The effectiveness of designing Egyptian smart government applications during the Corona virus pandemic

Dr. Maysoon Mohamed Qutp
Dean of the Faculty of Applied Arts - Professor of Advertising Design - Helwan University
Dr. Enas Mahmoud Hassan
Professor of Advertising Design - Faculty of Applied Arts
Heba Shaaban Abdelmonam Mohamed Ahmed
Assistant Lecturer - Faculty of Applied Arts- October University
heba_shaaban.art@o6u.edu.eg

Abstract:

The successive developments in the field of digital technology caused a great revolution in the different field of life, including the field of government services, hence the great and continuous development in technologies, many new applications of information and communication technology have appeared, resulted in great change in our life and helping in changing the way citizens deal with government services, and made the process of communication better, quicker, more accurate, higher quality, faster, easier and cheaper, so that the Egyptian citizen becomes a basic partner in the government institution, and with the Corona virus invading the barriers of time and place, as many countries around the world were forced to close completely, which resulted in the disruption of citizen services.

Then comes, the role of smart government's applications in order to make the best use of information and communication technology to build a sustainable environment and encouraging the use of technology to help the Egyptian citizens to benefit from these services, the smart government is not a new technical challenge as much as it is atrial to benefit from the technical achievements in the field of government institutions to confront the problems of traditional government institutions. The smart government is the last stage in the transformation from the traditional government, passing by the electronic-government to building an integrated smart government, and this stage cannot be achieved suddenly or quickly, but with stable and carefully studied steps with a gradual development and strategic change in the Egyptian government that leads to a radical shift in the methods of communication between the government and the Egyptian citizen during the spread of the global Corona epidemic ... **The research is summarized** in studying the digital transformation of institutions and applying it to the Egyptian government institutions and benefiting from its advantage in designing a smart Egyptian government, setting points for its construction requirements, its characteristics, and its objectives, it will also help in setting functional and design considerations for smart applications for Egyptian government institutions... The research ends with an analytical study of two models of smart applications confronting Corona virus:

- The Health of Egypt application (Egypt)…
- Tawakkalna application (Saudi Arabia) ...

Keywords:

Smart government- smart mobile applications - digital transformation- Egyptian State Organizations - corona virus.

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Introduction:

As the government strives to achieve the Sustainable Development Strategy Egypt 2030, and support the digital transformation of government institutions and connect them with citizens through ICT and smart applications, with the aim of providing the best government services to citizens that are effective, transparent and efficient, a service that is more interactive with the citizen directly through a range of applications on smart devices, characterized by achieving design and functional standards in order to reach the design of a smart application that is efficient and of a functional use, and with the spread of the global Corona epidemic most of the countries were forced to close completely, hence the importance of making the best use of ICT in the face of corona virus to support the state plan to motivate citizens to stay at home, as well as support The Ministry of Health's efforts to spread awareness among citizens and informing them how to deal with the suspected disease, so that the citizen is always informed of everything new, stressing the importance of developing smart health applications in the face of corona virus as well as applications that allow tracing and isolating suspected cases.

Here emanated the research's problem, which is summarized in answering the following questions:

1- How can smart government applications be used under the current circumstances of the country to reduce the spread of the global corona virus?
2- How can smart phone applications be used to build an Egyptian smart government?
3- To what extent the government presents smart applications to citizens in the light of the Corona pandemic that threatens Egyptian society?

The research aims to:

1-Building an interactive society by designing the applications of an Egyptian smart government under the circumstances of the Corona epidemic.
2- Highlight the importance of the digital transformation of Egyptian government institutions as a modern direction to reduce the Corona epidemic.
3- Taking advantage of modern digital media to build a smart government because of its positive impact on Egyptian society.

Research assignments: The research assumes that:

1-Leveraging of smart government applications may help reduce the global spread of COV.
2- Smartphone applications play a key role in building an Egyptian smart government as a modern direction to reduce the Corona epidemic.
3- The application of smart government in Egypt may have a positive impact on the Egyptian citizen towards Egyptian government institutions.

The importance of the research is summarized as follows:

1-Persuading Egyptian governments to change societal behavior and the need to take certain measures and adopt smart government applications in the light of the Corona epidemic.
2- Emphasizing the importance of implementing smart government in all areas of government of the state.

