**UNIVERSITY OF WOLVERHAMPTON**

**7CC012 – Importance of User-Interface**

Table of Contents

[Abstract 3](#_Toc79530228)

[Introduction 4](#_Toc79530229)

[Literature Review 5](#_Toc79530230)

[Layout Components of the User Interface (UI) Designing: 5](#_Toc79530231)

[Types of mobile user interfaces: 5](#_Toc79530232)

[User Interface Design: 6](#_Toc79530233)

[Designing for different screen resolutions: 7](#_Toc79530234)

[Mobile Navigation Paradigms: 8](#_Toc79530235)

[Realization requirements of user interface for mobile applications: 8](#_Toc79530236)

[User Interface (UI) Design Effectiveness Factors: 10](#_Toc79530237)

[Comparison b/w Mobile App Design and Desktop App Design: 12](#_Toc79530238)

[Conclusion 15](#_Toc79530239)

[References 16](#_Toc79530240)

[Table 1: Comparison Table 1 12](#_Toc79530241)

[Table 2: Comparison Table 2 13](#_Toc79530242)

[Table 3: Comparison Table 3 13](#_Toc79530243)

[Table 4: Comparison Table 4 13](#_Toc79530244)

[Figure 1: Main Screen Resolutions of Mobile Devices 7](#_Toc79530245)

[Figure 2: Navigation Schemes for Mobile and Desktop Applications 8](#_Toc79530246)

# Abstract

The purpose of this report was to determine the best user interface effectiveness practice and protocol for the mobile application development process. In the application store, there are millions of applications are available. There are two different terms are available user experience (UX) and user interface (UI). Both things are quite different from each other. In today’s world, all well-known mobile applications have the integrity of user interface design. Mobile applications that are designed without using the services of user interface design lead to a failure to attract users. Nowadays users prefer to have attractive mobile applications with good interface design and ease of use. The component of user interface (UI) design is to be integrated with other components also like the look of the application, feel of the application, integral part of the application, and many more. Each component is associated with each other to provide the best user interface implementation to the mobile application development feature. The job of the user interface designer is to focus on the graphics designing of the application attractively and simply so that each user can easily understand the working aspect of the mobile application. An effective user interface (UI) design is the key to a successful mobile application.

This study will describe all possible aspects of the user interface design in mobile applications by considering it with real-world examples also. The importance of user interface (UI) design in both mobile and desktop applications has an impact. The approach of user interface (UI) in both mobile and desktop applications is quite different from each other. For each application to be successful an effective user interface design is very important to apply. For the development of the mobile application, the usability of the user interface (UI) provides the services of business goals, building brand name, improved brand reputation, and many more. All such components are associated with each other to provide the best experience to each user who will use the mobile applications. In this assignment, numerous approaches and effectiveness factors of the user interface (UI) design for both mobile and desktop applications will be defined. A comparative study analysis will be provided in this report so that the basic difference between the mobile user interface (UI) design and desktop user interface (UI) design can be analyzed. At last, the study will define the different designing patterns of both mobile application and desktop applications to create or define a basic difference between each process.

**Keywords:**

User interface (UI) design, prototype design, mobile application, desktop application, design evaluation.

# Introduction

Nowadays the usability of mobile has increasing effectively and this has become a more widespread feature used for many purposes. There are millions of applications are available on multiple mobile platforms like iOS, Android, and many more. Each mobile application has the integrity of user interface (UI) design to make this more reliable and attractive for each user to use. There are numerous advantages are available of integrating the user interface (UI) design into the development phase of the mobile application. The mobile devices provide the opportunity for the mobile learning approach to get associated with the two basic operations of user interface protocol. For integrating user interface (UI) design in the mobile application there are numerous approaches are available which will be defined in this report completely. An effective user interface (UI) design for an app is always a priority for all application owners. The process of an effective user interface designing process includes a well create planning so that the combination of attractive application management systems can be provided effectively. The customer support and maintenance service is the approach that is most widely used in the implementation of the user interface (UI) design in the development process of the mobile application.

