

# The effect of applying the principles and considerations of smartphone applications interface design to improve user experience

**Dr. Abdel Nasser Ashour Aly Sayed Ahmed**

Assistant Professor of Graphic Design and Multimedia, Design Department  
Jeddah International College (JIC) Jeddah- Saudi Arabia

[a.nasser@JICollege.edu.sa](mailto:a.nasser@JICollege.edu.sa)

## **Abstract:**

Smartphone applications have become one of the indispensable interactive media for any governmental or private institution to communicate with targeted customers, as they play an essential role in our lives because of the services they provide that facilitate many things for us; two factors affect the effectiveness of the application: User interface UI, and User experience UX, which is the feelings of the user resulting from the experience of using it and interacting with the application, whether with satisfaction or dissatisfaction.

### **The research problem lies in trying to answer the following questions:**

Are there some applications in Egypt that need to be redesigned to improve the user experience?  
Does the non-application of the principles and foundations of designing the interface of smartphone applications affect the quality of service or the marketing of the product provided by the application?

What considerations should be considered when designing applications?

The importance of the research is due to the applications' role in supporting the service and investment activities that are increasing in numbers in the application store, and this increase coincides with the development of phone technology and the continuous updating of programs with the emergence of new professional tools for designing user interfaces. It is assumed that the design of application interfaces coincides with these updates and features to enhance the user experience and meet his needs, which motivates customers to use the service or product and interact with it.

The research aims to study the foundations and principles of application interface design to reach high-quality applications that address the customer and fulfill his needs.

Highlighting the considerations of interface design and user experience to produce successful applications that are well-designed and attractive to the public.

The research adopted the descriptive approach to collect data for a group of applications in the application store, study them, classify them, and analyze the data to reach the search results. The limits of research are limited to applications in Egypt and Saudi Arabia.

The researcher conducted a survey study that included many applications on the Apple App Store to study the extent to which the principles of interactive graphic design are applied to the user interface. The research results concluded that the survey showed a lack of knowledge of the basics and principles of application design among some of those in charge of producing applications. Therefore, it needs improvement and redesign.

**Keywords:**

Smartphone applications, user interface UI, user experience UX.

**ملخص البحث:**

أصبحت تطبيقات الهواتف الذكية من الوسائل التفاعلية التي لا غنى عنها لاي مؤسسة حكومية او اهلية للتواصل مع العملاء المستهدفين ، فهي تلعب دور هام في حياتنا لما تقدمه من خدمات تسهل علينا العديد من الامور كالخدمات الحكومية والتعليم والصحة والسياحة والبنوك والمواصلات والتسويق والمبيعات وكافة مجالات الحياة المختلفة ، وبالتالي اصبحت وسيلة هامة لاي مؤسسة او مشروع خاص لتحسين جودة خدمة العملاء ، وهناك عاملان يؤثران على فاعلية التطبيق العامل الاول تصميم واجهة المستخدم User Interface UI وهي الواجهة التي يراها المستخدم ويتفاعل معها عند استخدامه للتطبيق من تخطيط الصفحات والرسوم والصور والألوان فهي تركز على جمال التصميم وجاذبيته للمستخدم ، اما العامل الثاني فهو تجربة المستخدم User experience UX وهي مشاعر وأحاسيس المستخدم الناتجة عن تجربة استخدامه وتفاعله مع التطبيق سواء بالرضا أو بعدم الرضا ويعتمد هذا الشعور على طريقة التفاعل مع التطبيق مما يعني أن تجربة المستخدم قد تكون جيدة وقد تكون غير ذلك .

تتمثل مشكلة البحث في محاولة الإجابة عن الأسئلة التالية: هل يجب إعادة تصميم بعض التطبيقات في مصر لتحسين تجربة المستخدم؟ هل يؤثر عدم تطبيق مبادئ وأسس تصميم واجهة تطبيقات الهواتف الذكية على جودة الخدمة أو تسويق المنتج الذي يوفره التطبيق؟ ما هي الاعتبارات التي يجب مراعاتها عند تصميم التطبيقات؟ وترجع أهمية البحث للدور الذي تلعبه التطبيقات في دعم وتحسين وتسويق الأنشطة الخدمية والاستثمارية التي تتزايد اعدادها بمتجر التطبيقات والتي تغطي مختلف مجالات الحياة ويتزامن مع هذا الازدياد تطور تقنية الهواتف والتحديث المستمر للبرامج مع ظهور ادوات احترافية جديدة لتصميم واجهة المستخدم ومن المفترض ان يتواكب تصميم واجهات التطبيقات مع هذه التحديثات والمميزات لتعزيز تجربة المستخدم وتلبية احتياجاته مما يحفز العملاء على استخدام الخدمة او المنتج والتفاعل معه.

يهدف البحث إلى دراسة أسس ومبادئ تصميم واجهة التطبيق للوصول إلى تطبيقات عالية الجودة تخاطب العميل وتلبي احتياجاته

وتسليط الضوء على اعتبارات تصميم الواجهة وتجربة المستخدم لإنتاج تطبيقات ناجحة جيدة التصميم وجذابة للجمهور. واعتمد البحث المنهج الوصفي لجمع البيانات لمجموعة من التطبيقات الموجودة بمتجر التطبيقات ودراستها وتصنيفها وتحليل البيانات للوصول الى نتائج البحث، وتتحصر حدود البحث على التطبيقات الموجودة بمصر والمملكة العربية السعودية. أجرى الباحث دراسة استقصائية شملت العديد من التطبيقات على متجر تطبيقات آبل لدراسة مدى تطبيق مبادئ التصميم الجرافيكي التفاعلي على واجهة المستخدم ، وخلصت نتائج البحث إلى أن المسح أظهر نقص المعرفة بأساسيات ومبادئ تصميم التطبيق لدى بعض القائمين على إنتاج التطبيقات. لذلك تحتاج إلى تحسين وإعادة تصميم.

**الكلمات المفتاحية:**

تطبيقات الهواتف الذكية ، واجهة المستخدم ، تجربة المستخدم.

**The introduction:**

Electronic applications play an essential role in our daily life because of the services they provide that facilitate many life matters such as government services, education, health, tourism, banking, transportation, marketing, sales, and all different areas of life, and therefore it has become a necessity and an essential means for any institution, project or identity because it expresses the extent of interest in customers.

And with the tremendous technological development in phones, programs, and artificial intelligence, the phone and applications have become urgent and circulated matters for most users. At the same time, there is a desire for service providers and institutions to exploit this means of interaction and permanent presence with the target audience.