3- Encouraging the citizen to change his behavior and use the smart applications of the Ministry of Health to limit the spread of the Corona epidemic.

The research follows:

the descriptive approach of the theoretical framework of the research, with the work of an analytical study on two models of smart phone applications to combat the Corona virus (Health of Egypt application) (Tawakkalna application). The researcher has selected these two applications to compare smart applications in two countries, also to study latest digital technologies achieved by the world in its battle with Corona virus (the global epidemic), and the researcher has chosen a Saudi application for the similarity in language, culture, and the societal behavior of citizens.

Search limits:

Time limits:2018-2021.

Spatial boundaries: Government institutions - Ministry of Health: Implementation of Egypt Health - Egypt, Application of Tawakkalna - Saudi Arabia.

Objective limits: Studying the impact of technology and the use of smart phone applications for the Egyptian government to limit the spread of the Corona epidemic

- Theoretical framework:

First: The digital transformation of government institutions:

1- The concept of digital transformation:

- Digital transformation represents a process of change in the structure of enterprises, that is related to the use of technology, the facilities of the digital intermediary, and the improvement of citizen experience. It is the transition of organizations to a business model based on digital technologies in the innovation of services, and the provision of new channels and opportunities that increase in the value of their services.

2-The concept of digital transformation of government institutions:

- Digital transformation is one of the necessities for all government institutions that believe in the importance of continuous development of their administrative functions and services and facilitating their access to citizens, digital transformation means not only the application of technology but it is a comprehensive program of the institution that begins with internal working methods and how to provide services to citizens and ends with the completion of easier and faster services.

3-The benefits of digital transformation of government institutions:

Digital transformation has many varied benefits not only for the citizens but also for organizations and their employees, including :

- Decreasing cost and effort to a great extent, as well as improving the operational efficiency is felt.
- Creating opportunities to provide innovative and creative services away from traditional methods of providing government services.
- Helping the Governmental institutions to expand and spread more widely and reach a larger segment of the population.
- Improving quality and simplifying procedures for obtaining government services for citizens.

- Raising levels of transparency and governance and increasing the quality and efficiency of the functioning of the governmental institutions.
- Facilitating the link between government institutions with each other to ensure the quality of data and provide a reliable and interconnected source of information about citizens.
- Monitoring performance, improving the quality of services, and setting goals and strategies.

4- The motives for the digital transformation of government institutions:

- Citizens will be more informed
- Evolution of modern technologies
-Increased competitiveness
-New motives emerge

Second: Smart Government:

1-Smart government concept:

-Smart government is employing modern technologies to create a cooperative and interactive environment based on continuous and transparent communication between citizens and government, as well as employing innovative policies and modern technology to find solutions to the challenges facing the public sector.

2-Key components of smart government:

- The main goal of moving to smart government is to achieve the requirements and services of citizens, to save time and effort for them, by ending all daily life procedures through smartphones, by focusing on six main components:

- Electronic devices - Infrastructure - Electronic devices
- Electronic Services - Internet - The human element.

3- Smart government building requirements:

There are several requirements for building smart government, including:

- Developing legal frameworks and legislation.
- Documenting information, documents, and forms.
- Providing content, whether it's information, service, or communication.
- Preparing the infrastructure of information as well as the technical on the state level.
- Setting standard specifications for information security and cyber security.
- Motivating citizens by making them less expensive, faster, and easier than traditional government services.
- Assigning a greater focus to prioritizing services that will be updated into smart services to address diverse needs through smartphones.

4- Smart government objectives:

- Shifting to the knowledge economy and contributing to enhancing the competitiveness of the state.
- Integration of services between all government agencies and the provision of comprehensive services from one platform.

- Raising a high level of a transparency and credibility between citizens and governments.
- Increasing citizens' income, raising the level of productivity of governments, and reducing public expenditures.
- The inclusion of modern technologies so that the government can reach all segments of society.
- Increasing community participation and support innovation to provide the best services to citizens.

Third: Designing smart applications for government enterprise services in light of the spread of THE CORONA VIRUS:

1- The concept of application:

- Applications are a sub classification of computer software and smartphones that employ their capabilities to perform the tasks the user needs. Applied software is divided by evolution and method of use of the medium into computer applications - web applications - smartphone applications.