# Literature Review

User interface (UI) design is the process that is used by designers to create an attractive UI design for computerized devices and software also. The main aim of User interface (UI) is to focus on creating simple and attractive interfaces for mobile and desktop-based applications. The basic aim of designers is to create an application that can be very easy to use for the user to understand. The concept of User interface (UI) design refers to the graphical interface design which has an impact on the implementation of the application management system. Three different components are available such as:

* Graphical user interface (GUIs)
* Voice-controlled interface (VUIs)
* Gesture-based interface (Bhandari U, 2017)

These three components are associated with each other to create an effective user interface design for mobile applications. The graphical user interface is one of the most important approaches which is most widely used in the mobile application and desktop application designing process. For handheld computing devices there are a variety of devices are available like mobile phones, personal digital assistants, and many more. The integrity of interface design in the mobile application has become very rich nowadays which has an impact on the application management system (Chang K, 2017). Voice-controlled devices used to be controlled over the voice signals of the user and a gesture-based interface is associated with the 3D design spaces through body touch motions. The development of the User interface (UI) design for the mobile devices, the desktop application has their limitations also which needs to be analyzed before initiating the user interface design protocol or user interface design methodology in the application development process.

## Layout Components of the User Interface (UI) Designing:

The layout components of the User interface (UI) design has numerous different segments and each segment has their unique way of designing protocol of the application features.

### Types of mobile user interfaces:

Numerous different types of mobile user interfaces are available such as:

* Graphical user interface (GUIs): The task of this mobile user interface is to take input from the users through numerous mobile or computer keyboards. This user interface design has a pointing method that reacts on the screen directly when the user makes any activity. This is one of the most important and must implement a type of user interface design in mobile applications (Punchoojit L, 2017).
* Web-based user interface: This type of user interface design directly accepts a user’s request and that request is to be transmitted to the webserver. The transmitted information is to be displayed on the mobile screen by using the mobile web browser. Due to the engagement of online activity and social media platforms the web-based user interface services are increasingly becoming a very common component in the implementation of effective user interface design for mobile applications.
* Gesture-based user interface design is used nowadays in each mobile application device like fingerprint-based gestures, eye scanner locking systems, and many more. The approach of the human-centric interaction-based process is used during the development phase of the mobile application because this is integrated with the application architecture which is very important to implement and define during this phase (Punchoojit L, 2017).
* Voice-centric user interface design protocol is one of the unique services which are now implementing in most mobile applications. The voice contracted user interface design allows the user to speak anything and that application will listen to that voice command to do their associated task.

### User Interface Design:

User interface design is the feature of designing computer appliance-based mobile applications, software development, desktop application development, and many more. The focus of the user interface design of graphical design is to make a product very simple and attractive so that the functionality integrated into the application can easily be used by the users. The main aspect of making an attractive design in the application is to make it understandable for the user to use. The appropriate usability of the user interface design component directly increases the effectiveness of the user interface designing part in the mobile applications (Ahmad K, 2018). The development of the user interface for the mobile application is a complete overall part of designing the ease of use architecture for the application, understandable for the user, to separate the learning design also. The role of a graphic designer is one of the most crucial parts because he has to decide the complete theme of the application that looks attractive and easy to use also. For developing an effective user interface design for the mobile application there are some iterative stages are available such as:

* Before initiating the user interface design integration part the first requirement is to identify the potential customer or target audience. The user interface design of the application is always based on the type of audience like some limited age group people, male audience, female audience, and many more. All such factors have an impact on the popularity of mobile applications (Almaiah M, 2019).
* Every mobile application has a purpose for development and the user interface design of the mobile application should be related as per their purpose so that people can easily understand the functionality of the application. In this case, the definition of functional requirements is required to define before starting the implementation phase of the mobile application. The functional requirement will be associated with the mobile application purpose and as per the application purpose, the graphical interface designing of the application will be created.
* The development of a navigation scheme for the mobile application is the third stage which is highly measured to be considered as one of the most important aspects. The navigation bar of the application consists of all icons and services information of the application so this should be related as per the application purpose and should be very attractive also by defining all services information (Ahmad K, 2018).
* Before initiating the actual user interface design process this is very important to create a prototype or wireframes of the application so that the designer or developer can get a basic idea about the application what how this mobile application should look like.
* The emulators testing is the approach that gives a basic overview of the designing part of the mobile application before developing that design. This is one of the most important features in which numerous aspects related to the prototype designing and emulators integration both are involved. All such processes use to be integrated before integrating or developing the actual mobile application.
* Usability testing is the approach which use to test the prototype with the functional requirement with real users of different forms.
* The development of the final version of the user interface includes all such previously defined components which help the actual application to build very easily. The development of the final version can have numerous changes also because wireframes are made just to get the basic idea about the application (Almaiah M, 2019).

