. Brief introduction of usability

Usability is a metric that assesses how easily a specific user in a particular environment will use a product/design to accomplish a given purpose safely, reliably, and satisfactorily. In short, it is a criterion for determining how simple a user interface is to use. Five quality components describe usability that include learnability, efficiency, memorability, error minimization and satisfaction (Interaction Design Foundation, 2021). Mobile usability refers to the concept of user-friendliness in terms of using mobile devices including smartphones and tablets. The main emphasis is on addressing the specific features of smartphones, including smaller displays or resources in comparison with desktop computers or notebooks and developing and integrating the smartphone application. Usability concerns itself more with how it feels and behaves rather than how it looks. (Ryte, 2021)

1.2. Importance of usability in mobile apps

The way of finding new ways to connect and communicate with consumers through mobile devices has become very critical in the present context because we live in a smartphone-dominated environment. From booking a ride in Pathao to shopping online in Daraz, a lot of services are heavily depended on by the people. Play Store on Android and App Store on iOS devices are flooded with new mobile apps every single day. Many of such applications never reach the height they could have because of their poor usability. Even if a mobile app has a sleek look, if it is difficult to use, the final impression would be poor. The popularity of a smartphone app is solely determined by how its consumers view it (Dakić, 2019). The first step to successful adoption is to build a user-friendly interface. Bad usability in an application can cause a terrible impact on a business because of the increased number of help desk calls, brand damage and also affect in terms of dimished repurchase intent.

2. Literature Review

Two journals are selected for the purpose of analyzing the usability of the mobile applications. The two journals selected are:

a) Evaluating Usability for Mobile Application: A MAUEM Approach

b) Usability of Mobile Applications: A Systematic Literature Study

2.1. Summary of journals related to mobile usability

2.1.1. Evaluating Usability for Mobile Application: A MAUEM Approach

Due to many conventional usability metrics being designed with desktop computer software in mind and mostly not explicitly applicable to mobile applications, the metrics of mobile applications were evaluated with the use of an unsupervised usability evaluation tool. The Mobile Application Usability Evaluation Metrics (MAUEM) helped in providing guidance on choosing the attribute for the usability evaluation of a mobile application that would be the best usability-wise. The MAUEM usability model adapted nine attributes including efficiency, effectiveness, satisfaction, learnability, memorability, errors, cognitive load, interruptablity, and simplicity. Effectiveness is characterized as a user's ability to accomplish a task in a given context. Learnability refers to how simple it is to learn how to use a program effectively. It normally refers to the amount of time it takes a person to master an application's features. Memorability is the application's property that enables users to preserve records on the successful use of an application and perform the desired tasks without err. Users can also make a small number of mistakes when using a system but they should be able to correct them efficiently. The cognitive workload can be defined as the amount of cognitive processing the program requires the user to utilize. The general rule of convention is to fully focus on one task at a time. Interruptability is pertaining to humans' receptiveness to any form of interruption. And simplicity is the ability to accomplish a certain task in an effortless manner and was recognized as one

of the main factors to influence visual aesthetics. The MAUEM model thus helps in providing the needed guidance for the usability application with the measurement of the mentioned attributes. (Saleh, et al., 2017)

2.1.2. Usability of Mobile Applications: A Systematic Literature Study

The findings from the literature review suggest that the bulk of the study of mobile applications has adapted the ISO 9241-11 definition as a paradigm. In a set of 790 papers, indexed by the Scopus database, 75 attributes were differentiated. The most often used in the definition were efficiency (70%), satisfaction (66%) and effectiveness (58%). The less common were learnability (45%), memorability (23%), cognitive load (19%), errors minimization (17%), simplicity (13%) and ease of use (9%). All the attributes that remained occurred in an insignificant number of times. The majority of the qualities presented have centered on user beliefs, preferences, emotions, perceptions, physical and psychological responses, behaviors, and accomplishments which concern user interactions prior to, during and after the usage of the application. Such a mixture of quantitative and subjective evaluations finally results in an outcome that does not refer to usability or user experience. This indicates a misunderstanding of the objectivity of the methodology, which ultimately affects the quality of the findings. (Weichbroth, 2020)

Two mobile applications namely **Nagarik App** and **Mero Share** are chosen for the analysis based on golden rules, Jacob's rules and extra research done with the help of the research papers mentioned above.

a) Nagarik App

It is an application designed to provide users all the government services at a single place. It includes the services like the registration and linkage feature of PAN, Citizens Investment Fund, Provident Fund, Social Security Fund, Citizenship, Passport and Voter Card. It also contains features the public complains to the government related to government works.

b) Mero Share

It is an application developed by CDSC in order to provide services that are offered by CDSC to the investors in the Nepalese Capital Market. It includes the services like the application of issues, viewing current share issues, share pledgor and various other features.

The analysis is to be done with the Mobile Application Usability Evaluation Metrics (MAUEM) in mind since it properly guides on the way of selecting the necessary attributes for the analysis. Furthermore, the analysis would also not neglect the any attributes that hampers on the user beliefs, preferences, emotions, perceptions, physical and psychological responses and behaviors.

3. Analysis of applications

3.1. Analysis based on Schneiderman's 8 Golden Rules of Interface design

a. Strive for consistency

For comparable cases, designing consistent interfaces involves having the same design patterns and similar action sequences. Users need to be able to apply their experience from one click to the next without having to learn new representations for the same behavior. Information is communicated in a consistent manner.

- Consistency in Nagarik app

Figure 1: Homepage of Nagarik App

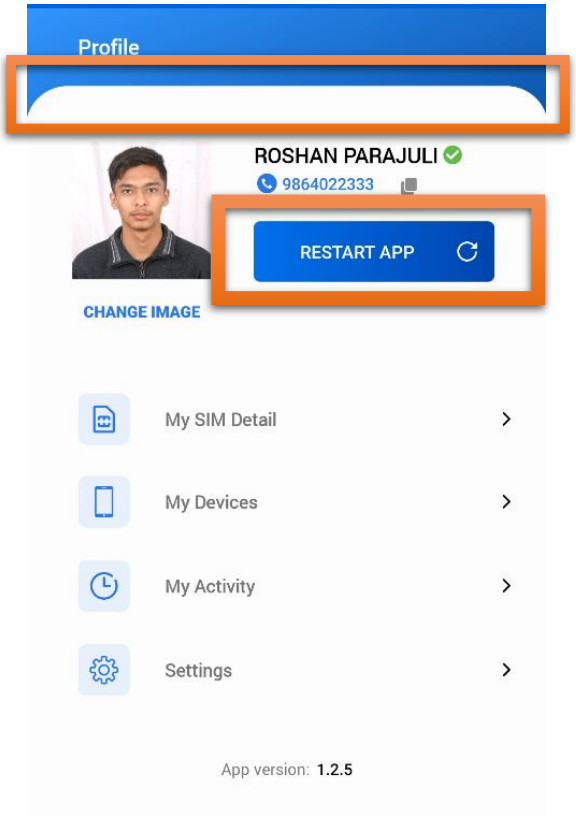


Figure 2: Profile page of Nagarik App

In these two screens of the Nagarik app, the gradient colors are consistent. Different colors on different pages of the app would have contributed to the interface being inconsistent. Also, the button layout which is shown in the picture below is similar everywhere. The buttons too, to match the overall UI of the system are of the same gradient colors with a slight border radius. Nagarik App has maintained consistency throughout the app. Although, the bottom portion of the app has icons which are not standardized.

Figure 3: Bottom panel of Nagarik App

In this picture, the middle icons look like a help and support icon but actually is the notification icon. Normally, a bell would be used. Other than that, the home and the user profile icon are standard.

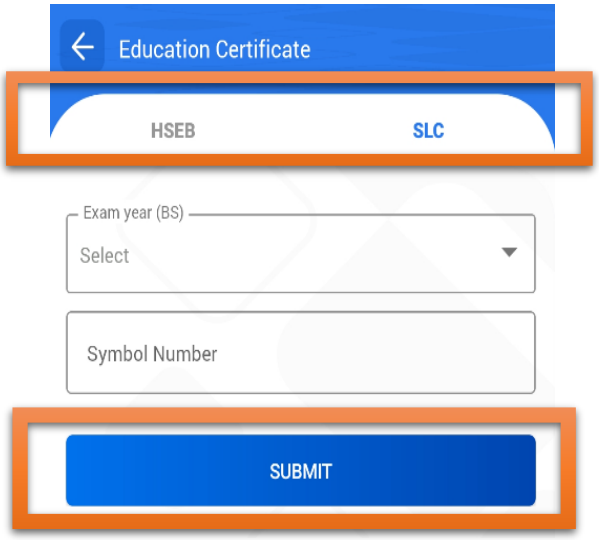


Figure 4: Education certificate page on Nagarik app

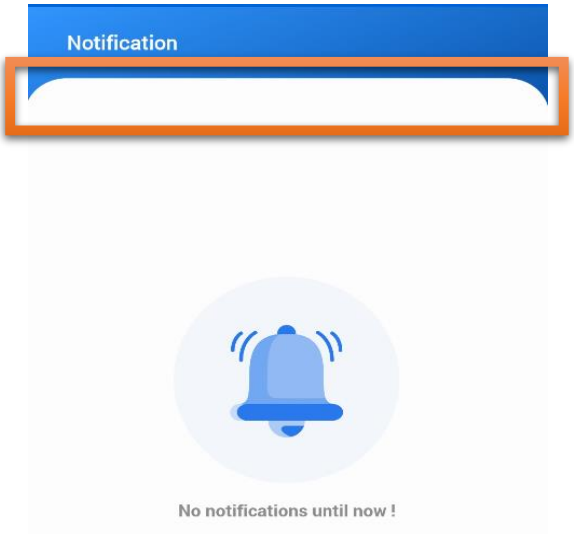


Figure 5: Notification page on Nagarik app

Although the design of the interface is consistent as of now, it would not be maintained if an update is scheduled to change the user interface drastically.

- Consistency in mero share

Mero share application is consistent as well in the sense that any user who is used to the mobile interface can easily adapt to the web interface because of its similarity. However, the fonts on the two interfaces are

different but it still is consistent throughout each interface. The icons visually justify the tasks they perform upon being pressed which follows the rule of standardization like the Nagarik app. The theming options and the color palettes used throughout the application contributes to maintaining consistency in this application.