It is now easy to permanently communicate between service providers and users, even if the distances are far away and the languages differ. This requires continuous development and updating of these applications to suit users, companies, and institutions' different and renewable uses.

From the foregoing, it becomes clear to us the influential role played by smartphone applications and the extent to which individuals and companies need to create modern applications through which services and products are easily accessible, attractive to target groups, easy to use, and taking into account the user experience, which helps institutions in improving the quality of customer service as well as companies in marketing their products and services and attracting more new customers through the application with minimal effort and the least time consumed by the user.

From here comes this research to study the extent to which the rules and principles related to graphic and interactive design are applied to reach the best form that achieves the requirements of users and the goals of institutions in reaching and marketing their services and products to the target groups.

### **Research problem:**

The research problem lies in trying to answer the following questions:

- 1- Are there some applications in Egypt that need to be redesigned to improve the user experience?
- 2- Does the non-application of the principles and foundations of designing the interface of smartphone applications affect the quality of service or the marketing of the product provided by the application?
- 3- What considerations should be considered when designing applications?

### **The importance of the research:**

Electronic applications are essential in supporting and marketing services and investment activities. There is a continuous increase in the number of smartphone applications that appear in the application store, whether the Apple Store or Android, which cover various areas of life. This increase coincides with the development of phone technology updating programs. With the appearance of new professional tools for designing the user interface, the application interface design is supposed to keep pace with these updates and features to enhance the user experience and meet his needs, which motivates customers to use the product and interact with it.

### **Search goal:**

- 1- Studying the foundations and principles of application interface design to reach high-quality applications that address the customer and fulfill his needs.
- 2- Highlighting the considerations of interface design and user experience to produce successful applications that are well-designed and attractive to the public.

## Research Methodology:

The researcher follows the descriptive analytical approach by collecting data and information on the research subject, then classifying and analyzing this data and reaching the results.

### Research limits:

The study was conducted on the applications of the Arab Republic of Egypt and the Kingdom of Saudi Arabia, which are available on the Apple App Store and the MacOS operating system.

## First: the research terms:

### 1- Mobile Application (Mobile App)

They are programs designed to run on mobile phones or computers to provide users with services and information. There are two types of operating systems: Android, which downloads its applications from the Google Play Store, and the second system is MacOS for Apple and its smartphones, which downloads applications from the App Store. Most of the applications are available for both systems.

### 2- User Interface (UI)

It is the interface that the user sees and interacts with on the phone or computer screen through his use of applications and what it displays in terms of page layout, graphics, images, and colors. It focuses on the beauty of the design and its attractiveness to the user, Figure No. (1).

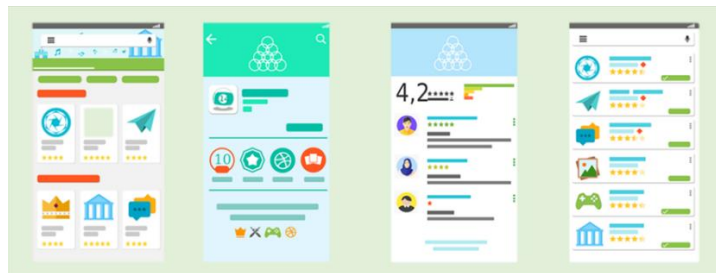


Figure No. (1) various models of user interface

### 3-User experience (UX)

They are the user's feelings and sensations when using and interacting with the application. Some factors affect the user experience, such as the user himself and his previous experiences, as well as the characteristics of the application, which means that the user experience may be good or not.

"User experience includes all aspects of an end user's interaction with a company and its services and products." Says Donald Norman, User Experience Architect. It is defined as how people think and feel when they use something, such as a product, service, or application. According to the definition of ISO 9241-210, user experience is the resulting or expected perceptions and responses when using a product, system, or service and is based on: Psychological aspect, usability, creation, design, and analysis. If users have a negative experience, they will not return. If they have a good experience with your application but a better experience with your competitors' application, they will return to this application instead of your application, Figure No. (2)

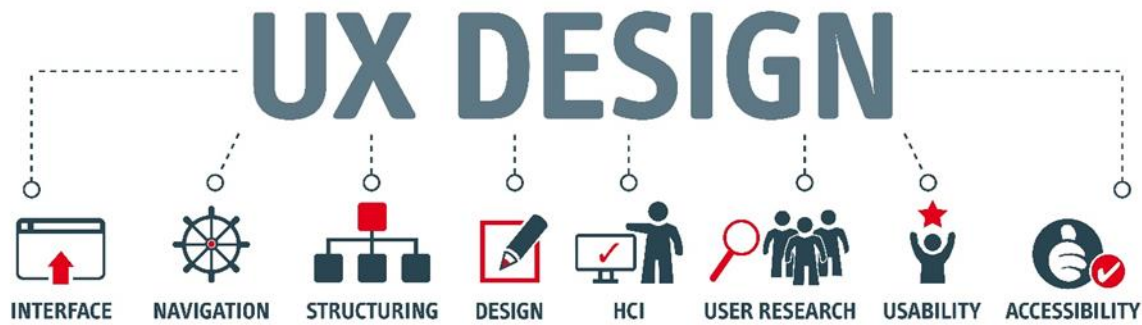


Figure No. (2) user experience

### 3-1- Comparison of user interface UI and user experience UX

	User Interface UI	User experience UX
1	Refers to the screens, buttons, switches, icons, and other visual elements we interact with when using a website, application, or electronic device.	It refers to the user's entire interaction with the product, including how you feel about it.
2	The term user interface applies exclusively to digital products. The job of a user interface designer is to make applications and websites visually attractive and easy to navigate. Common tasks for a user interface designer include the layout of the page, choosing fonts and colors, designing interactive elements such as buttons, drop-down lists, and text fields, creating wireframes and layouts in high resolution to show the final look of the design, working with developers to convert designs into an application.	A term referring to the user experience with the product and aims to create products that are practical, easy to access, and fun to use, whether digital products or non-digital products and services. Common tasks of a UX designer include: Conducting user research, creating user journey maps to analyze how the customer interacts with the product, conducting user tests to validate design decisions and identify issues, and collaborating with user interface designers.
3	It comes after user experience design.	It comes at the beginning of the product development process.
4	It cares more about making things look pretty.	It cares more about making things work well.
5	Focuses more on the final product.	Focuses more on the process of getting to that final product.
6	It relates to the individual elements of the product.	It's more about how these elements work together.
7	Relates to the visual elements of the product.	It is more about the interaction between the user and the product.
8	Its function is to create aesthetic and attractive interactive interfaces.	Its function is to identify and fulfill user needs.
9	More to do with the surface level.	Related to infrastructure.
10	Focuses more on aesthetics.	Focuses more on ease of use.