### Designing for different screen resolutions:

The user interface development is very for personal computers comparatively mobile applications. Numerous reasons are there for this consideration such as:

* Personal computers support higher screen resolution
* The personal computer has a full-size keyboard which allows designers to integrate numerous additional functionality as well.
* The personal computer has the availability of a mouse as a pointing device for the user interface design process.

The integrity of support resolution can easily be categorized as a designing impact in mobile application and desktop application development. The range of pixels depends on the type of device on which the application is going to be developed. The approach of the web-based interface has the approach of development one solution which redirected to all possible recognition devices of the web-browser and this resolution device can implement additional recommendation also (Thinnukool O, 2017).

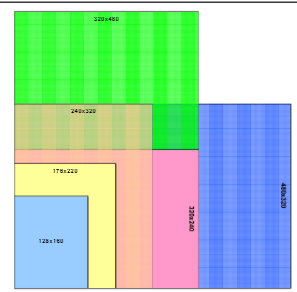


Figure 1: Main Screen Resolutions of Mobile Devices

The given image is about the main screen resolutions of mobile devices. During the development of graphical designs, all possible resolution sizes have been identified in figure 1. The approach of general mobile application feature by considering resolution development feature is also there which has been integrated with this figure.

### Mobile Navigation Paradigms:

In the process of mobile application development, the designing components are associated with the multiple navigation schemes which are to be applied during the development phase. The navigation schemes are also developed or created as per the types of devices and purpose of devices. The navigation is the first header of the mobile application which consist all possible services name provided by the application so this is very important to integrate the basic requirement process related to the application feature, ease of use and attractiveness also. The navigation integration for mobile applications and desktop applications has a different approach because of the resolution size (Sarkar S, 2020).

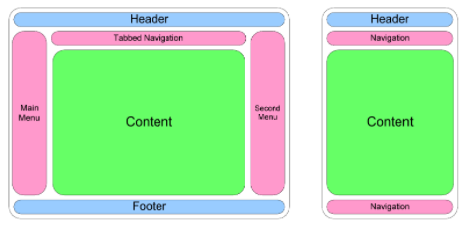


Figure 2: Navigation Schemes for Mobile and Desktop Applications

Figure 2, describing the navigation paradigms for both mobile applications and desktop applications like notebooks, PC, mobile, tablets, and many more. The navigation schemes are not applicable for mobile since they have a small screen. During the development of navigation systems, the availability of smartphones and their architecture information is required for getting the actual information about the mobile device. The orientation of the screen is to be considered into the account management functionality of the system for both mobile devices and desktop devices.

### Realization requirements of the user interface for mobile applications:

The realization requirements of a user interface for mobile applications can be categorized into three different approaches regarding the navigation process, the multimedia process, and the verification of the user’s knowledge.

**Regarding the navigation process:**

* While designing user interface interfaces for the mobile application the navigation should be intuitive and this should be located at the top and bottom of the screen. The navigation screen of the application should a constant at their place but the complete webpage should be in a movable format. The application feature is to be associated with the keyword-based approach in mobile applications (Sarkar S, 2020).
* To overcome the issue of re-visualization this is highly required to put the main screen and sub screen in different panels so that both the panels can work accordingly and appropriately. In the implementation of navigation schema, the navigation button should be large so that the user can easily see that. To provide an effective touch screen integration module the navigation button should be large.
* While developing user interface design for the mobile application the navigation elements should be in a visualized manner for all possible mobile devices with different screen resolutions. The effectiveness of multiple screen resolution should be incorporated with mobile device integration. There are several options are available for resolution integration in the user interface design of the mobile device that should be integrated effectively to define the best resolution practice (Sarkar S, 2020).