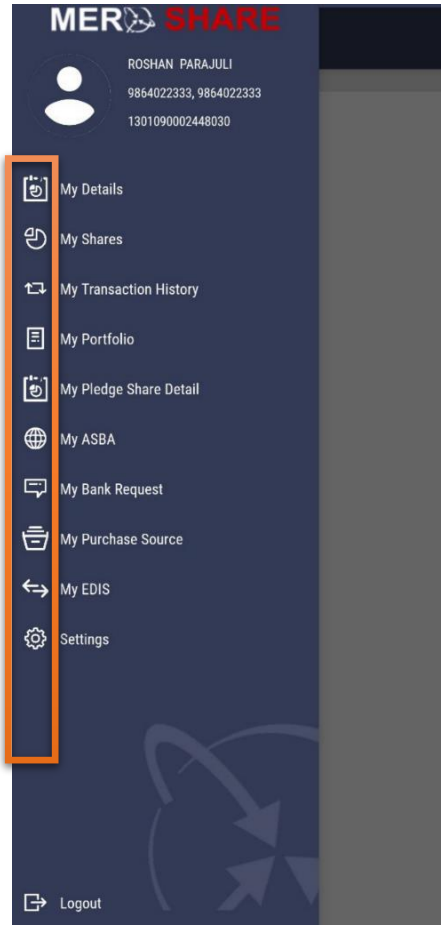


Figure 6: Sidebar of Mero Share

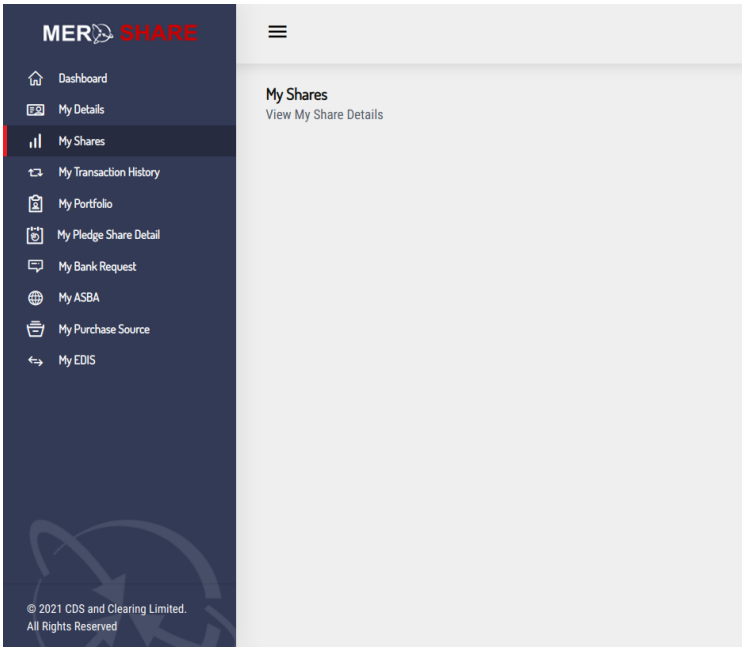


Figure 7: Desktop view of the sidebar in Mero Share

b. Enable frequent users to use shortcuts

If a series of events need to take place inside an application, a shortcut would be an effective way to deal with it. Shortcuts in an application may include abbreviations, function keys, hidden commands and macro facilities.

- Shortcuts in Nagarik App

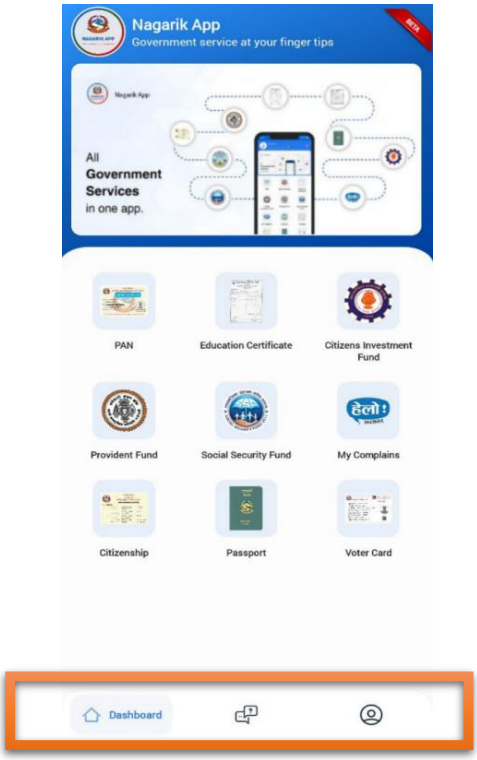


Figure 8: Homepage of Nagarik App

The navigation bar in the bottom helps users to navigate to all of the pages present in the application. There is not a long and a tedious way to accomplish the basic tasks. The tiles in the homepage also redirect users to the respective field of interest acting as a shortcut in the application.

- Shortcuts in mero share application:

A simple swipe from the left to right side on the mero share app reveals a menu to accomplish all the goals the app is designed to fulfill. That is how the application implements shortcuts.

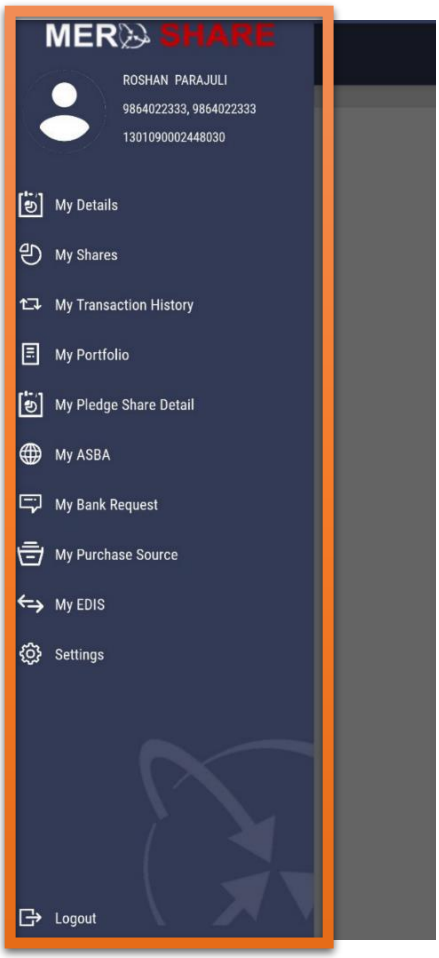


Figure 9: Sidebar of Mero Share

c. Offer informative feedback

The users of the application need to be constantly updated on the status of their operations at every stage. The feedback provided must be substantive, important, consistent and appropriate for the situation.

- Status of informatic feedbacks in Nagarik App

Nagarik App is, at this phase, neither good nor bad in terms of providing informatic feedbacks. In the first picture below, upon entering gibberish symbol number by the user, the app returns a meaningful error message stating that it didn't get any records matching the criteria. Meanwhile, In the second picture, during the process of registering pan card, even after uploading an image with eyes widely opened, the app still returns the error

message stating the eyes are closed. In this case, feedback is provided but is not informatic which might frustrate the user using the application. Also, In the third picture, after getting disconnected with the internet, the app throws no error message immediately but removes the picture and name from the profile page. Also, on the fourth picture, the input cannot be typed out as requested. Hyphens are not allowed to type whist the automatic insertion of hyphen is random. Other than these situations, users are mostly updated on the status of their operations.

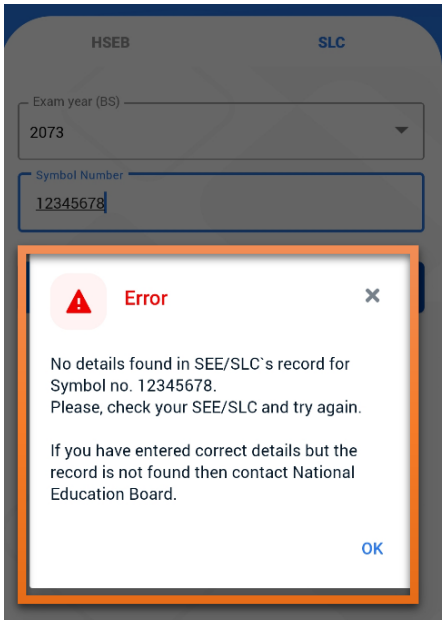


Figure 10: Error message dialogue in Nagarik App

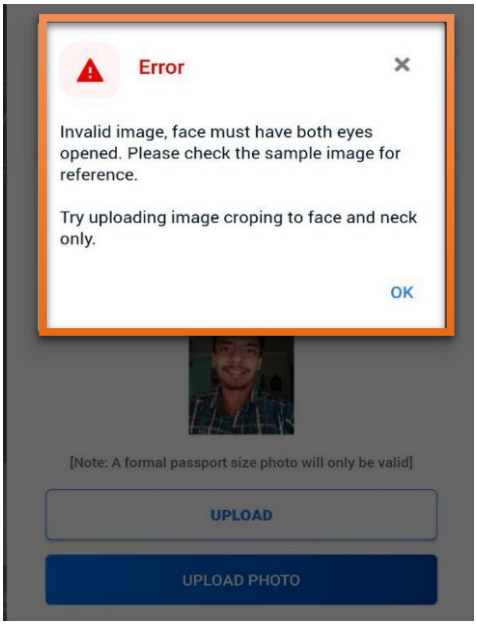


Figure 11: Invalid picture error

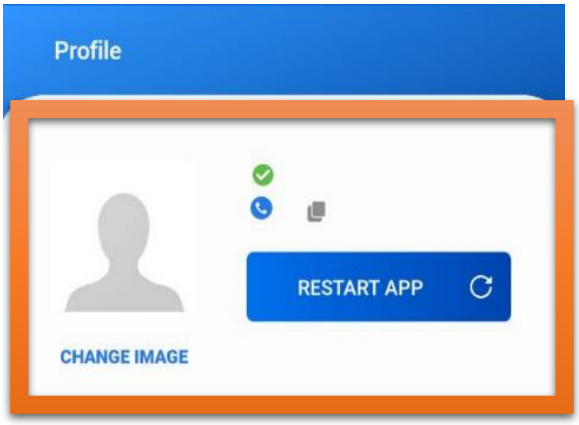


Figure 12: Disappearing text error

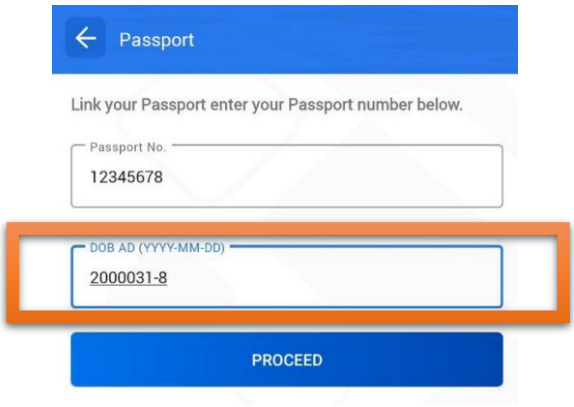


Figure 13: Failed hyphen usage

- Status of informatic feedbacks in mero share application

The quality of informatic feedbacks in mero share is utterly terrible. It takes multiple attempts to log in sometimes even if the password is correct and provides error message like “Auth Token Access Failed” which is not easily readable by the average user. The dashboard is empty and there are no any error logs seen on the screen. This keeps users guessing about what is going to pop up while nothing ever does. In some portion of the application, an error message with “No data found” is shown for a couple of minutes until the actual data replaces the message. When the internet is unstable, it shows message “Linked Accounts not Loaded” as shown on the second screen instead of clarifying user of the unstability in their network. The feedback, if they come, come really late which hampers a lot in usability.