11	Refers to a system and a user interacting with each other through commands, data entry, and the use of contents.	Refers to the overall experience related to the reaction and behavior that he feels and thinks through his use of the application
12	It relates to system functions' design, interaction, and visual connection.	It relates to the use of the system, the contents and services, and all user experiences.
13	The final user experience is the result of improvements in the user interface. The development of the user interface led to the presence of interfaces with which the user interacts and thus forms a positive, negative, or neutral feeling toward the application.	

Table (1) Comparison of user interface and user experience

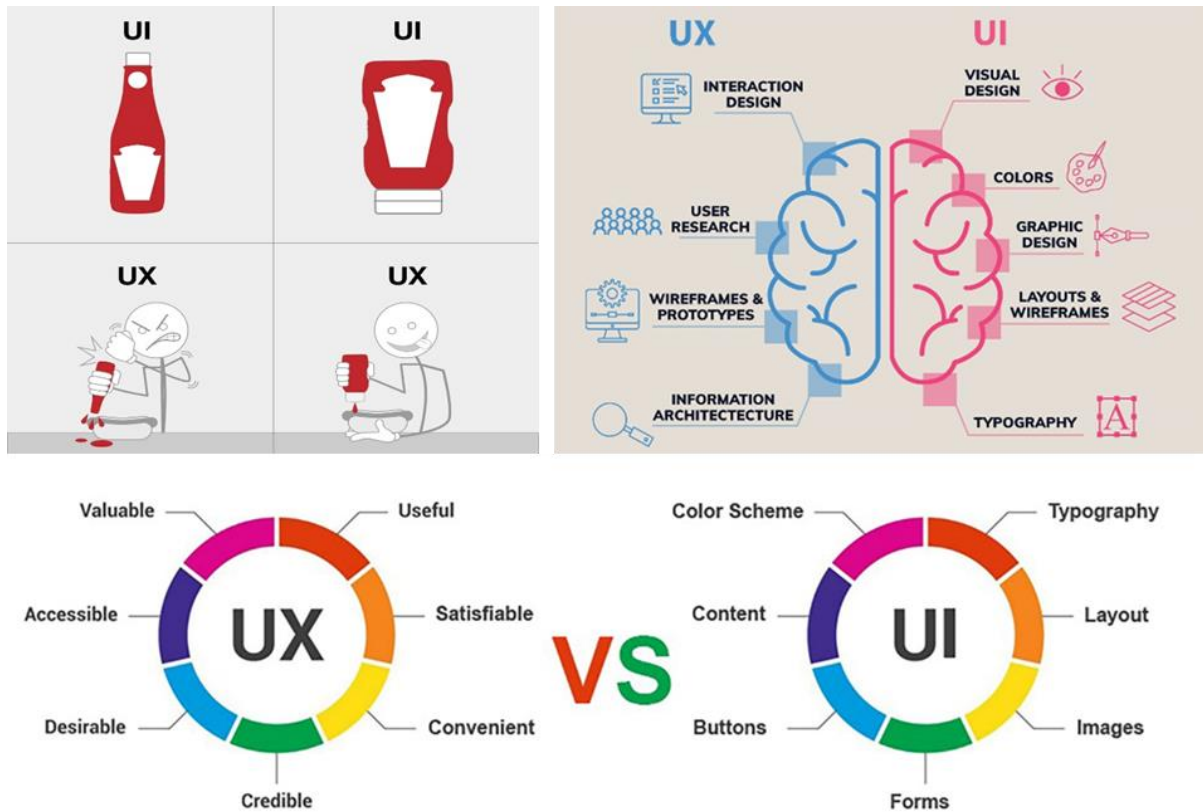


Figure No. (3) The difference between the user interface and user experience

#### 4- Customer Experience (CX)

It is the complete experience of the customer’s interaction with the service or product, starting from marketing the brand and offering the service through implementation and even customer service. It includes all contact points affecting the user’s decision to return to that brand. The experience is not limited to the application’s visual elements, but rather his complete experience with branding both offline and online.

#### 5- Digital customer experience (DCX)

It means the complete digital experience for application users, the method of interaction with all stages of service performance, from marketing, branding, implementation, and purchase. Customer service, and after-sales, see Figure No. (4).

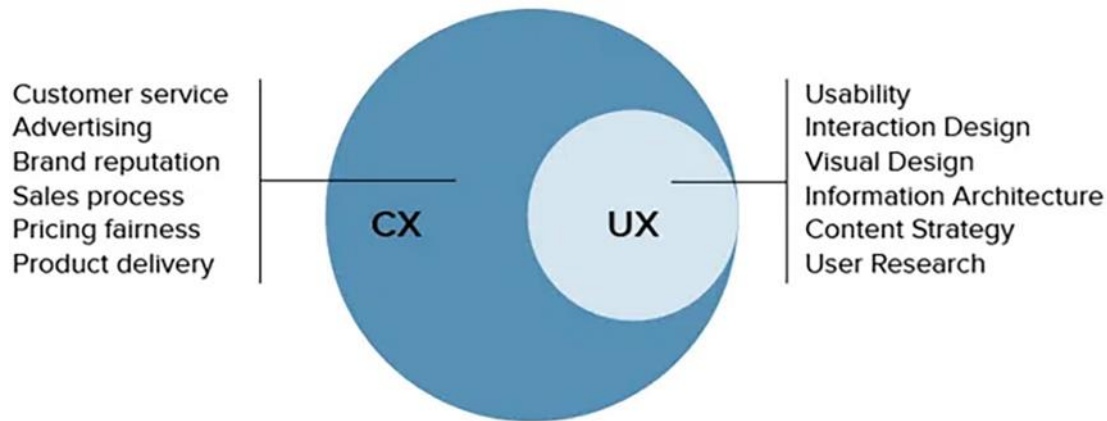


Figure No. (4) the difference between customer experience and user experience

## Second: The importance of smartphone applications

The applications have facilitated a lot of things in our lives and have become a large industry that generates billions of dollars according to economic reports, including reports on the Statista platform, which specializes in market and general studies and the production of statistical information, as the data published on the site related to the share of Egypt and North Africa indicated that the total revenues of applications until the end of 2022 reach 70 million US dollars, with an annual growth rate of 7.40% and it is expected to reach 792.40 million US dollars by 2026. Advertising revenue from applications will reach 292.30 million US dollars in 2022.