**Regarding the multimedia elements:**

* In the implementation of user interface design in the mobile application the multimedia elements have an impact which is one of the most important concerns in the application protocol. The screen resolution is one of the most important features in this process which is required for performing the multimedia elements operation in mobile applications.
* The font size changes are to be provided in user interface design for creating an effective design interface for the application. This process will allow changing the design at any point in time by utilizing the services of text font-based modules. The graphic image sizes should be consistent as per the screen size to make a strong and effective user interface design. The designing part should be related to the mobile device screen size which is one of the most important aspects (Chauhan S, 2020).
* While creating a graphical design for the mobile this is important to keep the separate graphic from the text so that both the div section cannot be inter-joined with each other. This is one of the most important things that should be taken carried out by the graphic designer. The video and audio integration is the main aspect of multimedia elements which is very important for the user to watch on mobile and this is the responsibility of the designers to take care of these things. The coding style for both audio and video should be associated with a single screen to maintain the effectiveness of the mobile application.

**Regarding the verification of user’s knowledge:**

During the testing process, this is very important to keep both questions and answer task in a separate screen so that both the screen can’t be added on a single screen. This is very important because there are numerous multiscreen variables will be integrated during the development phase in this mobile application and each variable will be interconnected with the numerous object of the application protocol. Each protocol of the graphical design should be correct and provide effective knowledge to the user (Chauhan S, 2020). The multiple-choice objective type questions are also required to open in a separate screen which is a great design principle. Because a user can easily understand that the next screen will contain the different coding aspects related to the application architecture module. During the testing phase each phase of the user interfaces like layout, feel, ease of use and many more things will be tested and on that testing phase, all the things will work perfectly if the screen of the user’s variable is interconnected to the each other and has the component of separate screen value.

## User Interface (UI) Design Effectiveness Factors:

The user interface (UI) design has an impact on the mobile application development approach and there are numerous aspects are available regarding this same. The component of user interface and user experience are both different forms each other but have an impact on the mobile application development process. Several factors are there which can impact the effectiveness of the mobile application development feature by using the component of the user interface (UI) design protocol. Each factor is associated with each other to provide the best and effective mobile application features for multiple platform services (Nikou S, 2017). Before initiating the user interface (UI) design of the mobile application this is very important to find out that what is the main area of the process of the mobile application and what are the basic functional requirements are there for defining the mobile application development feature. After collecting all such possible resources the development phase of the mobile application can easily be started. Some of the basic factors are there for increasing the effectiveness of the user interface design component in mobile applications such as:

* Latest design and speed
* Animated illustrations
* Responsive colors
* Voice user-interface
* Artificial intelligence
* Video content
* The rich quality of content

All such factors are very important during the implementation process of the user interface design in the mobile application development process. Each factor is associated with each other and providing the best solution for the graphical user interface features. All such components have an impact on the effectiveness of the mobile application and each mobile application is dependent on all such factors. Nowadays most mobile applications are having all such basic factors for providing the best user experience services to each user by implementing ease of use features also (Nikou S, 2017).

**Latest Design and Speed:**

In the development of the mobile application, this is very important to use trendy design feature in the user interface (UI) designing feature to attract the users. The working speed of the application should also be very fast because most of the users don’t want to waste their time login into the system again. So you should create a feature by which users don’t need to login into the system every time. This is called an effective designing feature in the mobile application. The mobile application should be having an interactive design so that each user can get an outstanding experience. The version of the application should be updated at a certain point in time and at that time there should be some minor changes also to be done in the user interface of the mobile application (Nikou S, 2017).

**Animated Illustrations:**

The development of mobile application always based on the effective usability of user interface (UI) design and the user interface design has numerous user interface implementation process which is not limited to just layout, video integration, audio integration and many more but the animation is also one of the most important segments in this phase which is very important to apply to make an effective mobile application design component. Most of the customers love to see graphics, animation, and other related content in the mobile application so that they can enjoy using that application. Each animation and graphic provides numerous advantages also and first thing is that this gives a user a good experience. The implementation of 2D and 3D animation feature is one of the most important features in this process and this is the responsibility of the graphic designer to implement each process related to animation and another component in the mobile application (Economides A, 2017). The usability of personalized graphic features is also one of the most important features which are most widely used nowadays in the application development feature. There are numerous mobile applications are available that are approaching the usability of animation very well like Instagram, Facebook, TIKTOK, and many more.