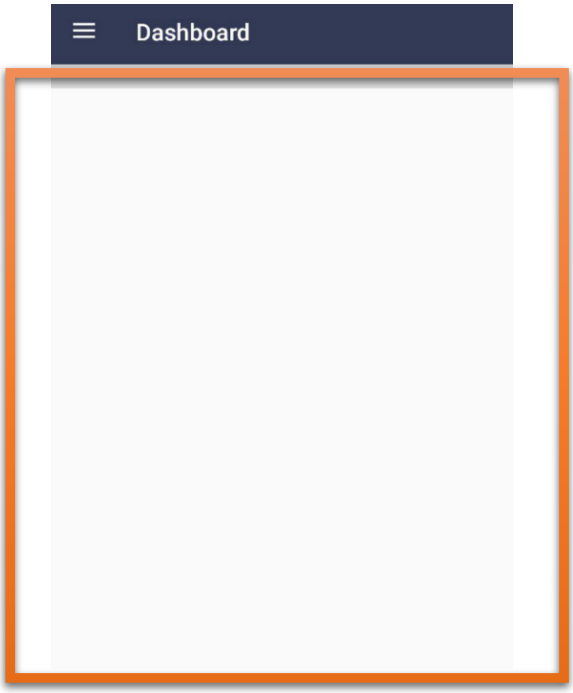


Figure 14: Empty dashboard

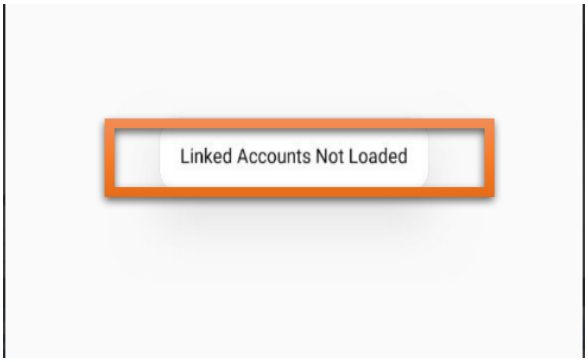


Figure 15: Error with a jargon

d. Design dialog to yield closure

Upon executing a certain task on an application, there are three phases: beginning, middle and end. It is important for a user to know where they currently are. Upon completion, informative feedbacks and options for the next step are to be provided but if the task is being executed, the user should not be left wondering. To sum up “Don’t keep the users guessing” would summarize this rule well.

- Implementation in Nagarik App

While a certain task is being performed, Nagarik app does show a loading screen but not the exact phase it currently resides in. There is an animated

loading screen for every time the data is being loaded into the application but there is no textual guidance for the same as shown in the picture below.

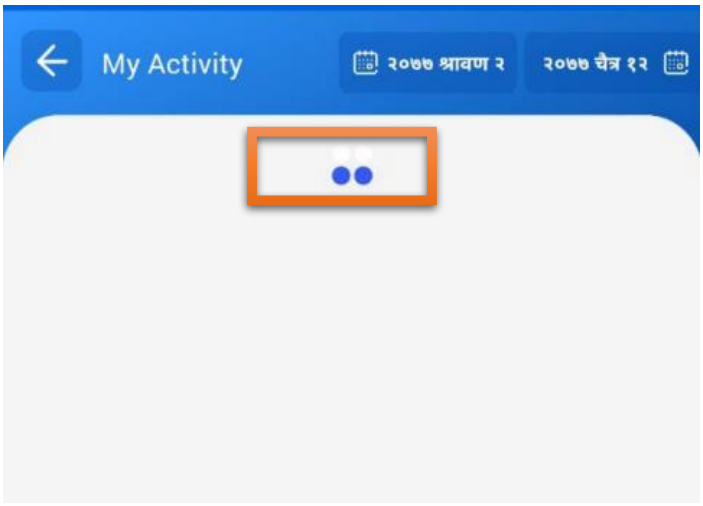


Figure 16: Loading screen

- Implementation in meroshare application.

This rule is not implemented well in the meroshare application. It seems clear from the first start as when a user tries to log in and provides a wrong password for 3 times, the screen freezes on the loading screen keeping the user wondering about whether the password entered was indeed incorrect or just another issue had arrived. In the first picture, upon loading a page the first message seen is “No data found” when in actuality there is a presence of data and the fetch time is high.

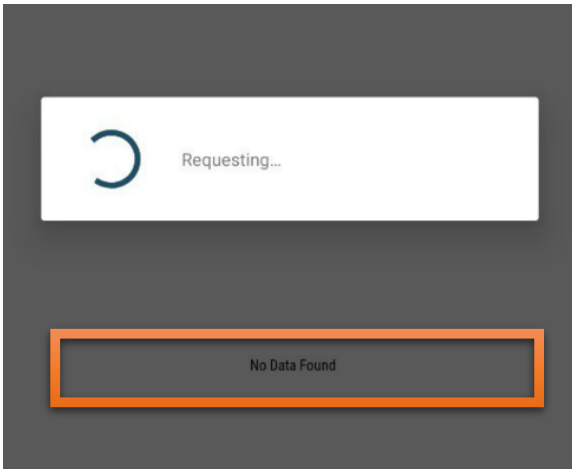
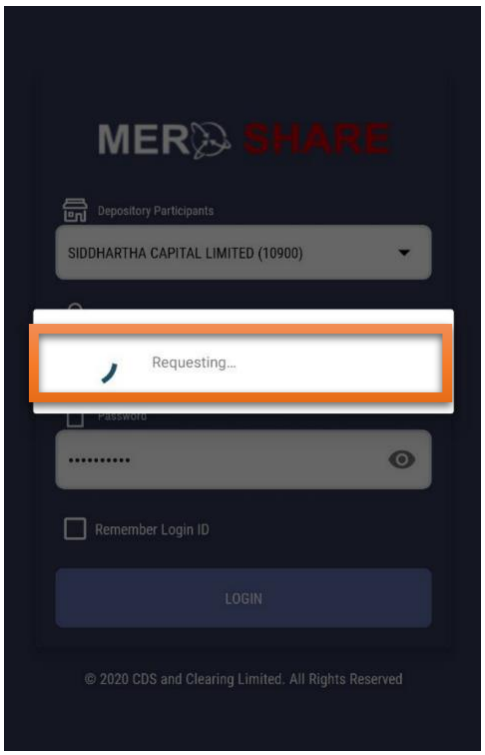


Figure 17: Requesting screen



e. Offer simple error handling

The treatment of errors has a major effect on usability. Bad error handling coupled with a confusing error messages can even frustrate users and lead them to quit an app. It should not be assumed that the user is too technical to detect mistakes. The errors should be human readable and presented in plain English. Each error message should contain what is wrong and the procedures to solve the problem.

- Implementation in Nagarik app

Nagarik app has a very well explained errors which are very human readable and does not involve any jargons. Also, the app does not let users type random characters in the fields which require a numerical value and quickly informs user if anything was mistyped during the time of input.

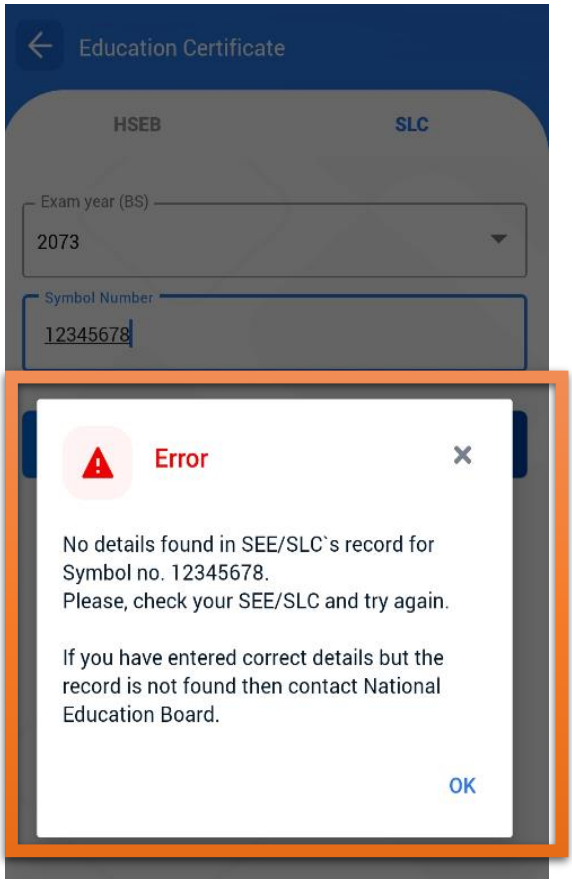


Figure 18: No record error in Nagarik app

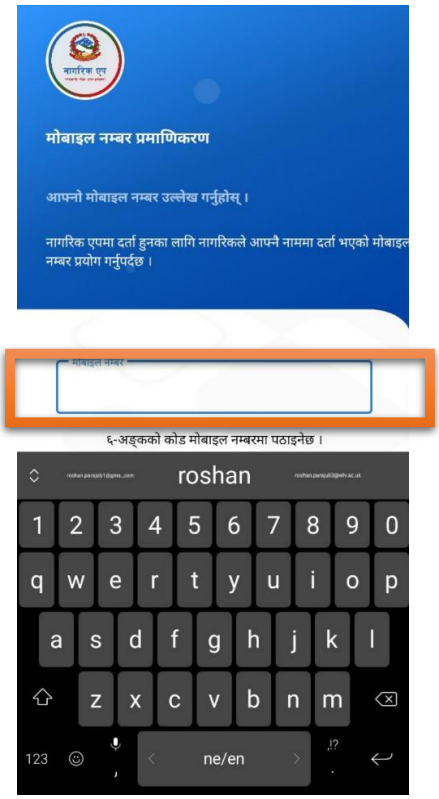


Figure 19: No alphabetical input in input box

- Implementation in meroshare application

The application has a very bad error handling feature. Most times it would show a complicated error message and it takes a lot of attempts to get a proper error message as shown in the first picture. In case if a user forgets their password, there is no way of resetting it with the app without logging in which would cause a user too much hassle because there are no intuitive step-by-step instructions to solve the problem. In some of the fields especially while filling up the form error handling is much better as it highlights the boxes with errors and lets users know about the error that they already made or are going to make.

