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# Towards A Responsive Egyptian Urban Governance

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## ABSTRACT

Lately, innovation in information and communication technology (ICT) has been pervasive. That necessitated the development of the participatory urban process by connecting citizens and their city government using the latest ICT technology. This connection is defined well in **responsive urban governance (RUG)**. On the other hand, it is noticeable that Egypt is exerting efforts in its digital transformation by utilizing the latest ICT technology. This paper aims to realize to what extent Egypt's digitization efforts go beyond applying RUG to fulfil citizens' participation in their city's governance via ICT tools. Responsive urban governance (RUG) principles came to light from the analysis of successful international examples. Therefore, a comparative analytical study is conducted between the previously concluded principles of RUG and Egypt's digitization efforts. The results of the SWOT analysis aim to conclude **a proposed framework of responsive Egyptian urban governance.** Furthermore, experts' semi-structured interviews are conducted to investigate the previously proposed framework from experts' viewpoints within the Egyptian context. The conclusions revealed that, although Egypt's government works on speeding its digital transformation, it needs more attention to activate the **responsive tools**, not the smart tools, with its citizens, who are the backbone of the responsiveness concept, besides promoting **RUG mechanisms as** well. Eventually, it is crucial to announce Egypt's Digital efforts through various media to encourage its citizens to participate in the governance of their cities, in case the exitance of societal awareness, which could be available through **Egypt's Digital Strategy** towards building a digital society.

**KEYWORDS:** Responsive City, Responsive urban governance (RUG), Citizen Design Science (CDS), The Information and Decision Support Center in Egypt (IDSC), and The Ministry of Communication and Information Technology (MCIT).

## نحـــو حوكـــمة مصـــريـــة حضـــريـــة مســـتجـيبـــة

في الآونة الأخيرة، انتشـر الابتكار في تكنولوجيا المعلومات والاتصـالات على نطاق واسـع. الأمر الذي يؤدي إلى تطوير العملية الحضـرية التشـاركية من خلال حدوث تواصـل بين المواطنين وحكومة مدينتهم باسـتخدام أحدث تقنيات تكنولوجيا المعلومات والاتصـالات. وجد ان الإدارة الحضـرية المسـتجيبة تعزز جيدا هذا التواصـل. ومن ناحية أخرى، لوحظ أن مصـر تبذل جهودًا في التحول الرقمي من خلال اسـتخدام أحدث تقنيات تكنولوجيا المعلومات والاتصـالات. وبالتالى تهدف هذه الورقة، معرفة إلى أي مدى تتجاوز جهود الرقمنة في مصـر RUG من اجل تمكين المواطنين من

المشـــاركة في حوكمة مدنهم. بناءً على تحليل الأمثلة الدولية الناجحة ، ظهرت مبادئ الإدارة الحضـــرية المســـتجيبة (RUG). وبالتالى، تم إجراء دراسة تحليلية مقارنة بين مبادئ تطبيق RUG وجهود مصـر فى رقمنتها، بهدف استنتاج **إطار مقترح لحوكمة مصـرية حضـرية مسـتجيبة** من خلال تحليل SWOT، الذى يعمل على تحويل جهود الرقمنة في مصـــر نحو تطبيق مبادىء RUG. علاوة على ذلك ، تم إجراء مقابلات مع الخبراء في مجال التخطيط والتصـــميم العمرانى للتحقيق في الإطار المقترح سابقًا من وجهة نظرهم ضمن السياق المصري. وكشفت الاستنتاجات أنه على الرغم من أن الحكومة المصـرية تعمل على نشـر تحولها الرقمي، إلا أنها تحتاج إلى مزيد من الاهتمام لتفعيل أدوات الاتصـال المستجيبة مع أصحاب المصلحة وخاصة مواطنيها، الذين يمثلون العمود الفقري لمفهوم الاستجابة، إلى جانب تعزيز آليات RUG أيضًا. واخيرا، من المهم الاعلان عن جهود مصر الرقمية لمواطنيها لتشجيعهم على المشاركة في حوكمة مدنهم، من خلال وسائل الاعلام المختلفة.

**الكلمات الدالة:** المدينة المستجيبة- حوكمة حضرية مستجسبة (RUG) - علم تصميم المواطن (CDS)- مركز المعلومات ودعم اتخاذ القرار (IDSC)- وزارة الاتصالات وتكنولوجيا المعلومات (MCIT).