**Responsive Colors:**

The user interface (UI) design in the mobile application can be increased by using an effective and responsive color combination. The usability of color combination in the mobile application is very important to attract the user. The color combination should be very simple so that the users can see the content and written information very well. Nowadays all progressive businesses are using a lightweight color coding scheme in their application because this creates a positive environment and is easy to see for each user. One of the biggest examples of responsive color schemes in mobile applications is Amazon mobile app. The color-coding scheme of the Amazon mobile application is very simple by including an effective navigation bar also. Each content and information provided in the Amazon mobile application is very easy to understand for the user (Economides A, 2017).

**Voice user-interface:**

The popularity of virtual assistants is increasing day by day. Most people nowadays are depending on software like Alexa, Siri, and many more. The virtual assistant allows the user to just speak and the application does the things as per the received command. This is one of the most important factors of user interface design effectiveness in mobile applications. Most mobile applications are now having this software so that they can be associated with the user’s basic needs and can provide the best software solution as well. Implementing voice command software in the application allows the user to create an interactive environment with the user and mobile applications.

**Artificial Intelligence (AI):**

This is one of the most emerging technology nowadays and most business organizations are utilizing the services of artificial intelligence (AI) to increase the growth of their business. The services of artificial intelligence (AI) can be used in any application, product, software, and website. The usability of artificial intelligence (AI) in the mobile application makes the thing easier for the user and this is all every user wanted nowadays. The personalized experience-based services are to be provided by each mobile application nowadays which is one of the most impressive things (Economides A, 2017). Artificial intelligence (AI) can easily be associated with both user interface design and user experience software.

**Video Content:**

Most of the users want accurate information and that is the reason video content is increasing day by day in the mobile application. The impact of video content in mobile applications is providing effective and attractive software which is very important for that user who is fond of video content. A nicely designed video gives proper insight into the inner information of the video which is very important for the user to understand. The structure of video content should be placed nicely in the application user interface design so that other designing features can’t be affected by the video content part. Many companies today are implementing this video content feature into their mobile application like online platform-based organizations (Nikou S, 2017). They are utilizing the services of video content effectively in this application to give the proper information about the product. In the section of the product description, the video information about the product is also provided so that users can get the actual information about the product.

**Rich Quality of Content:**

When it comes to delivering an effective user experience the written content in the application feature should be very significant so that the user can get the actual information of the service provided by the mobile application. The quality of content has an impact on the effectiveness of mobile applications and this is associated with the user interface (UI) design section directly. This is the responsibility of the graphic designer to create a separate div section for the content information part so that other design can’t be hampered in the application management system (Nikou S, 2017).

## Comparison b/w Mobile App Design and Desktop App Design:

One of the major decisions enterprises take that whether they should go with the mobile application or desktop application is a very crucial aspect. Both mobile application design and desktop application design have features and services which are quite different from each other. The user interface (UI) design of the mobile application and desktop application is also totally different from each other. There are some very big differences between such as:

**Screen Size:**

|  |  |
| --- | --- |
| Desktop | Mobile |
| The screen size of the desktop is large. | The screen size of the mobile is small. |
| While developing a desktop application there are many opportunities and scopes are available to add more features and stuff. The screen size affects the aspect of the application designing especially the navigation part. The desktop application can support the feature of fixed navigation which is one of the most useful and attractive features. | The mobile application has a smaller sizer as compared to the desktop application. The feature of fixed navigation is not there in the mobile application. For the menu section, there is only two standard technique known as hamburger and minimalism (Ibrahim D, 2021). |

Table 1: Comparison Table 1

**Interaction:**

|  |  |
| --- | --- |
| Desktop | Mobile |
| The desktop application has the feature of cursors interaction. | The mobile application has the feature of gestures interaction. |
| The desktop application can provide the full use of cursor interactivity for triggering anything in the web portal. | In the mobile application we can’t roll over on mobile apps but the service of infinite gesture is available in mobile applications. |
| The desktop application interaction provides the complete feature of an entire screen full of pictures with descriptive text only. | The integrity of fingerprint and swapping is provided by the mobile application if talking about interaction features. |