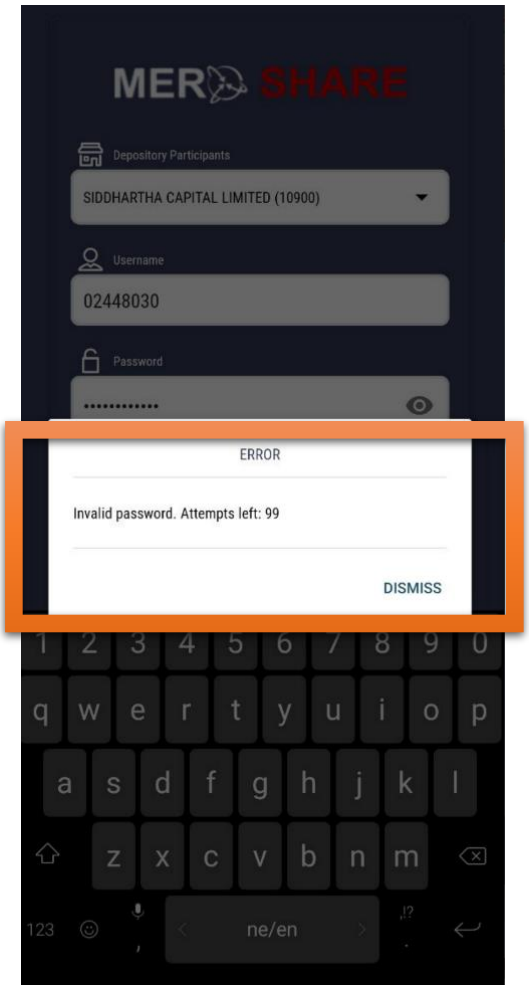


Figure 20: Wrong password error

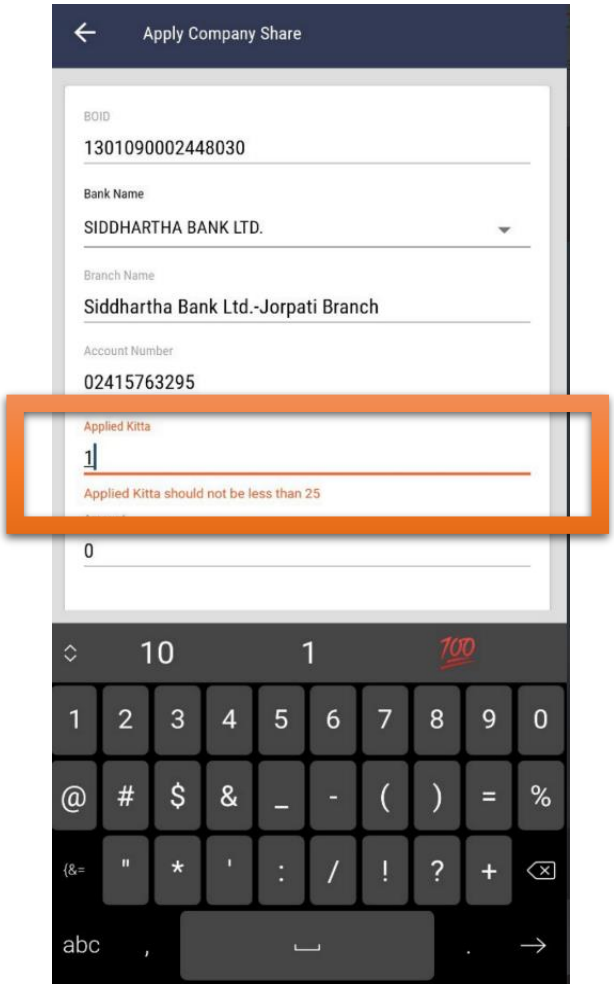


Figure 21: Highlighted error box

f. Permit easy reversal of actions

Designers should aspire to provide the ability to undo the errors done by the users. These reversals should be allowed in different ways, whether after a single operation, a data entry or a whole series of acts. According to Schneiderman, the feature helped in relieved anxiety as the user is informed that the action can be reversed and thus helps in exploration of unfamiliar options. Users should be able to return to the previous step and not the starting point of the application.

- Implementation in Nagarik app

Once the PAN card details and the education certificate details are linked into the application, it is extremely easy to unlink it with the icon on the top right corner. If, for some reason, user decides on unlinking all their details, it is possible in a painless way.

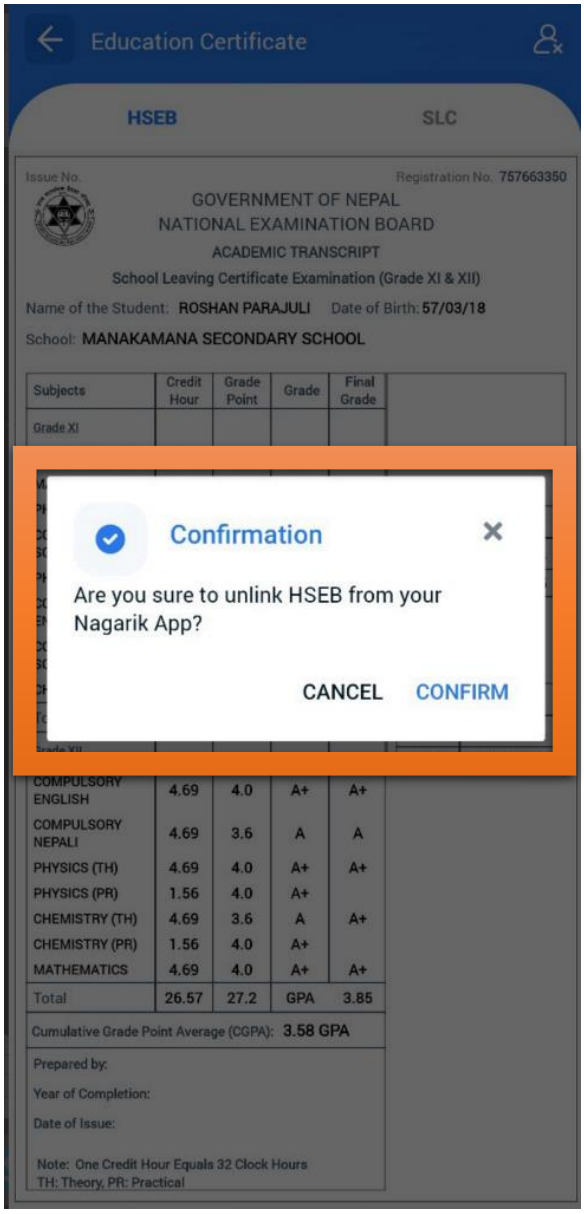


Figure 22: Confirmation dialogue

- <u>Implementation in meroshare application</u>

Meroshare application has a few to no options for the reversal of actions. There is no way of cancelling the filled-up IPO. That is very likely to frustrate a user if they decide to change their plans and reverse their actions through the application. However, in a few places there are options to cancel a process if realized before it starts. In the following picture, users have the ability to go back to the previous page if they decide on not applying for a company share.

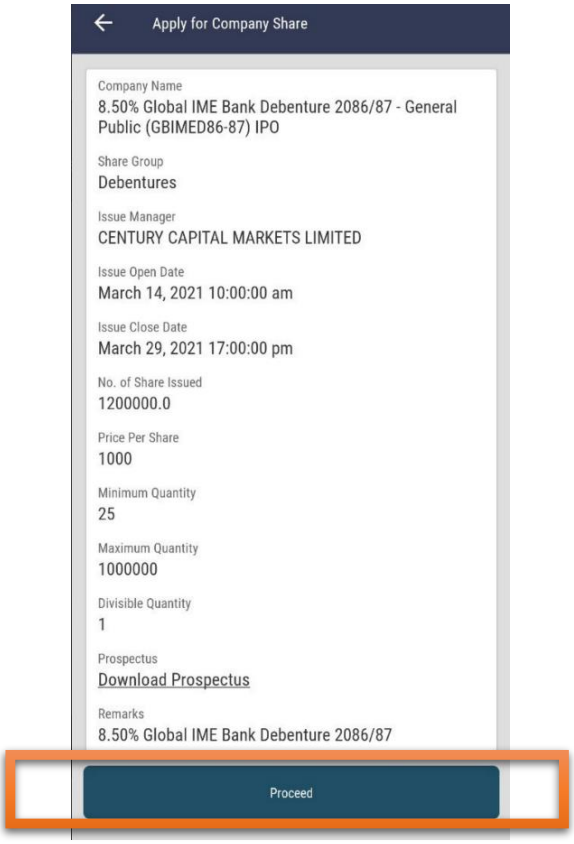


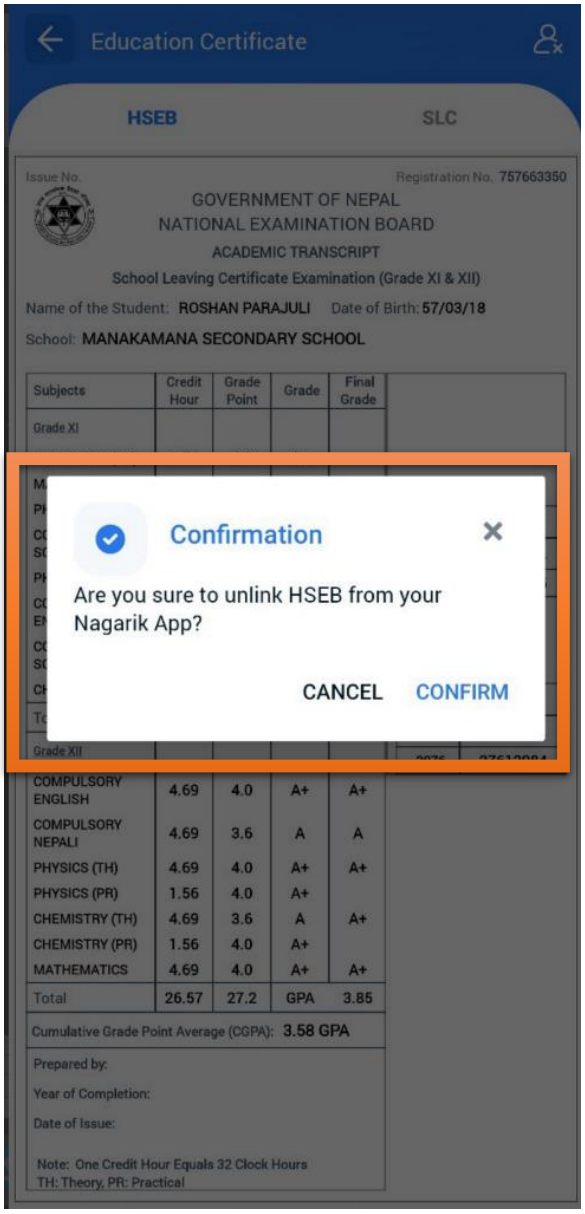
Figure 23: Confirmation page

g. Support internal locus of control

Users should be the activity initiators in an application. The design of the application is to be done in such a way that the trust of the userbase is earned and this comes true only when the system behaves as they expect. Users should be provided assurance as if they are the central and the most prominent part of the application.

- Implementation in Nagarik app

The following permission/confirmation dialogue on the Nagarik app tends to make the users of the application the initiators of actions and not the responders to actions. Experienced users can feel as if they are in charge of the interface and that the interface does respond to their actions.



- Implementation in meroshare application

The application is very bad in terms of handling the internal locus of control. There is no way of customization and users have to deal with what is provided to them. There is no sense of freedom and confidence as it is very difficult to undo an action. Users are mostly stuck and frustrated with the lack of control they have over the application which affects a lot in terms of usability.

h. Reduce short-term memory load

Since the short-term memory is not able to hold a lot of information at once, the users of the application might get easily frustrated if the memory is overloaded. The applications should also follow the principle of recognition over

recall since recognizing something is always easier than recalling to get a certain task done.

- Implementation in Nagarik app

Figure 24: Homepage

The homepage has a very simple grid layout on the application and it does not look cluttered at all. All the services provided in the application are present on a single screen and for visual purposes the images are also present which justifies its function upon being pressed. It helps in promoting the recognition part in an application rather than recall and the users do not have to memorize the steps to perform a simple application.

- Implementation in meroshare application

Mero share requires recognition more than recall. The process of doing a simple task is accompanied by following a lot of smaller steps. The hidden

submenus inside menus make it a difficult job for an average user to find the specific functionality they are looking for. In the following picture, four hidden submenus were present inside the main menu and the screen it follows is even more difficult for the user to follow because of the complicated jargons it offers.

Figure 25: Submenu inside menu

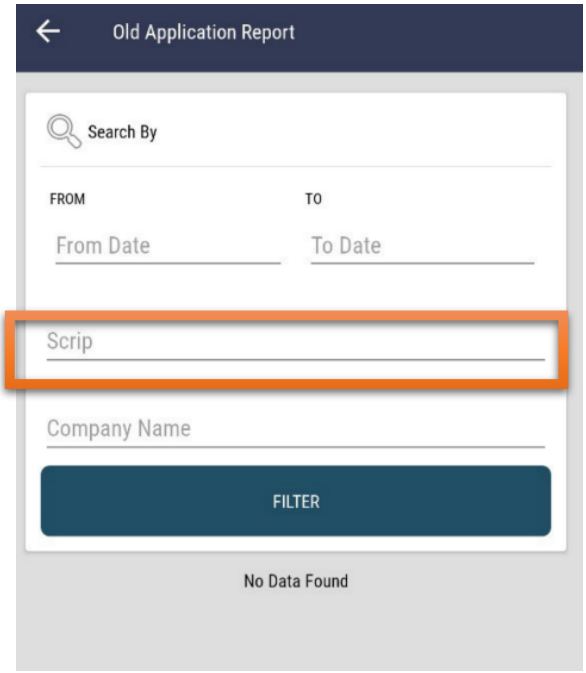


Figure 26: Application Report page

3.2. Analysis based on Jakob Nielsen's 10 Usability Heuristics for User Interface Design

a. Visibility of system status

With the right suggestions, the design should still keep users up to date about what is happening. When users know the device state of their previous contacts, they will learn the results and decide the next steps. Predictable experiences generate trust in both the product and the brand.