The following points explain the importance of applications:

Constant presence with customers supports the marketing of new plans and increased sales.

Brand support for millions of users to see the application in the App Store and its appearance in search engines.

The existence of a permanent archive of customer data as a result of entering it when registering and creating an account in the application, and thus identifying their needs and demographic information such as gender, age, housing, and income to benefit from them in the market study to improve the product or service.

Ease of communication with the target audience through the application, and this is what customers prefer.

They are marketing any new product or service through advertising and defining it in the application.

We are supporting the product or service against competitors who do not have smartphone applications.

Identify the appropriate design that suits the target audience.

## Third: The Elements of User Experience

There are five stages or basic levels that the application production goes through, and they are called the elements of user experience. Successive layers represent them, and each level builds on the preceding level. These five levels are strategy, scope, structure, skeleton, and surface.

The following is a simplified explanation of the five levels, Figure No. (5):

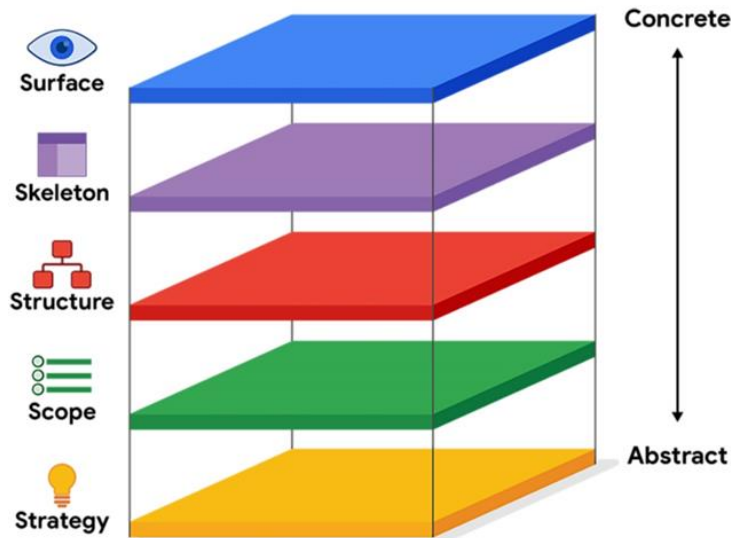


Figure No. (5) The Elements of User Experience

### 1-Strategy:

It aims to study the user’s needs and the purpose of the application and to identify the reason for producing the application and the target group sufficiently through conducting strategic research that includes studying competitors and similar applications, conducting interviews with potential users and all stakeholders, identifying their needs and added value, Figure No. (6).

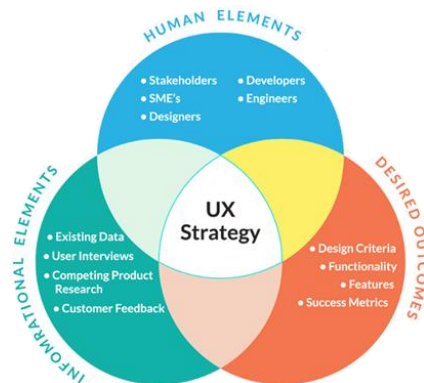


Figure No. (6) User Experience Strategy

### 2-Scope of work:

At this level; the scope of work of the application is determined so that we can know the size and time of its completion by studying the following points:

The functional requirements and specifications of the application by studying the user and identifying what he says he needs, what he needs, and what he needs and does not know he needs.

The features needed by the user and how they relate and work with each other to reach the strategic goals.

Content requirements, which are the information that the user needs in the application and the extent of its suitability for him and the work presented, such as texts, images, audio and video clips, and what is required of the content, such as delivering information or marketing and selling a product.



### 3- Structure:

Building information is the process of planning and organizing information smoothly and effectively by organizing, classifying, and arranging it according to the priorities and needs of the user. The structure is divided into two main components: Interaction design and information engineering.

Interaction design is responsible for the reaction and response of the application to user interaction. Good interaction design helps users achieve their goals by informing them of state changes (file saved, the order will be canceled) during their exchange and preventing user errors.

Information engineering is arranging and organizing content elements to facilitate human understanding. It helps organize, classify, and position information according to the priorities and needs of the user and business goals to promote awareness and flexibly navigate through the provided information.

### 4- Skeleton:

It means the link between user interface design and browsing and navigation design, where the user interface design represents the visual form of screens, presentation, and the arrangement of all elements that make us interact with the system functions on the interface. As for browsing design, it is how the user navigates through Information and how it is presented.

Information to make it effective and clear structure is divided into three components: Designing and arranging interface elements to make it easier for the user to interact with system functions.

Design browsing through Information through the user interface.

Design and display information in an easy-to-understand manner.

Therefore, the skeleton is responsible for the nature of the visual appearance of all the elements that will be displayed on the screen, the way the interaction is shown and its arrangement, the user's navigation in the application, and how the content is presented clearly, and here comes the role of the user experience designer to make decisions about the design of application information, and create prototypes that show the position of each part of the application including buttons, links, images, and text, and how to place these elements in a way that ensures that the user can quickly navigate through each page to find the information they need.

### 5- Surface:

The result of all the work and decisions made at the previous levels determines how the visual design of the content will appear in terms of fonts, colors, the method of interacting with screen elements, and how the format of screens and prototypes that were created at the structure level were used at the surface level to make the final pages of the application, as it will become clear how did the colors in the visual design help us understand the way to navigate through the application and interact with it, and how the way the content is displayed allows us to access information in the application.

The summary of the above is that all levels of the application depend and build on each other and work together to produce the application, as it starts with the foundation, which is the strategy on which we make the user experience, which will turn into scope when translating the user's desires into requirements for content and functions. We give the area a structure that

defines the interaction methods between the user and the parts of the system and organization. Data and screen preparation using Wire-Framing, which explains how to display information and the process of interaction Figure No. (7), Finally, we get to the surface or the user interface and the visual form that the user will see.