Table 2: Comparison Table 2

**Organizing Content:**

|  |  |
| --- | --- |
| Desktop | Mobile |
| The content in desktop applications is to be organized in columns. | The content in the mobile application is to be organized in scrolling, portrait, and landscape format. |
| In desktop applications, any content can appear in a multi-column format like print content, newspaper, and many more (Ibrahim D, 2021). | The scrolling-based content is to be provided in the mobile application which has the interaction functionality also into the application. The feasibility of portrait and landscape is also there if talking about organizing content in mobile applications. |

Table 3: Comparison Table 3

**Functionality:**

|  |  |
| --- | --- |
| Desktop | Mobile |
| Desktop application provides the functionality of the big task. | The mobile application provides experimental functionality. |
| Desktop application provides a longer task integrity feature into the application management system where each functionality is associated with the screen resolution-based feature. | The mobile application lacks multiple functionality features but for functionality, there are other services are available such as virtual reality, augmented reality, multiple cameras, and many more. |

Table 4: Comparison Table 4

The design of mobile applications is different from the design of desktop applications. The mobile application has the feature of tappable interaction and the desktop application has the feature of clickable interaction. The mobile application provided the dropdown menu where the desktop application provides the on-screen menu list. The navigation scheme of both mobile and desktop applications is completely different from each other that is one of the biggest aspects and difference of both the application management system. The difference in speed and trending design layout is also there in both mobile and desktop applications. Not all navigation or user interface design can implement in both applications this is one of the biggest drawbacks also of this. In this section, each possible piece of information about the comparison of mobile applications and desktop applications has been defined effectively by providing a table-based difference table.

# Conclusion

This report is providing complete information regarding the computing feature. The user interface design-based topic was selected for this report to complete. In the mobile application and desktop application, the usability of attractive user interface design is very important to implement and this report is all about describing all possible features regarding the same. In the literature review section, the complete information of the effectiveness of user interface design and multiple factors related to the designing feature has been successfully defined in this report. The comparisons between the mobile application and desktop application have also been derived completely for the given topic.

# References

* Bhandari, U., Neben, T., Chang, K. and Chua, W.Y., 2017. Effects of interface design factors on affective responses and quality evaluations in mobile applications. *Computers in Human Behavior*, *72*, pp.525-534.
* Punchoojit, L. and Hongwarittorrn, N., 2017. Usability studies on mobile user interface design patterns: a systematic literature review. *Advances in Human-Computer Interaction*, *2017*.
* Almaiah, M.A. and Alismaiel, O.A., 2019. Examination of factors influencing the use of mobile learning system: An empirical study. *Education and Information Technologies*, *24*(1), pp.885-909.
* Alsaleh, N. and Alnanih, R., 2019. Mapping Gamification Mechanisms to User Experience Factors for Designing User Interfaces. *Journal of Computer Science*, *15*, pp.736-744.
* Ahmad, A.K.A., Fuad, I.N.F.M., Abdullah, M. and Aziz, M.N.A., 2018. Design and evaluation of a mobile user Interface usability. *Idealogy Journal*, *3*(2), pp.119-128.
* Thinnukool, O. and Kongchouy, N., 2017. The user's satisfaction of graphic user interface in designing for health care mobile application. *Journal of Telecommunication, Electronic and Computer Engineering (JTEC)*, *9*(1-5), pp.11-15.
* Sarkar, S., Chauhan, S. and Khare, A., 2020. A meta-analysis of antecedents and consequences of trust in mobile commerce. *International Journal of Information Management*, *50*, pp.286-301.
* Lee, E.Y., Lee, S.B. and Jeon, Y.J.J., 2017. Factors influencing the behavioral intention to use food delivery apps. *Social Behavior and Personality: an international journal*, *45*(9), pp.1461-1473.
* Nikou, S.A. and Economides, A.A., 2017. Mobile-based assessment: Investigating the factors that influence behavioral intention to use. *Computers & Education*, *109*, pp.56-73.
* Yazid, M.A. and Jantan, A.H., 2017. User experience design (UXD) of mobile application: An implementation of a case study. *Journal of Telecommunication, Electronic and Computer Engineering (JTEC)*, *9*(3-3), pp.197-200.
* Sadiq, R.B., Cavus, N. and Ibrahim, D., 2021. Mobile application based on CCI standards to help children learn English as a foreign language. *Interactive Learning Environments*, *29*(3), pp.442-457.