- Implementation in Nagarik app

While a certain task is being performed, Nagarik app does show a loading screen but not the exact phase it currently resides in. An image on during the app fetching the data from the server is presented below. The header of the page shows the current place where the user actively is in.

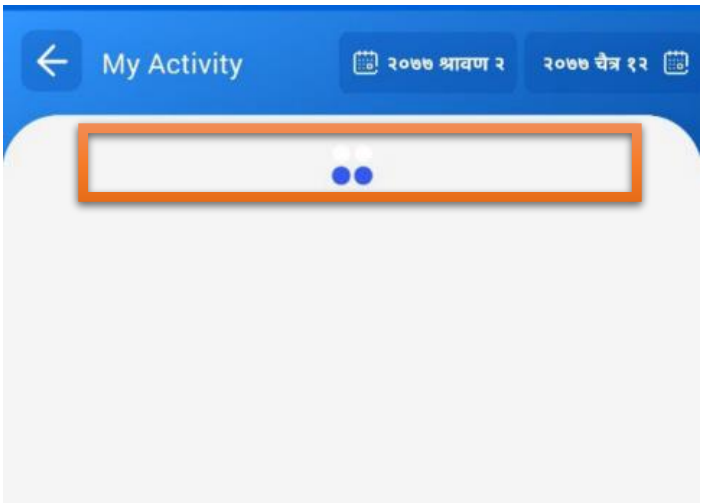


Figure 27: Loading screen

- Implementation in meroshare application

When a search function is executed in the meroshare application, a dialogue box appears with a message "Requesting" as shown in the picture below. Similar with the Nagarik app, the header of this application also portrays in

which page the user is currently in. The message on the dialogue box is similar throughout the application no matter which operation is being performed.

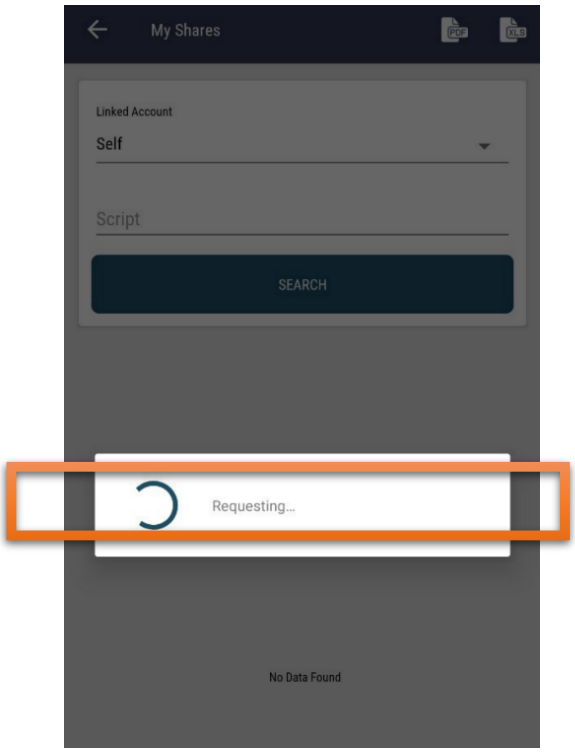


Figure 28: Requesting screen

b. Match between system and the real world

The application design must speak the language of the user. Using user-friendly vocabulary, sentences, and definitions, instead of internal jargon. Real-world norms should be followed which have a natural and logical structure for facts.

- Implementation in Nagarik app

The icons in the bottom panel of the Nagarik app matches to that of the real world to some extent. The dashboard's icon resembles a home icon and it is the homepage of the application. However, the middle icon looks like a help and support icon but actually is the notification icon. Normally, a bell would be used. The profile icon is also a standard icon used in most mobile applications. Although, instead of dashboard, 'Home' would be a better word choice in this scenario.

Figure 29: Bottom panel

In the “My Activity” page, the use of jargon is present. The jargons highlighted in the screenshot would not help to build an experience that feels intuitive.

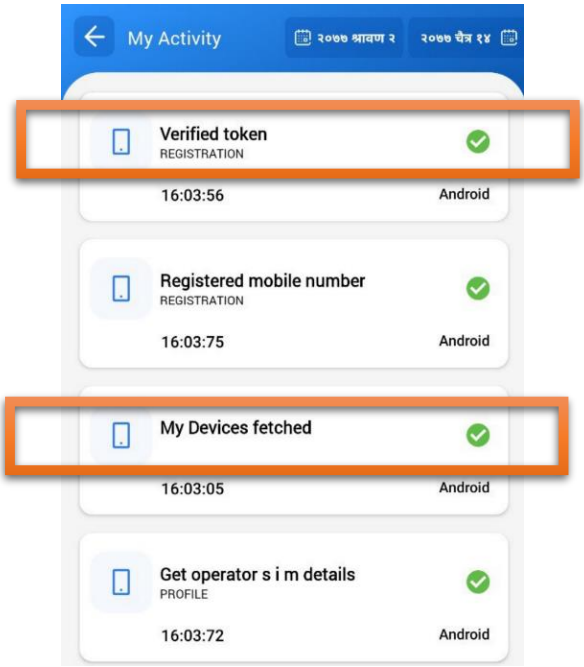


Figure 30: Activity page

- Implementation in meroshare application

  The icons in the sidebar of the application also resembles to that of the real world. The use of jargons in the side is little due to which it is easier for all the people with knowledge on Nepalese Capital Market.

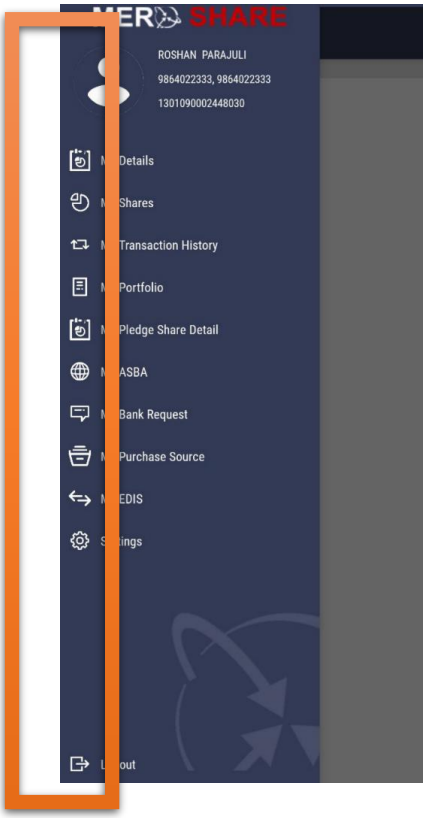


Figure 31: Sidebar layout

c. User control and freedom

User control and freedom encourages a sense of independence and trust whether it is convenient for people to back a procedure or reverse an action. Exits encourage users to stay controlled and prevent themselves from being trapped and irritated.

- Implementation in Nagarik app

  Below is Nagarik App checking if the unlinked button was clicked by mistake. If there was no prompt, the process of linking it might have been tedious.

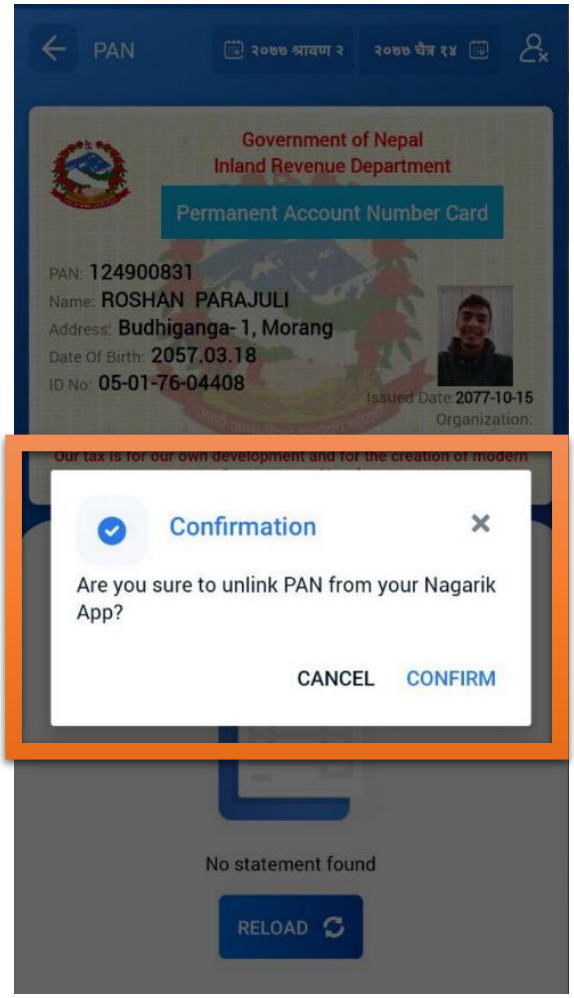


Figure 32: Permission dialogue

- Implementation in meroshare application

When the apply button is clicked in the “Apply for Issue” page in mero share application, it shows the details of the opened IOP to confirm where it meets the users need and demand or not. It provides sufficient information before forwarding the request to the respective banks.