## INTRODUCTION

Although **the Participatory Urban Process** gathers professionals and non-professionals to work together to respond to citizens' changeable needs and wishes, a few are satisfied with the actual process and outcomes (Hou, 2010, as cited in Calderon, 2020). Fortunately, with the propagation of technological development, which is the pioneer in our era, ICT technology introduces new conceptual types of cities (Abd Elsalam, 2016). One of them is **the Responsive City**. It increases the degree of citizens' satisfaction towards their city through practicing a complete participatory process, as it places its citizens in the center of planning, designing, and management of their city (Schmitt, 2018).

Besides, the major reason for the appearance of responsive cities around 2011 is that with the help of ICT technology (e.g., smartphone apps, official websites, etc.), citizens began to communicate directly with their city and vice versa. They started to influence infrastructure and governance processes in real-time. Accordingly, a mechanism that connects citizens with their city government evolved by utilizing ICT technology (Schmitt, 2018). Thus, principles of applying RUG came to light as they promote the connection of those three domains (the responsive government, its citizens, and their combination via the ICT technology) from the responsiveness perspective.

On the other hand, it is noticeable that Egypt is exerting efforts toward digital transformation. The United Nations Study has recently declared that Egypt is one of the eight African countries that developed the E-Government Development Index, from the middle group in 2018 to the high group in 2020. This upward transition is related to two trends that encouraged the digitization of the region: increasing investment in infrastructure and the provision of online services (UN E-Government Knowledgebase, 2020). Thus, there is a persistent need to study Egypt's digitization efforts to know if those efforts go beyond the concept of RUG. Consequently, the major question that arises here is,

***To what extent do Egypt's efforts in the digital era go beyond implementing responsive urban governance?***

Thus, **the major goal** of this research is to **provide a framework of responsive Egyptian urban governance (mechanisms and tools)** respecting the nature of both: the Egyptian people and the Egyptian government. In addition, the **minor goal** is to conclude RUG principles from successful international examples to aid in shifting governments into responsive urban ones.

Therefore, the methodology of the present study is carried out through four consecutive phases, as in figure 1, where **phase one** presents the notion of a responsive city, followed by a real concrete case study that applies the same concept to highlight some criteria of the responsiveness concept. Next, **phase two** comes up with some concluded principles (mechanisms and tools) required to implement RUG through analyzing successful international examples.

The previous examples offer clear guidance for governments toward implementing RUG in general and guide **phase three** in analyzing the situation in Egypt to conclude a proposed framework of responsive Egyptian urban governance via a SWOT analysis. Then, **phase four** verifying the previously proposed framework throughout experts' semi-structured interviews according to the Egyptian context.