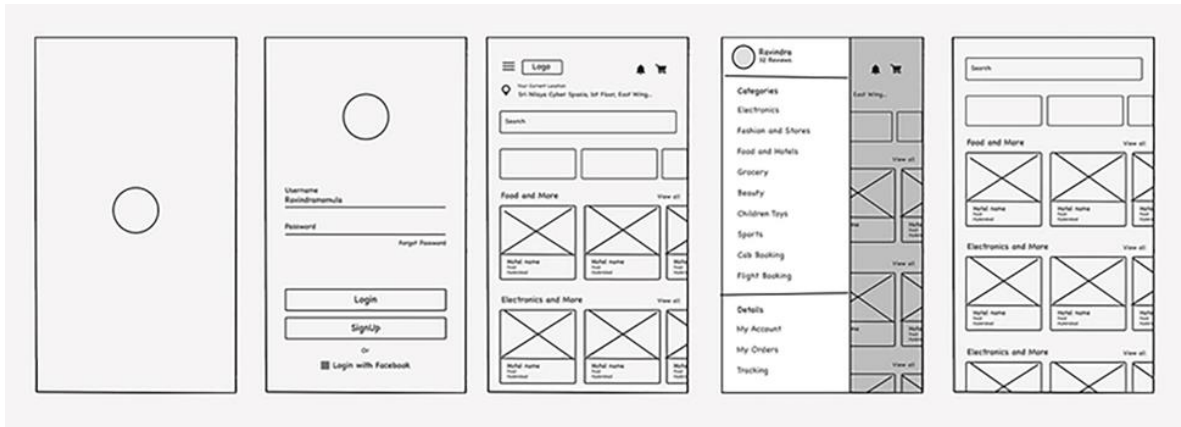


Figure No. (7) Wire-framing

#### Fourth: Design thinking and its relationship to the elements of user experience

Design thinking is the stages that the designer goes through to find a new innovative solution that is detailed to the user's need. It begins with the step of sympathy with the target audience and the desire to help them, then generating ideas and choosing the best and most appropriate ones, and then building the first model and sharing it with the target audience to test it, then publishing and approving the innovative final product or service.

The five elements of user experience design (UX) depend on design thinking as an approach to solving design problems, as it begins with understanding the problem and ends with the solution that represents the application. The goal of design thinking is to enable people to be as creative as possible while keeping the people for whom the application is designed at the center of every decision considering business requirements and technical limitations and capabilities.

Design thinking aligns well with the five elements of user experience, and both approaches share the same basic goals and perspectives, as a result, the implementation of the five elements is a way to practice design thinking, as long as the participating designers maintain an innovative scientific approach whose motto is designed for the user.

#### Design thinking stages for application production

Design thinking stages for application production.

Empathy and getting to know the user through interviews, inquiries, and user research.

Defining the problem or the required needs is the next step, where the information collected during the empathy stage is organized and analyzed to identify the basic problems that need to be solved.

The idea is the stage of generating ideas. It is usually teamwork and the goal is to "think outside the box" and create ideas based on the information gathered in the first two stages, and in the end, we have different solutions to the problem.

Prototype: This is the experimental stage in which experimental designs are made, which starts with coordinating graphic elements such as writings, pictures, drawings, videos, and other elements, which is called wire-framing, and then Prototype follows.

Testing where tests are conducted for the developed prototypes with a sample of the target users, which is an important step to confirm and ensure ease of use and problem-solving, Figure No. (8).

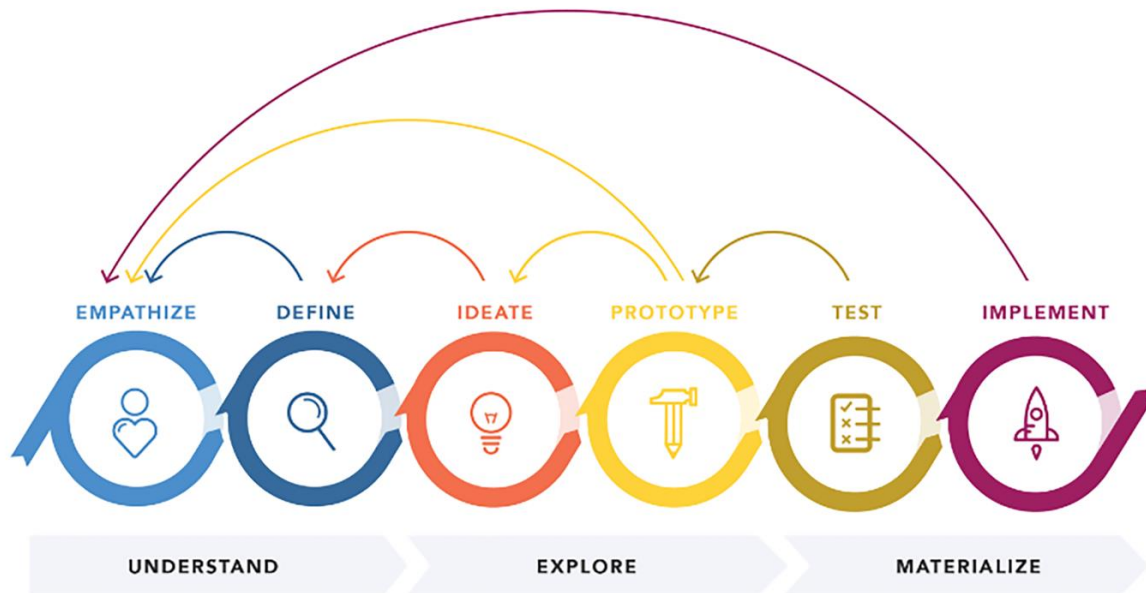


Figure No. (8) Design thinking stages for application production

### Fifth: Application design tools and programs

It is a group of programs and tools that designers use in producing applications. It is recommended to try more than one tool to choose the most appropriate and best, and perhaps a combination of more than one tool. We will review some of these tools and programs and the most widespread ones, with an explanation of the most important features that distinguish them in designing a successful interactive digital visual experience:

#### 1- Adobe XD program:

It is one of the Adobe Creative Cloud programs, and its system is based on vectors. It designs the application from the beginning, passing through the wire-framing stage until the stage of animation and prototype. It is one of the fast and most powerful programs that are compatible with Windows operating systems, and Apple MacOS, and can create animated prototypes and create a network of repeating elements and supports dealing with Illustrator, Photoshop, After Effects, Sketch files, and is characterized by the use of smart Content-Aware Layout controls in alignment and spacing equally when dealing with elements and components of the design in addition, removal or resizing, in addition to the feature of responding to resizing, and resizing the content automatically. Responsive resize according to the device used, whether mobile or computer, and there are plugins used to add properties to the program such as executing functions and animations automatically.

**2- Figma program:**

It is one of the distinguished and most common programs for designing applications and making prototypes. It works with a vector graphics system. It can implement everything required for application design, from the idea to producing interactive models. It is characterized by flexible design models that can be used in designing the appropriate user interface. In addition to libraries for many design elements, interactive prototypes, and Plugins to implement some of the required functions in the application, as well as help add animated GIFs.