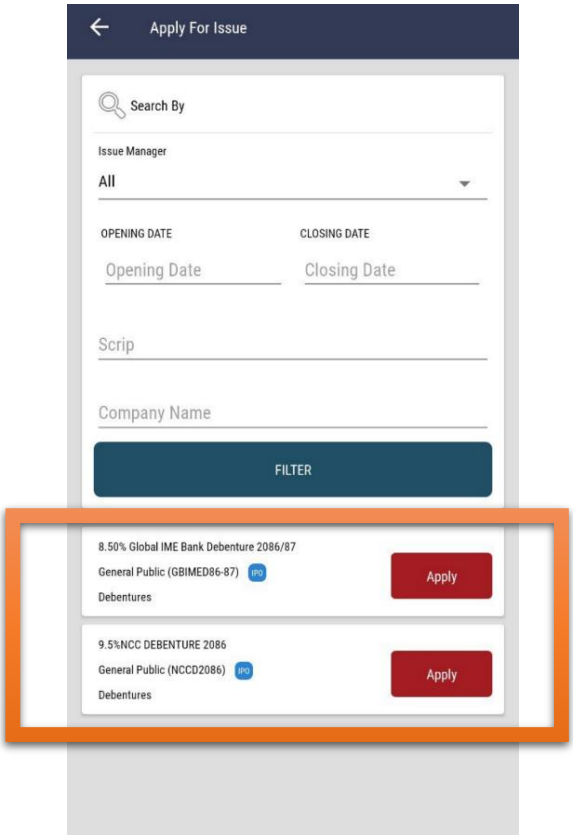


Figure 33: Apply for issue page

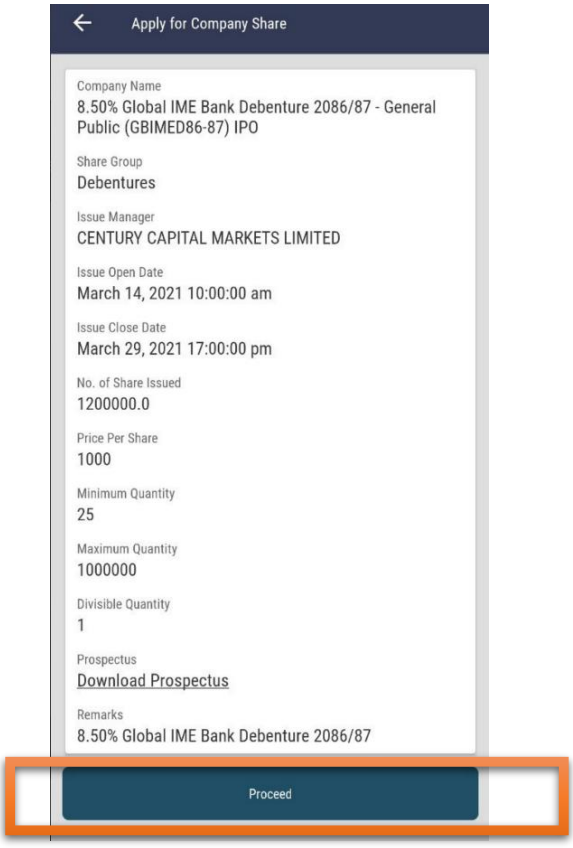
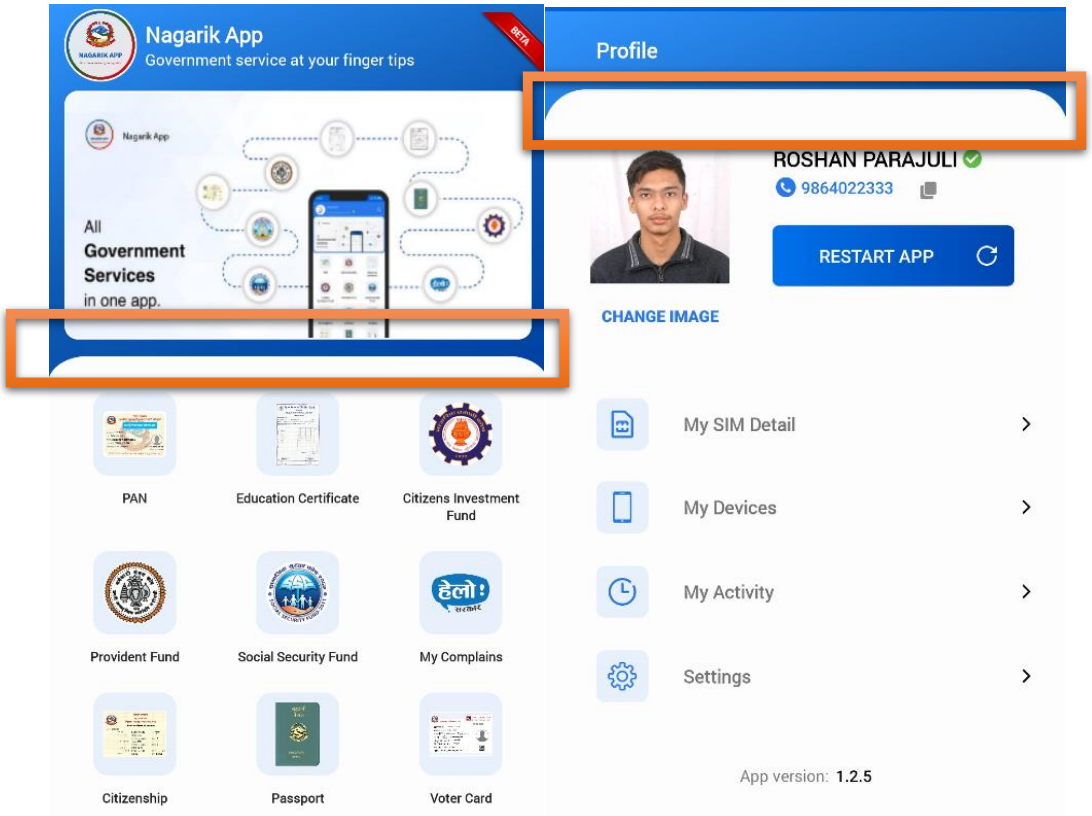


Figure 34: Confirmation page

d. Consistency and standards

For comparable cases, designing the consistent interfaces involves having the same design patterns and similar action sequences. Users need to be able to apply their experience from one click to the next without having to learn new representations for the same behavior. Information is communicated in a consistent manner. The application should follow platform and industry conventions.

- Implementation in Nagarik app

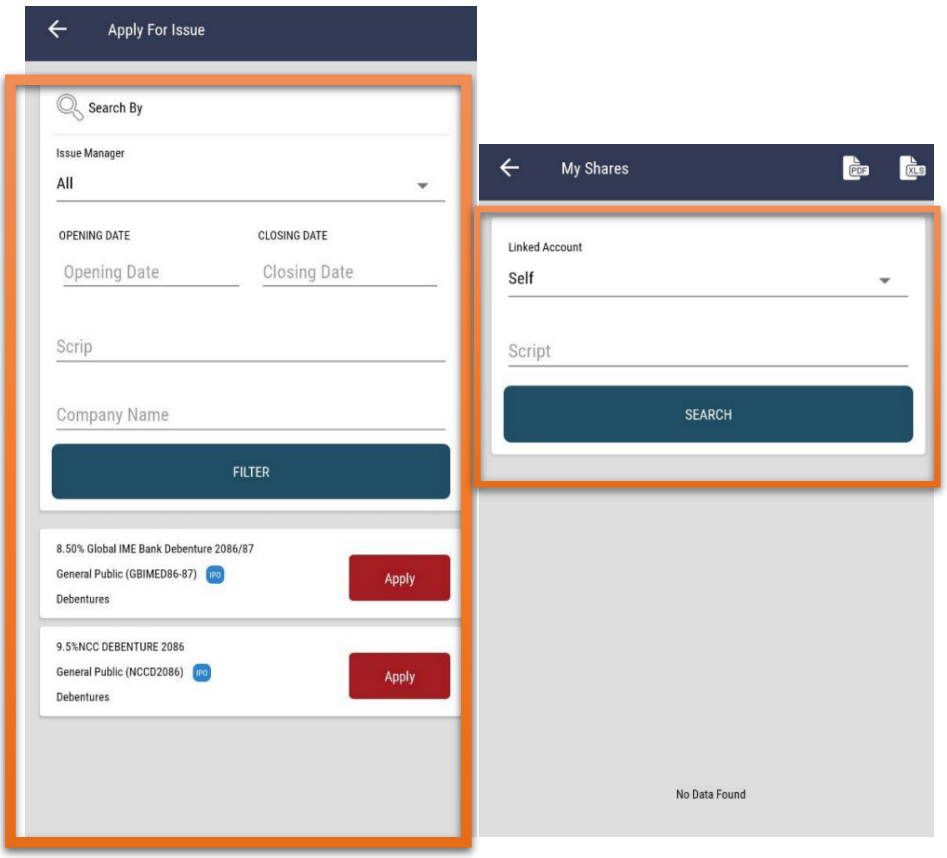


The color palette used throughout the application is consistent. Different color schemes on different pages of the app would have contributed to the interface being inconsistent. Also, the button layout which is shown in the pictures below is similar everywhere. The buttons too, to match the overall UI of the system are of the same gradient colors with a slight border radius. The icons relating to the sim details, device details, activity and settings

follow industry conventions and is enough to interpret what they do just by looking at them.

- Implementation in meroshare application

Meroshare application is consistent as well in the sense that any user who is used to the mobile interface can easily adapt to the web interface because of its similarity. However, the fonts on the two interfaces are different but it still is consistent throughout each interface. The icons visually justify the tasks they perform upon being pressed which follows the rule of standardization. Not only between the different interfaces, the consistency in terms of color schemes, themes is present in the mobile application.



e. Error prevention

Good error signals are essential, but first and foremost, the best designs avoid problems. Either the requirements that are susceptible to errors should be

prevented, or they should be searched and provided a validation choice to users before committing.

- Implementation in Nagarik app

Error prevention is also existent in Nagarik app as during the process of filling forms the app does not let the user type the irrelevant information. The fields that require numerical values cannot be populated by other alphabets and special characters.

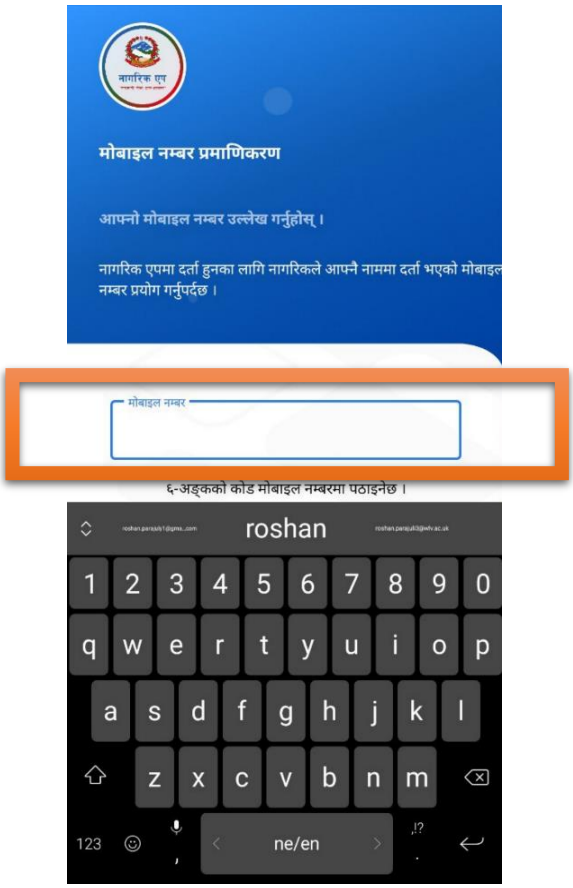


Figure 35: Phone number authentication page

- Implementation in meroshare application

In the application, while filling up the form, error prevention can be seen as it highlights the boxes with errors and lets users know about the error that they already made or are going to make. This helps users to quickly notify what errors they made and what they need to follow to correct it in an efficient way.