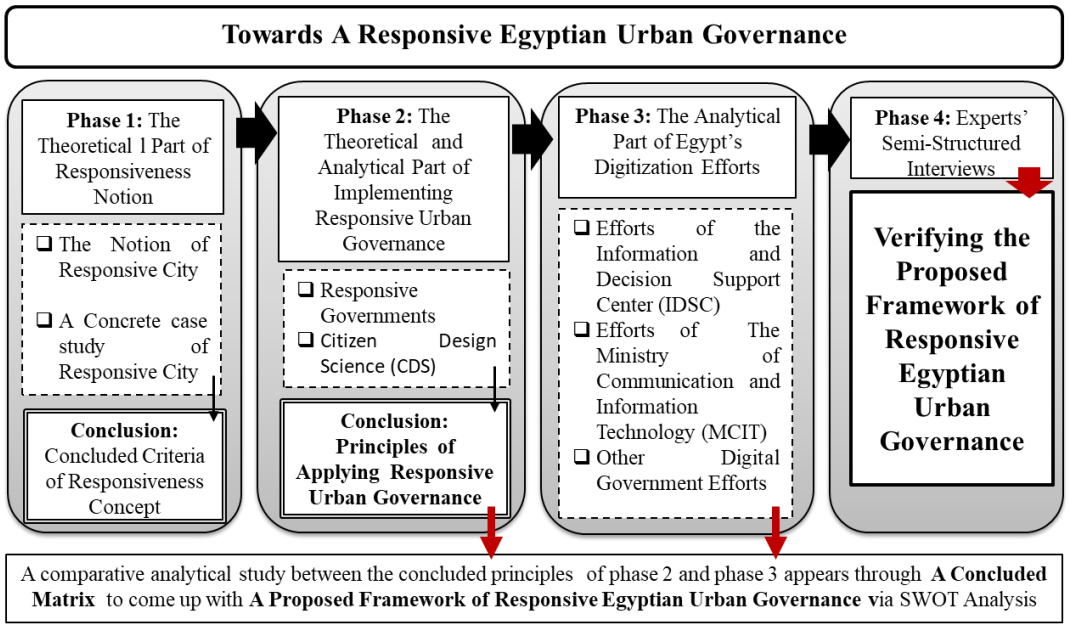



Figure 1: The methodology of the study

Source: The researcher

## 1. THE NOTION OF A RESPONSIVE CITY

O'Donnell and Bige Tuncer presented the definition of a responsive city as: "The Responsive City is one that, as the name suggests, responds to the needs, wants, and desires of its citizens; whether they're workers, residents, or visitors. All this is done in real time, and it's active and rich with applications". (O'Donnell, 2017).

And, Tuncer (2018) has introduced her viewpoint considers "a Responsive City as a smart city that places the users of cities at the center of technological developments and aims to bring the knowledge and opinions of users in a feedback loop where the future designs of cities are partially shaped by this input. She mentioned that users of cities are the backbone of the concept of responsive cities, and evidence-informed urban design and planning processes play an important part in achieving responsive cities".

### 1.1 A Concrete Case Study Applied the Concept of Responsiveness as a Process: The Renovation of Hönggerberg Campus

Both ETH[1] Vice-president Planning and Logistics and the project director claimed that the renovation of the Hönggerberg Campus of the Swiss Federal Institute of Technology in Zurich is considered one of the pioneer responsive projects because it is not only stirring worldwide interest by combining the users' requirements (bottom-up plan) with the top-down plan but is also reacting flexibly with users' changeable needs over time (Staub, 2005).

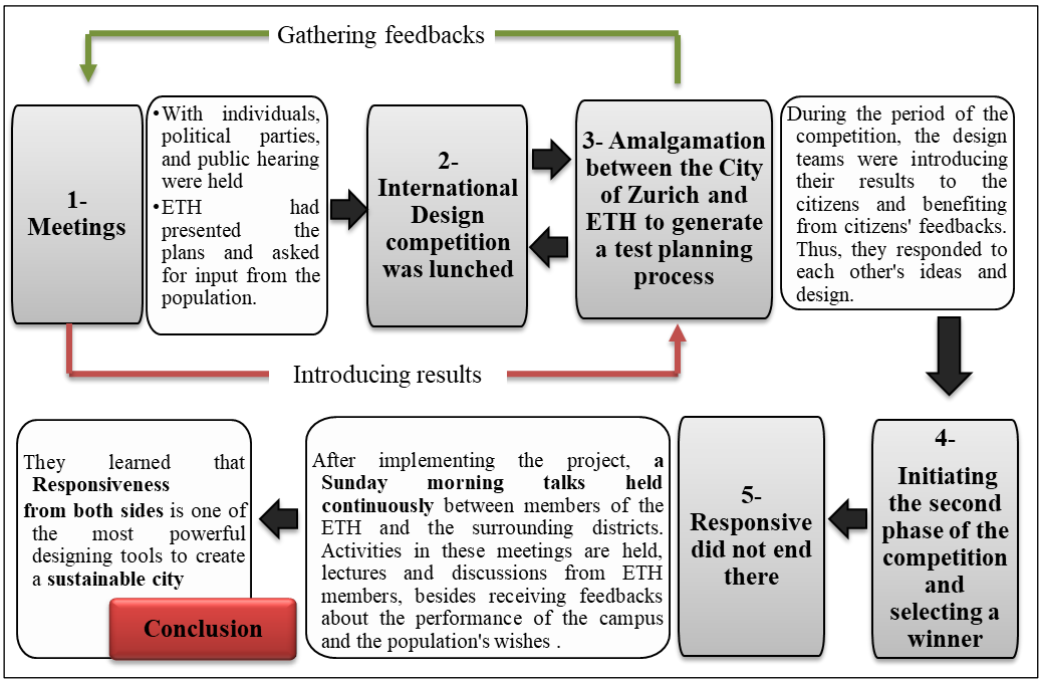



Figure 2: The Process of Responsiveness in Hönggerberg Campus's Competition

Source: The researcher, based on (Schmitt, 2018).