**3- Sketch program:**

It is a program used to design the interface and user experience, starting from drawing, coordinating screens, making prototypes until design delivery, and it is one of the programs that operate with the vector graphics system and is compatible with the MacOS operating system for Apple devices, and files are saved in Sketch format and it is compatible with basic design programs, such as Photoshop and Illustrator, and the design can be saved and exported in different formats such as PNG, JPG, SVG, and PDF. The design can be displayed on any platform or operating system other than Apple. It is considered one of the approved programs for designing applications that are compatible with industry standards, and it is suitable for all levels of designers, whether it is a beginner or an experienced professional, what is taken about the program is that it is compatible with the macOS operating system, and therefore all the work team must work on Apple.

**4- UXPin program:**

It is one of the programs that is used to design and produce interactive prototypes for applications and is compatible with Windows and Apple MacOS operating systems. It contains libraries of ready-to-use interactive elements such as texts and symbols that can be added to the design to create interactive designs. It also allows designers to achieve full consistency with the final product through the grid formatting tools, and UXPin is the only real user interface design tool from start to finish, and it facilitates the creation of interactive interfaces well, but what is taken for the program to work slowly sometimes due to its many capabilities and features.

**5- The Marvel program:**

It is a program that runs on an internet browser and therefore does not require downloading or installation. It is dedicated to simple and fast design, and is compatible with many different design programs and tools for designing applications from the beginning, going through the stage of coordinating screens or wire-framing and making interactive prototyping and contains templates a ready-made format that can be directly included in the design, in addition to a set of images, symbols, and icons that help in producing interactive prototypes.

**6- In Vision Studio program:**

It is considered one of the most powerful application design programs spread for professional designers, starting from drawing and coordinating screens to making prototypes and animations, and it contains easy-to-use vector drawing tools and is compatible with the MacOS and Windows operating systems in addition to many advantages of creating models Responsive resize according to the device used, whether mobile or computer.

**7- Zeplin program:**

The program works by providing a common cloud-based software workspace for UX and UI designers and programmers to exchange designs, specifications, and all application elements between designers and UI developers to produce the application, and the program is compatible with most known operating systems such as the web or Apple MacOS or Android, as it is compatible with most other programs such as Figma, Adobe XD, Sketch, and Photoshop.

**8- Origami Studio program:** One of the tools for prototyping interactive user interfaces; it is created by Facebook, and it is one of the free tools that are suitable for beginners, and users of Apple macOS.

**9- Uizard program:**

It is considered one of the programs suitable for those who do not have much experience in designing user interfaces, as it contains simple formatting forms.

**10- Axure RP program:**

This program is suitable for technical projects that need powerful functions, complex interactions, and carefully planned complex information architecture.

**11-Framer program:**

The program creates interactive prototypes where its ready-made and adjustable components work to interact and there are a lot of smart components that come with Framer as standard in addition to advanced features such as magic animations, but what is taken from it is that the Framer community is relatively small, so it is difficult to find Designers with sufficient knowledge of it, Table (1) Comparison of the most important programs used in designing applications.

	The Program	The operating system	The advantages	Notes
1	Adobe XD	Windows, macOS	- Full compatibility with all Adobe programs. -Compatible with Windows and macOS operating systems. -Simple user interface.	Non-powerful support for video or animated images.
2	Figma	Windows, macOS, web	-Good and complete specifications. -It works in the browser. -Collaboration features for each team.	Relatively expensive
3	Sketch	macOS	-Clear interface. -It delivers much of what a designer would expect.	It works on macOS systems only.
4	UXPin	Windows, macOS, web	Favorite for developers and programmers.	Slow to some extent.
5	Framer	Windows, macOS, web	Outstanding User Interface.	The program's user community is small.

6	Axure RP	Windows, macOS	Good components for Wireframe.	high-cost
7	Marvel	Web	Easy to use tools. User testing features.	There are no desktop applications.

Table (2) Comparison of the most important programs used in designing applications

### Sixth: The survey study of some applications in the market

The survey was carried out in two phases as follows:

**The first stage:** The researcher carried out a survey study of some applications on the App Store of Apple to study the extent to which the principles of interactive graphic design are applied to the interface and user experience; at the same time, some applications have some problems in terms of interface design or user experience, and this does not mean that the plan, in general, is bad, but there may be some notes on some functions of the application or the format and colors of the contents on the screens.

**The second stage:** The researcher selected 18 applications from the total sample of the applications under study, which have clear notes and problems on the design of the interface and user experience, as well as from the reality of evaluating the user experience of the application on the App Store of the Mac OS operating system, and the following are examples of some of the applications referred to Figures (9-26).