2- Devices that operate smart applications:

Smart apps are not only smartphones, they are applications on any smart device, whether interactive screens or wearable devices, for example.

2/1 – Smartphones 2/2- Tablets 2/3 Wearables

3- Dimensions of smart app design:

3/1- Aesthetic dimension:

The aesthetic aspect of the application design includes both color spaces or expressive icons, semantic symbols, innovative graphics, and kinetic effects of menus within the application.

3/2- Functional dimension:

It relates to the delivery of information to citizens to market a particular product or reaction to a particular service (a selling goal or a service goal).

3/3- Economic dimension:

It is about connecting the information and service contained within the app at the lowest possible cost and in the best form.

3/4- Technological dimension:

It is about taking out the application and accessing the final image and methods of implementing it from programming, developing, and updating its versions, which is effectively concerned with ultimately raising the efficiency of the application.

4- Considerations related to the design of smart applications for Egyptian government institutions:

The smart application of government institutions requires special specifications in its use, which must be available in the design and functional elements, which must be carefully considered when designing because it has a great impact on arousing the attention of the citizen and attracting his attention to the content and services of the smart app, and a multiplicity of considerations related to the design of the interfaces of the smart app, the most important of which are:

4/1- Design considerations for the application:

4/1/1- Color:

Color design is one of the most important conditions for the success of the application, so consider the following:

- The colors used in the application must correspond to the experiences of citizens in the way of the government institution.
- The colors used should respond to his emotional state, beliefs, ideas, and orientations.
- Using colors that correspond to the identity of the government institution to achieve the best communication process that affects the citizen while roaming and navigating within the pages of the application.

4/1/2 - Writings:

- Considering easy reading and browsing within the smart app.
- Speed of navigation between the contents and pages of the app by the clarity of writing.
- Considering the clarity and format of writings and illustrations within the app interface.
-Taking into account sizes, types, shapes, type of character, and size of titles.

4/1/3 - Photos and drawings:

-Using images and graphics in smart applications, images do not need much effort to get the citizen to discover navigation, follow information, and make choices within the app and its pages even if the language used is different from the citizen's language.
- Considering the size of the images and graphics used to ensure the speed at which the images are uploaded.
- Considering the accuracy and clarity of the image used.
- Considering the types of photo files and graphics allowed to being used in the app.

4/1/4 - Coordination:

Developing a general format for the app interface and organize visual information by arranging and processing images, icons, and writings for ideas to create the app interface.

4/1/5- Sound effects and music:

- The impact of music should be taken advantage of its ability to connect and install the name of the government institution in the mind of the citizen through the design of the smart app interface, good music can contribute to the effectiveness of smart applications by making it more attractive to the attention of the citizen.
- Considering the ear, it turns to the tones and familiarizes them, and calls for the image that accompanies it to the institution in the mind of the citizen.
- Taking advantage of sound effects and their role in increasing attractiveness and citizen turnout and interaction with the app through sounds in cases where you click on an icon to go to another page or see certain lists while entering or exiting the app.

4/1/6- Kinetic effects:

Taking advantage of the mobility of its ability to arouse the interest of the citizen and draw attention, the movement is a visual appeal and is an aspect of the configuration in smart applications because it is possible to suggest the movement of pages or icons where configurations and color spaces can move within the user interface, which adds to the attractiveness of the application.

4/2- Functional considerations for the smart app:

4/2/1- Interaction:

Smart applications are the first way to interact with the citizen, so that they can ask citizens to enter certain information or express their opinions, and can also look for a specific service for the organization, but also pay for it.

4/2/2- Efficiency:

Applications must be characterized by the ability of the citizen to perform tasks quickly and accurately and its efficiency is measured by measuring the time required for the citizen to complete a particular task such as data entry.

4/2/3- Satisfaction:

Citizens are required to feel satisfied and comfortable when using and interacting with the app.

4/2/4- Usability:

The app should be used easily because if the citizen feels that it is difficult to interact with this application he will look for a change, as the time of citizen interaction with the app determines the measurement of ease effectively.

4/2/5- Rememberability:

Considering the ability of the citizen to remember how to use the application effectively even after a while since it has been used.