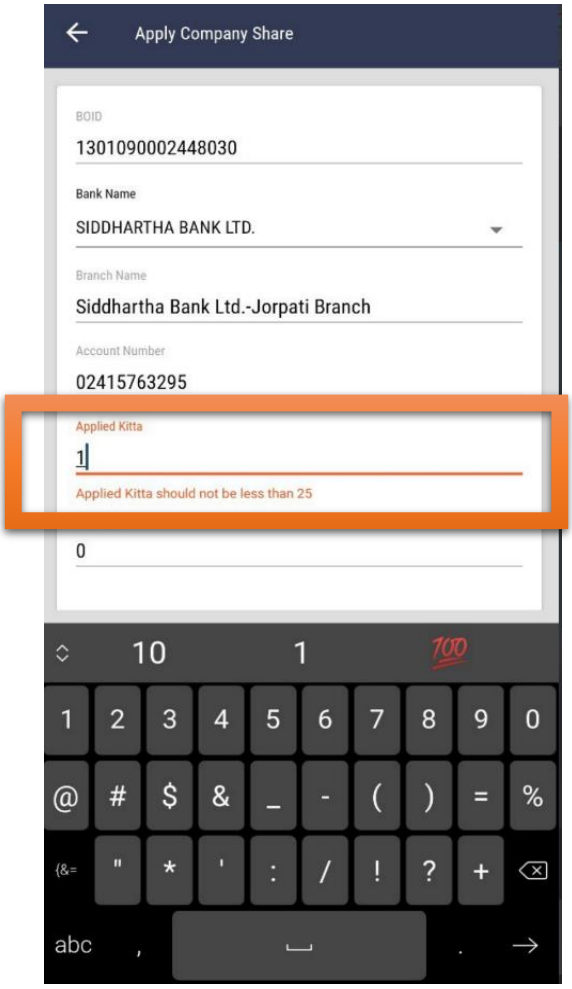


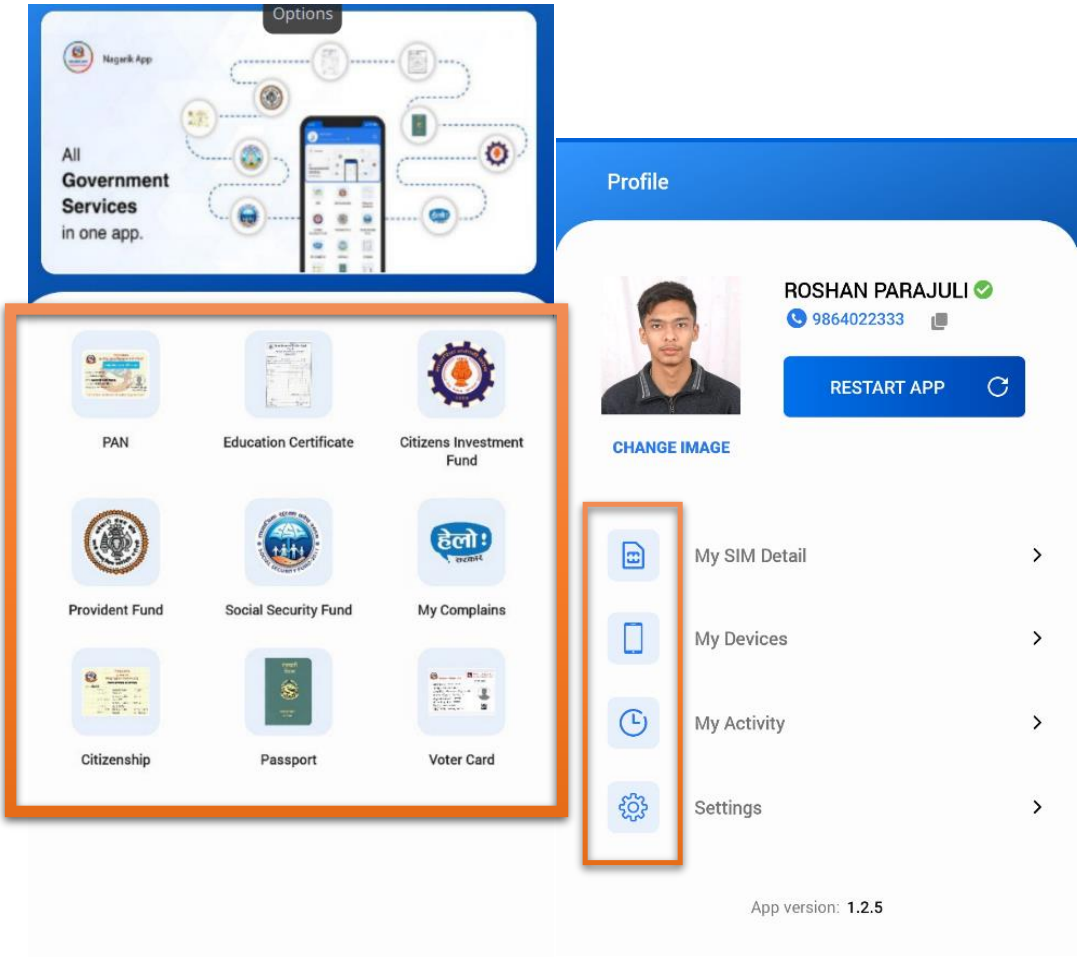
Figure 36: Apply for Share page

f. Recognition rather than recall

The memory load of the user should be reduced by rendering recognizable elements, behaviors and choices. It is not necessary for the user to recall details from part to part of an app. Important information should be noticeable or readily retrievable. Since the short-term memory is not able to hold a lot of information at once, the users of the application might get easily frustrated if the memory is overloaded. The applications should also follow the principle of recognition over recall since recognizing something is always easier than recalling to get a certain task done.

- Implementation in Nagarik app

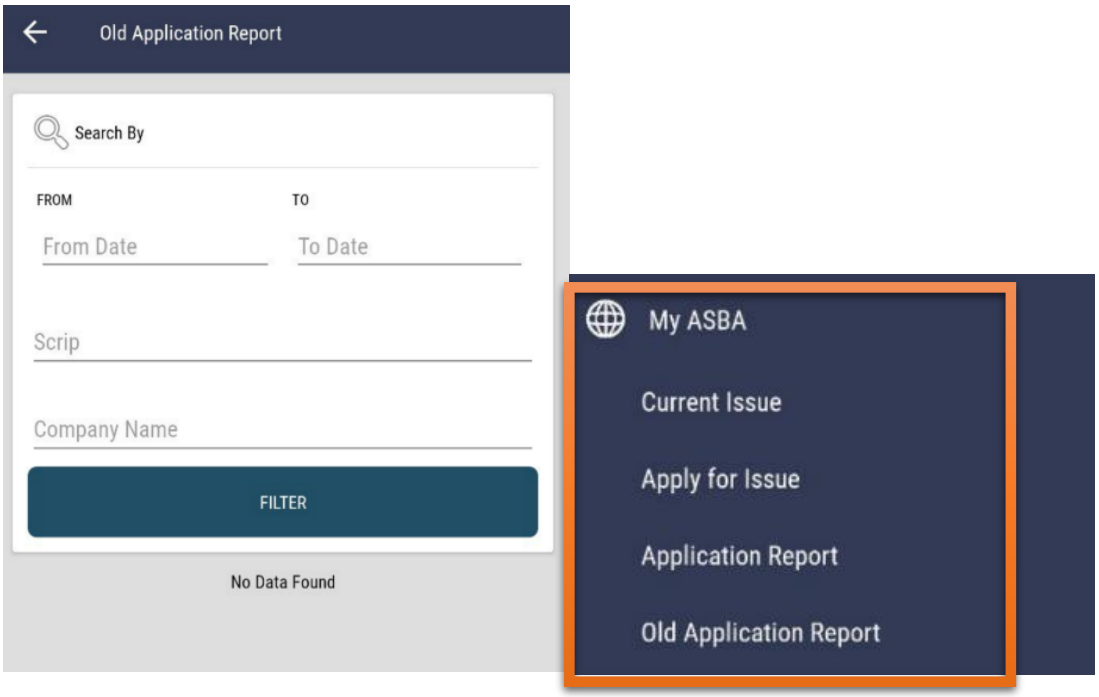
The homepage of the Nagarik app contains the services that the application intends to provide on a single screen effectively and for visual purposes the images are also present which justifies its function upon being pressed. It helps in promoting the recognition part in an application rather than recall and the users do not have to memorize the steps to perform a simple application and get lost inside the application and get lost inside the application.



- Implementation in meroshare application

Mero share requires recognition more than recall. The process of doing a simple task is accompanied by following a lot of smaller steps. A similar functionality is distributed between different submenus which makes it difficult to find the one that is actually the user is looking for. In the following picture, four hidden submenus were present inside the main menu and the screen it

follows is even more difficult for the user to follow because of the complicated jargons it offers.



g. Flexibility and efficiency of use

Inexperienced and experienced users both can benefit from a design which is loaded with shortcuts, hidden from novice users but useful for expert user to speed up the interaction for the expert user. Users should be allowed to customize common actions.

- Implementation in Nagarik app

  Nagarik app uses shortcuts in the navigation bar below to help quickly move between the required pages.

- Implementation in meroshare application

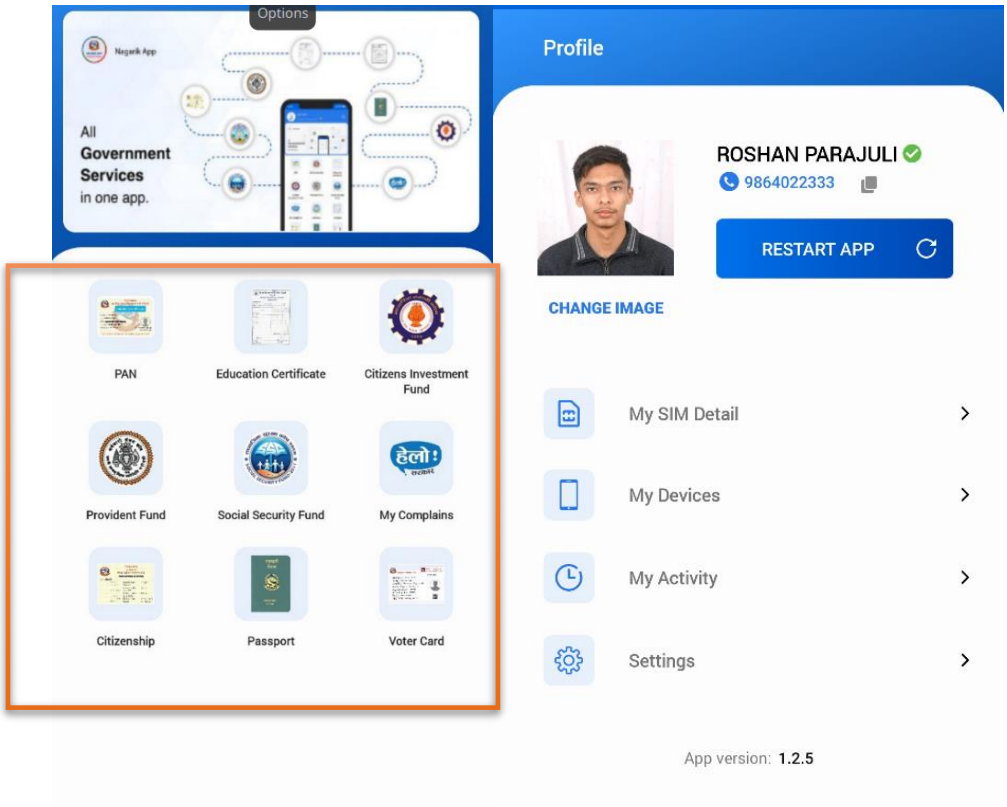
  No shortcuts are found on meroshare application expect for the sidebar it has.

h. Aesthetic and minimalist design

The information should not be cluttered with the information that is rarely used and is unimportant. Any external data unit in an interface competes and decreases the relative visibility of the relevant units of information.

- Implementation in Nagarik app

The design of Nagarik app is very minimalist in the sense that only the important information is shown in the interface. The use of whitespace and the organization of pictures, menus, navigation looks very aesthetically pleasing to the eyes. It is neither riddled with all of the unnecessary information and details nor looks so empty that users might feel something is missing.



- Implementation in meroshare application

This application shows all of the services in its sidebar regardless of its importance. Most of the menu items are not used by the majority of

customers and could have easily been shifted into a subcategory called advanced menu items or something similar.