Figure 9: The news offers



Figure 10: Orange



Figure 11: Egypt Air



Figure No12: Make a power of attorney



Figure No13: Letters school



Figure No14: Children's buds



Figure No15: Everyday wisdom



Figure No 16: Speaking English



Figure No 17: Rest assured



Figure No 18: Ana Vodafone

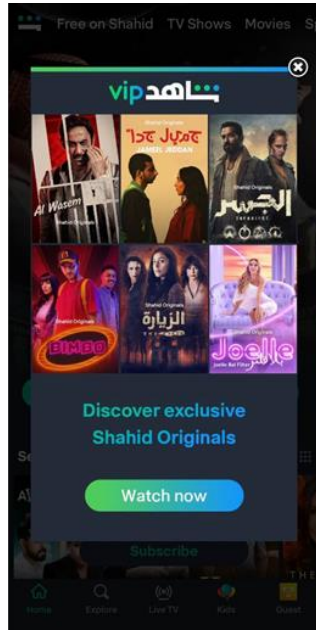


Figure No19: Shahid



Figure No 20: Ana Vodafone



Figure No 21: Saudi Sale



Figure No 22: Whites



Figure No 23: Berain Water





Figure No 24: Dukan



Figure No 25: ALRaya

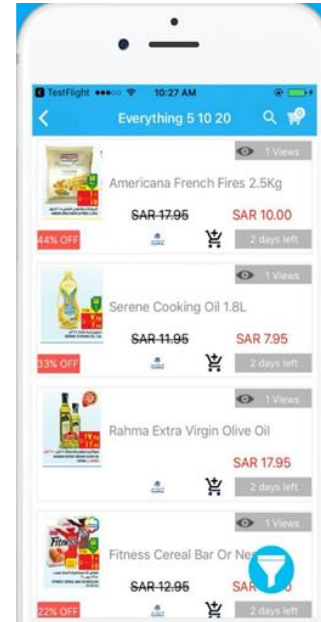


Figure No 26: Waffer

Serial No	The Application name	The purpose of the application	Evaluating the UX on App Store Max score (5)
1	The Egypt Air	Traveling and booking flights	2.4
2	My orange Egypt	Mobile line services	3
3	The news offers	News of offers and applications	4
4	Buds – educational games	Teaching the basics of the Arabic language	3.4
5	Letters school	Teaching the pronunciation of letters	3.3
6	I would like to make a power of attorney	Book a role in the documentation office	2.2
7	Rest assured	Registration to reserve a role for corona vaccination	2.3
8	Speaking English	educating the English language	2.2
9	Everyday wisdom	Entertaining displays everyday wisdom	3.7
10	Radio Misr	Music to listen to Egyptian radio stations	1
11	Shahid	Entertaining to display Arabic content	3.2
12	Ana Vodafone	Services for Vodafone customers	3.1
13	Saudi Sale	Online cars trading	3.7

14	Whites	Health & Beauty holding company	2.3
15	Berain Water	Water delivery	2.9
16	Dukan	Food & Drink Retailing	2.8
17	ALRaya	Shopping	1.8
18	Waffer	Shopping	3.7

Table (2) Evaluation of the user experience on the App Store for the applications under the survey

The above practical and survey study confirmed the validity of the research hypotheses and that there is indeed a technical problem in the design of the interface and user experience for some applications, which demonstrates the importance of those in charge of designing applications studying the principles of graphic and interactive design and considering the user experience to avoid these observations. The following are the most important basics and principles of interface design and user experience which must be considered when designing applications.

### Seventh: Considerations and principles of application design:

The design of the application must be of high quality, focused on the customer, the design for him based on audience research and marketing, achieve all the goals of the application, interact with users, and make them enjoy the interaction, and achieve this, the following principles and points must be considered:

- 1- The design should be characterized by clarity, simplicity, and avoidance of complexity or the addition of unwanted elements, as users prefer an uncluttered design with easy-to-understand content due to the limited size of the phone screen, which helps the application perform its function better.
- 2- The user interface design must be consistent and committed to maintaining consistency in screen designs, appearance, and functionality across all pages, services, and products within the same brand or group of products.
- 3- Across all pages, services, and products within the same brand or group of products. Consistency screen designs, appearance, and functionality must be consistent.
- 4- Pay attention to individual pages and screens' information structure and visual hierarchy. The most important elements are at the top of the order so that they are clearer and more accessible for the user to find. They can be emphasized by placing them at the top of the page or screen, as well as the strategic use of color and contrast. And the use of different sizes of fonts, which works to increase clarity and ease of reading, and the employment of repetition, which gives the impression of a connection to the content with the employment of white spaces or emptiness, which makes the design comfortable for the eye and attractive and directs the user to focus on what is important by arranging the elements of the user interface design and presenting them in an order that helps to understand the information Easily.
- 5- It is preferable that each screen display the necessary and sufficient information only gradually and not at once so that each screen in the user interface leads to only one primary action and then follows the details on the following screens, which makes the user interface easier to learn and use.

- 6- The application interface must speak the language of the user through the use of clear and concise labels for the elements of the user interface and communicate with him to implement any action or change in the state or the occurrence of an error in addition to arranging the placement of the elements according to their importance.
- 7- A reaction must appear to the user for each action he takes, such as using visual cues or simple messages showing the user that his actions led to the expected result, which helps him understand that the intended measures have been implemented.
- 8- Identifying the goals that the user wants to achieve from the application and the interfaces he likes and how he will use them; that is, the user is the focus of the design, and therefore the designer must make the user's goals his goals.
- 9- Navigation should be characterized by ease, speed, smooth navigation, and distance from all unnecessary functions that hinder browsing speed, which may lead to users not being attracted to the application and not using it.
- 10- The design should be characterized by simplicity and clarity and the message delivery to the user, away from any complications or unnecessary or unwanted features.
- 11- The application interface must be more interactive by using the latest technologies in designing the user interface to increase the success and attractiveness of the application. Examples of this are:  
Interactive videos.  
Emotional design, which makes the application more personalized to the user, encourages his interaction, raises his feelings, and increases his connection to the application.  
Animations facilitate interaction with the application and increase user interaction.  
Emoji symbols have become indispensable in communication with users.
- 12- The application should be characterized by ease of search so that the user can reach what he wants easily and quickly, as the difficulty of accessing things leads to the user's alienation and moving to another application.
- 13- The screen layout is easy to use by providing easy controls to click on using the thumb with ease.
- 14- Organizing and simplifying the content and reducing the elements so that the information reaches the user smoothly and clearly, away from the chaos of the details.
- 15- The fonts of the writings must be clear, legible, and unambiguous, as well as an appropriate size that is easy to read.
- 16- Using touch controls because they are suitable for dealing with a mobile phone, unlike the design of websites.
- 17- It is preferable to use simple symbols and reduce writing whenever possible so that the user can quickly deal with the application.
- 18- There must be consistency in the application's content on mobile screens with the same content on websites.
- 19- Using contrast in the design is recommended, as it reduces eye strain and works to see all the details clearly.
- 20- It is preferable to use and employ the 3D interaction by the user and enable him to customize the settings, which works to display the product in all its aspects. Thus, the application becomes more attractive and practical.

- 21- The design is preferred for the user, i.e., customization as if the content was created personally for this user, which makes the design more focused on the person and leads to the user's attachment to the application.
- 22- Using data visualization graphs and schematics to display numbers and data that help the user to understand easily is preferable.
- 23- It is preferable to use distinguished illustrations to work on making the content clear, understandable, and beautiful to help compete and distinguish between applications.
- 24- A good design requires considering the ease of accessibility to reach the information or message the application wants to communicate by applying the principles of color contrast and clarity of the written text.
- 25- The usability principle must be applied when designing the application to obtain a practical and uncomplicated experience that emphasizes user satisfaction, efficiency, lack of errors when using, ease of learning, and remembering the application's work quickly when using it again after a period of times. It is one of the priorities that must be considered.
- 26- The context in which the application will be used, the circumstances in which it will be used, and the influencing factors must be specified.
- 27- User control must be considered and given the authority to control and lead the application and help it correct the error if it occurs through the presence of buttons for undo, redo, and cancel and clarify the procedure followed in the event of a desire to undo by the user.
- 28- User-centricity must be achieved, as it is the goal. His needs must be put in first place. Decisions must be made based on what we know about him and what he wants through a design that solves his problems, starting with researching the user to identify the problem, understanding the nature of the target user, and measuring the extent to which the application meets his needs.