4/2/6- Avoiding mistakes:

- Avoiding mistakes made by citizens while using the application, ensuring that citizens perform certain tasks without making mistakes.
- If a mistake is likely to be made, the system must have the ability to correct this mistake easily.

4/2/7- Cognitive perceptive loading:

Taking into account the amount of cognitive processes required of the citizen to use the application so that the application does not exceed the limits of the citizen's abilities.

4/2/8- The simplicity of the post:

- The smart app must be flexible and easy to use.
- Information can be easily accessed and to be more effective in in-app roaming.

4/2/9- Consistency:

- The app must contain all design elements that interact smoothly and consistently.
- Considering the design style so that it is innovative and unified among all pages of the smart app.
- It must be relevant to the content on the one hand and the characteristics of the citizen on the other.

6. Smart government's role in reducing the spread of corona virus:

- The government is seeking to be data-driven, focusing on using data as strategic assets for the benefit of the citizen and the government itself. The smart Government specifically provides comprehensive and general data to citizens, and a broad government portal will be provided for data available to all, expanding data provided by the government, the data available to all will encourage innovation, in addition to supporting operational efficiency by reducing the costs of obtaining data, and the smart government is keen to take advantage of government and non-governmental data from multiple sources to better serve citizens and distribute Resources.

- Since the emergence and widespread of COVID-19, many countries around the world have been quick to use smart phone applications to follow the movement of people infected with the virus and reduce their mixing with others. The applications trace contacts of Covid-19 cases to account for cases and control the spread of the virus. Smart applications have a superior ability to accurately identify contacts with newly infected people, which contributes to the speed which with contacts are warned of the possibility of contracting the virus and demand that they isolate themselves as a precaution.

- Analytical study:

The researcher analyzes two models of smart government applications as a recent trend to reduce the spread of the corona virus in terms of design and functionality: the application of "Health Egypt" in Egypt, and the application of "Tawakkalna" in Saudi Arabia.

The analytical study proved that an Interactive application has been launched all over the country by the Ministry of Health to be the official application with the aim of reducing Corona virus, the application's design has been developed to suit all citizens, this is a part of the efforts of the government. To improve the experience of folding and make sure of the quality of the services provided, in order to achieve optimal Utilization ICT in the face of corona virus.. The Egyptian Ministry of Communications and Information Technology has exerted efforts to support the country's plan confronting corona virus, and it helped in motivating people to stay at home, it also contributed to the efforts of the Ministry of Health and Population to spread awareness among citizens and to provide smart distinguished services, stressing the importance of developing e-health applications in Egypt for Confrontation of corona virus, as well as applications that allow remote work.

Results of the analytical study: After the analytical study, the researcher has achieved the results that are summarized in the following points:

1-The digital informational revolution, and rapid technological development in all fields, have led to the emergence of new smart applications from the Ministry of Health around the world to aiming at limiting the spread of the Corona virus.

2-The design of smart applications has been developed to suit all citizens, to improve the citizen's experience, and to make sure of the good quality of services presented to the citizens. Also, to get the maximum benefit of the information and communication technology for confronting Corona virus.

3-Directing the experiences of smart phone users to help them protect themselves and their families through an interactive smart application to reduce the spread of the Coronavirus.

4-Smart applications contribute positively with the Egyptian citizens which benefit the Egyptian state.

5-Good design contributes to the citizen interaction with smart applications to achieve the required response.

6-Good functioning of the design elements in smart applications contributes to creating interactive experience to achieving the desired function.

7-Considering attraction element for citizens' attention to the use of smart applications, whether aesthetic or functional.

Results:

1- Smart government applications in Egypt have a positive impact on Egyptian citizens towards reducing the spread of COVID and adhering to precautionary and preventive measures.
2- The properties of modern technology provide all opportunities to implement innovative A.F.K. in the designs of smart government applications that attract the attention of the citizen to interact with them and receive the services of the government institution.
3- The use of successful design and functional standards for smart applications affects the speed and efficiency of providing government services to Egyptian citizens.

Recommendations:

1- The need to pay attention to innovation in the designs of smart applications for Egyptian government institutions to achieve the desired goal scores.
2- The need for continuous development in the methods of receiving government services for the Egyptian citizen by linking them to it.
3- Attention should be paid to the design of smart applications for the Ministry of Health and population as a recent trend to reduce the spread of corona virus.

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