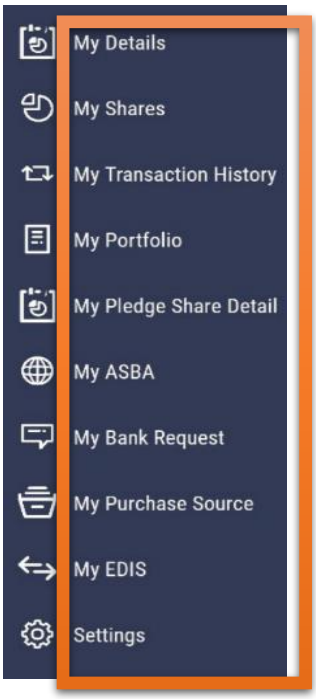


Figure 37: Sidebar menus

i. Help users recognize, diagnose, and recover from errors

The treatment of errors has a major effect on usability. Bad error handling coupled with a confusing error messages can even frustate users and lead them to quit an app. It should not be assumed that the user is too technical to detect mistakes. The errors should be human readable and presented in plain English. Each error message should contain what is wrong and the procedures to solve the problem.

- Implementation in Nagarik app

Nagarik app has a very well explained errors which are very human readable and does not involve any jargons. The informative errors provides details about the things that went wrong and the mitigating measures.

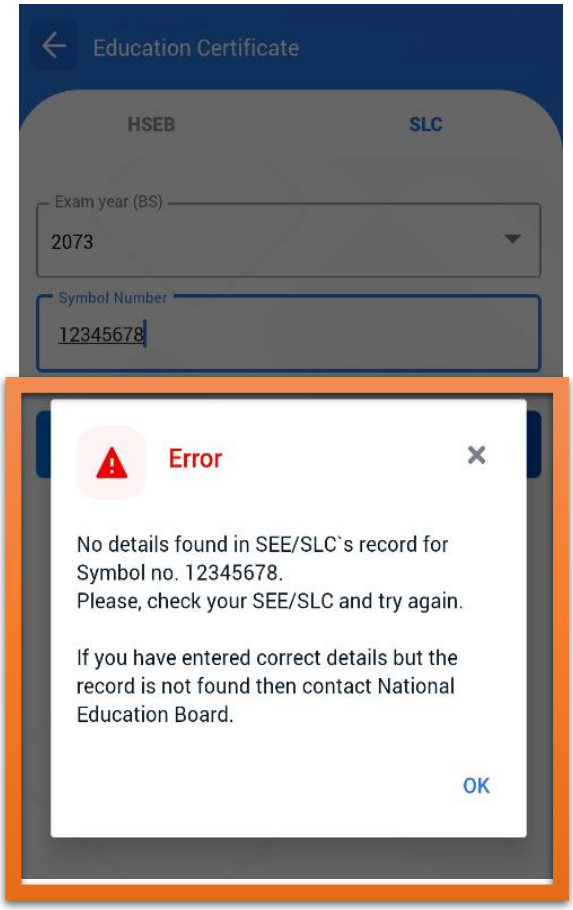
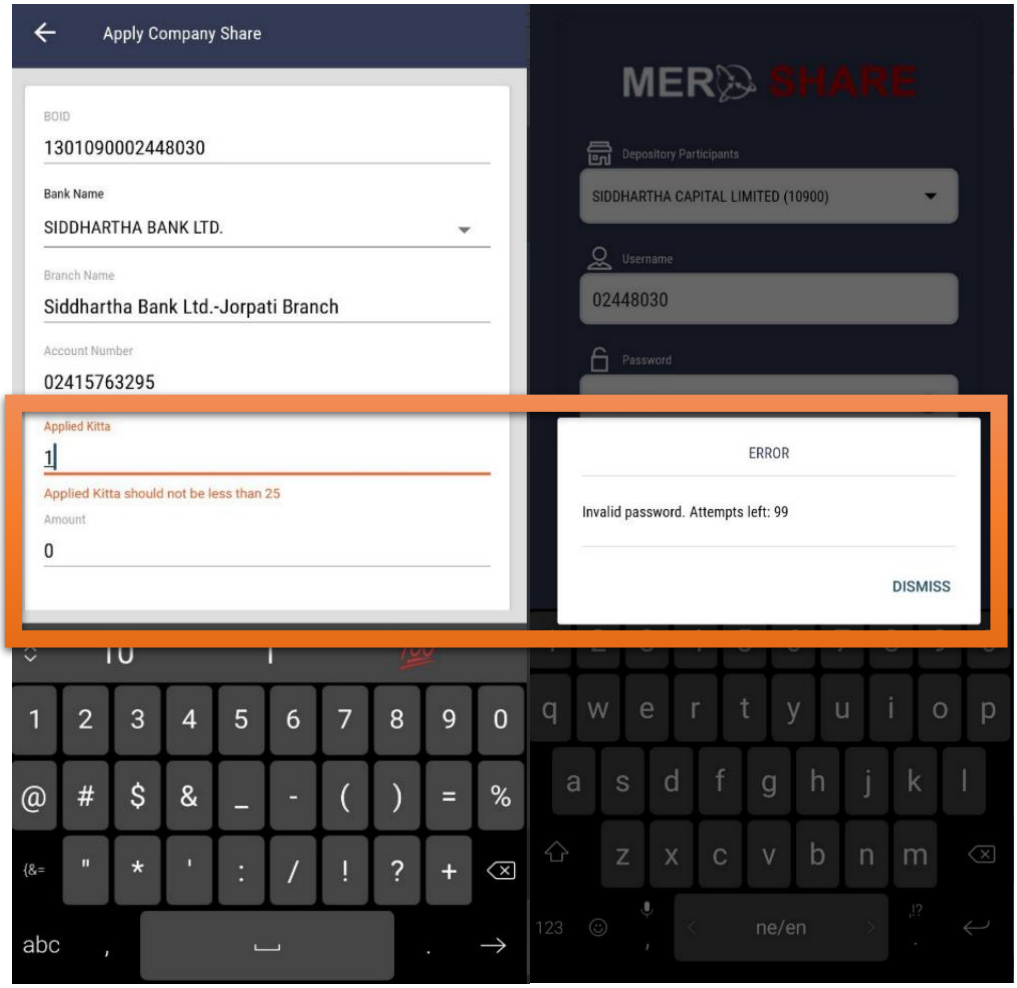


Figure 38: Symbol number error

- Implementation in meroshare application

The application is very bad at recognizing, diagnosing and recovering from errors once its is done. Most times it would show a complicated error message and it takes a lot of attempts to get a proper error message as shown in the first picture. In case if a user forgets their password, there is no way of resetting it with the app without logging in which would cause a user too much hassle because there are no intuitive step-by-step instructions to solve the problem. In some of the fields especially while filling up the form error handling is much better as it highlights the boxes with errors and lets users know about the error that they already made or are going to make.



j. Help and documentation

Every user is not technical enough to learn all the required functionalities. That is why people might need guidance on performing certain tasks and help and documentation would greatly help in doing so.

- Implementation in Nagarik app

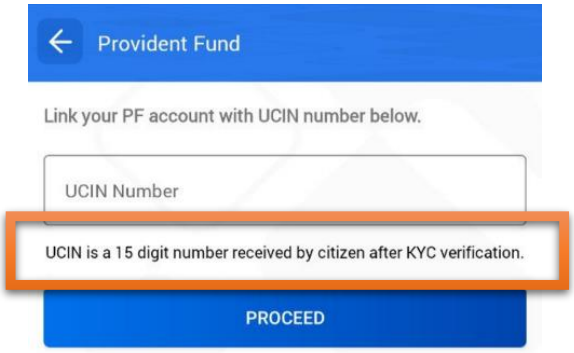


Figure 39: Provident fund page

Although the application does not have a documentation page integrated inside the app itself but it does provide information with the intent of helping them on what they are about to do. In the above screenshot, the intent of he user is to link their provident fund account to the app itself and for that the UCIN number is required. The application clearly defines what a UCIN number is if in case the user was unable to understand the term that has been used.

- Implementation in meroshare application

Mero Share application neither has a proper documentation nor a little guidance on how the app is to be used. The use of complicated jargons without explaining what they actually are will definitely frustrate user. In the picture below, the user wants to check which shares he has applied to. Despite being the only one account logged in, linked account field is empty. Not only that, the input field below it with the text “Script” confuses users even more since people with (or without) technical knowledge might also find the term confusing and not understand what it is intended for.

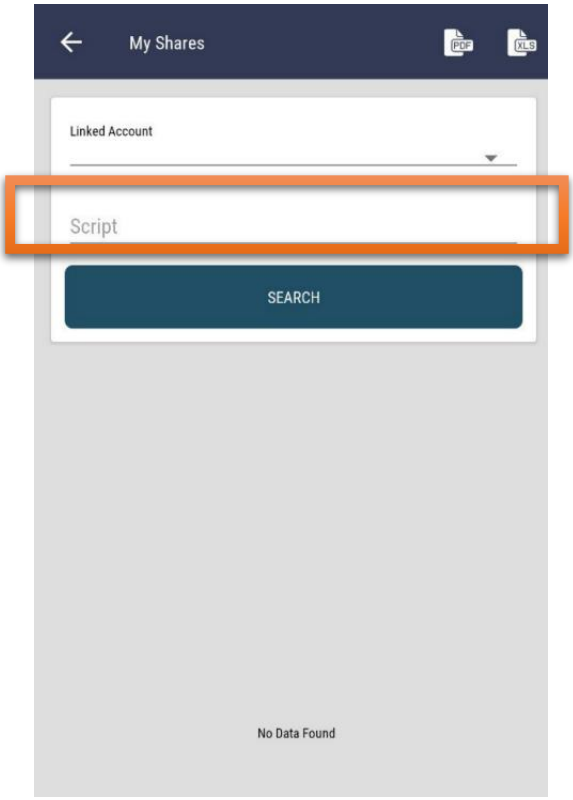


Figure 40: My shares page

4. Conclusion

Analyzing the usability of the Nagarik App and the mero share application, it can be concluded that although Nagarik has a limited amount of features, the application is very far ahead of the other in terms of usability. By no means, Nagarik app is a perfect application to showcase usability; It is filled with a lot of flaws but it fulfills mostly every rules of usability. Nagarik App even follows most of the attributes in the MAUEM usability model including efficiency, effectiveness, satisfaction, learnability, memorability, errors, cognitive load, interruptablity, and simplicity. On the other hand, Mero Share application seems to have been developed without thinking about usability at all. It is a very unfinished product made just to get a job done by hooks or by crooks.

Both the apps were very bad in terms of accessibility-wise. Constant occurrence of errors without the appropriate error message keeping users wondering what went wrong was the worst issue that had to be faced. In addition to that, use of jargons and technical terms in error messages which the normal user had no idea about was a very big design flaw that hampered a lot in the context of usability. During an execution of a certain task, user mostly had no idea of their current placement in the application. The most prominent issue of all that is anxiety inducing was being unable to reverse the actions after performing them once. Other than that, users were not granted overall control over the applications and it felt as if the user was actually the product and not the application.

The absence of accessibility features and the user control features are the ones which I feel should have been prioritized more. And the similar features will be kept in mind while I develop an application on my own. The easiest issue to solve could have been showing proper error messages and informatic feedbacks to the user so that the user would not find the overall product overwhelming and it would also not account to a product with a very low learnability.

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