### **Eighth: Research results**

- 1-The survey showed a lack of knowledge of the basics and principles of application design among some of those in charge of producing applications. Therefore, it needs improvement and redesign.
- 2-Failure to consider the functional and aesthetic form in the application interface design makes the user not prefer to deal with it, which negatively affects the product or service provided by the application.
- 3-The study showed the need to apply the principles and considerations of interface design and user experience to produce effective and successful applications that meet the perceptions and needs of the user.
- 4-The Egyptian application production market is constantly growing, but some applications need more attention to design quality.
- 5-The good graphic and interactive design of the application in terms of functionality and aesthetics, which meets the expectations and requirements of the user, leads to the success of the application in attracting more users and customers.

## Ninth: Recommendations

1-The research recommends that companies specializing in the production of applications need to pay attention to the design of the interface and user experience, and consider the considerations of their design through the use of designers specialized in the field of application design.

2-The study recommends companies specialized in producing applications to take advantage of the great and continuous development of application design programs in training designers on an ongoing basis in order to produce good and innovative applications that support the goals of institutions in continuous and effective communication with the target audience.

3-The research recommends that the faculties of art and design make the design and production of an application one of the outputs of the graduation project for the departments of advertising, graphics, media, printing, and publishing, to provide the market with scientifically and academically qualified designers who are trained at the highest level and follow all that is new in terms of techniques, tools, and programs.

## Tenth: The references

١- بوقديرة ، مريم . مساهمة تطبيقات الهاتف الذكي في تحقيق الميزة التنافسية للمؤسسة الاقتصادية . رسالة ماجستير ، كلية العلوم الاجتماعية والإنسانية ، جامعة العربي بن مهيدي – أم البواقي ، الجزائر ، ٢٠١٩

1- buquadirt, mrim. musahamat tatbiqat alhawatif aldhakiat fi tahqiq almizat altanafusiat lilmuasat alaiqtisadiati. risalat majistir, kuliyyat aleulum alaijtimaeiat wal'iinsaniati, jamieat allearab bin mahidi - 'um albawaqi, aljazayar, 2019

٢- حميض، شهد. واقع تصميم واجهات المستخدم في تطبيقات الهواتف الذكية. رسالة ماجستير ، كلية العمارة والتصميم، جامعة الشرق الأوسط،الأردن ، ٢٠١٧

2- hamid, shahidi. waqie tasmim wajihat almustakhdam fi tatbiqat alhawatif aldhakiati. risalat majistir, kuliyyat alhandasat almiemariat waltasmimi, jamieat alsharq al'awsat, al'urduni, 2017

3- Ambrose, Gavin and Harris, Paul. Basics Design 08: Design Thinking. Ingram Publisher Services, Lausanne, 2010.

4- Preece, Jenny and Rogers Yvonne and Sharp, Helen. Interaction Design: Beyond Human-computer Interaction. J. Wiley & Sons, 2002.

5- Peters, Dorian. Interface Design for Learning: Design Strategies for Learning Experiences. New Riders. 2014.

6- Joel Marsh. UX for Beginners: A Crash Course in 100 Short Lessons. · "O'Reilly Media, Inc." Dec 2015.

7- Garrett, Jesse. *The Elements of User Experience: User-Centered Design for the Web and Beyond*. Pearson Education, 2010.

8- Getto, Guiseppe, Cao, Jerry. *UX Design: The Definitive Beginner's Guide*. UXPin Inc & CA, 2016.

9- Treder, Marcin, Pachucki, Adam, Zielonko, Adam, Łukasiewicz, Kami. *Mobile Book of Trends*. UXPIN & MOVADE, 2014.

10- Interaction Design Foundation. *The Basics of User Experience (UX) Design*.

<https://www.techopedia.com/definition/2953/mobile-application-mobile-app>

<https://www.itrelease.com/2022/01/what-are-types-of-user-interface>

<https://academy.hsoub.com/design/user-interface>

<https://www.techtarget.com/searcharchitecture/definition/user-interface-UI>  
<https://careerfoundry.com/en/blog/ux-design/what-is-user-experience-ux-design-everything-you-need-to-know-to-get-started>  
<https://www.newbreedrevenue.com/blog/ask-an-expert-what-is-user-experience-ux-design>  
<https://delighted.com/qualtrics>  
<https://blog.hubspot.com/service/customer-experience-vs-user-experience>  
<https://www.linkedin.com/pulse/what-user-interface-ui-design-principles-reetika-gupta>  
<https://www.uxdesigninstitute.com/blog/ux-design-principles>  
<https://www.pdfdrive.com/designing-the-user-interface-strategies-for-effective-human-computer-interaction-e189300049.html>  
<https://designthinkingblogs.com/ui-ux-prototyping-software-prototypes>  
<https://www.krishaweb.com/7-important-ux-design-elements-to-consider-when-creating-successful-design>  
<https://designshack.net/articles/ux-design/7-steps-creating-a-ux-strategy>  
<https://medium.com/omarelgabrys-blog/ux-a-quick-glance-about-the-5-elements-of-user-experience-part-2-a0da8798cd52>  
<https://www.new-educ.com>  
<https://focus7international.com/2020/03/10/the-7-key-elements-of-good-user-experience-ux-design>  
<https://bootcamp.uxdesign.cc/the-key-frameworks-in-ux-design-e5c6350a26a0>  
<https://www.creativebloq.com/how-to/20-best-ui-design-tools>  
<https://webflow.com/blog/ui-ux-design-tools>  
<https://www.uxpin.com/studio/blog/what-is-user-interface/#h-what-is-a-user-interface>  
<https://komar.edu.iq/workshop-2/>  
[https://en.wikipedia.org/wiki/Mobile\\_app](https://en.wikipedia.org/wiki/Mobile_app)  
<https://www.techopedia.com/definition/2953/mobile-application-mobile-app>  
<https://www.alliedmarketresearch.com/request-sample/2300>  
<https://www.thinkwithgoogle.com/intl/en-145/consumer-insights/consumer-trends/digital-marketing-trends-2023/>  
<https://www.alliedmarketresearch.com/mobile-application-market>  
<https://www.meemapps.com/term/mobile-application>  
<https://raya-adv.com/app-development>  
<https://dribbble.com/shots/6249381-Mobile-App-Wireframe-UX>  
<http://androiddeveloper.galileo.edu/2017/05/29/design-thinking-in-app-development-process>