The last matches with O'Donnell and Bige Tuncer notion mentioned above of a responsive city, and the first ensures that responsiveness enhances the participatory process between the Top-Down and Bottom-Up approaches. Figure 2 shows in detail the responsive process of the campus's competition.

### 1.2 Conclusion: Concluded Criteria of the Responsiveness Concept

The concept of a responsive project strongly supports combining **bottom-up and top-down approaches through a loop**. **Firstly**, the combination of elements of both previous approaches starts from the surrounding communities, the project's users, the city's mayor, and the confederation's president. They all work together along the responsive process, which starts from putting on the renovation vision, going through the project implementation, and continuing even after finishing the project.

**Secondly**, the responsiveness loop; throughout the project's renovation process, the design team worked on introducing their results to the citizens and benefiting from their feedback. This feedback loop does not end with the project's implementation but

[1] ETH: is a public research university of engineering and natural science in the city of Zurich, Switzerland (a city with the highest quality of living) (ETH Zurich, n.d.).

continues even after finishing it. That's why it strongly applies the notion mentioned earlier of the responsive city by Big Tuncer. **That is done using the responsive tool; it is the continuous weekly meeting supported by activities in The City Hall** with the people to follow up their feedback about their project's performance and wishes, even after ending it.

## 2. IMPLEMENTING RESPONSIVE URBAN GOVERNANCE (RUG)

This part investigates the implementation of **a truly RUG** within citizens' involvement in their city's government and design. Therefore, it would be preferable to focus on the following two domains theoretically and analytically from the responsiveness perspective. **Firstly, The Responsive Government** ensures citizens' involvement in the governance of their city by presenting the notion of responsive governance, followed by implementing responsive government within some international examples to develop mechanisms and tools to implement responsive government. **Secondly, Citizen Design Science (CDS)** ensures citizens' involvement in designing their city (Mueller et al., 2017) by presenting its notion, followed by highlighting the latest tools (The UrbanAPI and The Quick Urban Analysis) that allow citizens to participate in designing their city, within some European cities, as shown in Figure 3.

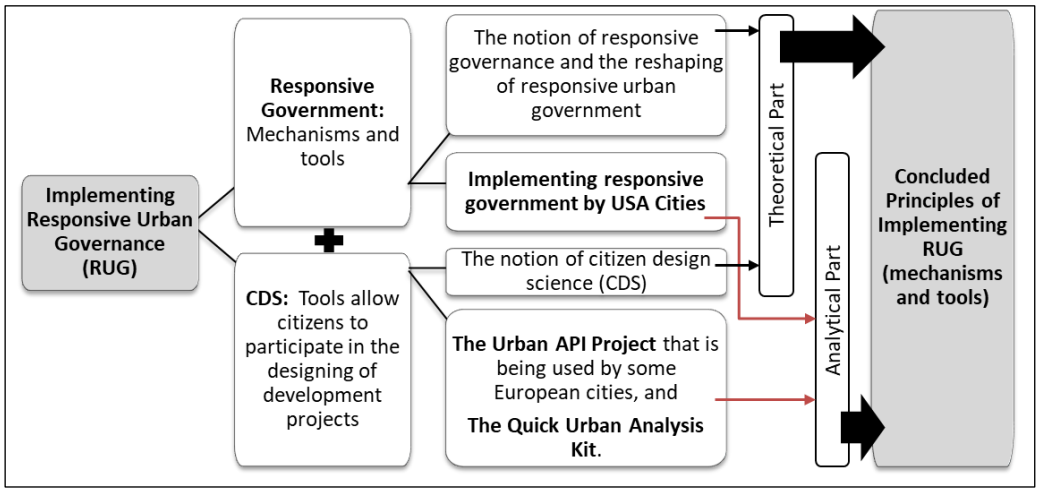



Figure 3: Phases of applying RUG as concluded by the researcher

Source: The researcher

### 2.1 Responsive Governance Notion

"Responsive public governance requires responding efficiently[1] and effectively to people's real needs. This entails a resolve to anchor policies, strategies, programs, activities and resources, taking into account people's expectations, with particular attention paid to local variations and ambitions" (United Nations, 2015, P.27).

Through the literature review to clarify the differences between participatory, inclusive, and responsive urban governance, it could be concluded that when

[1] ***Efficiency,*** e.g., service delivery, toward ***effectiveness*** – more accountable, transparent, inclusive, participatory, representative, and responsive governance (Gilman, 2015).

government informs, consults, and dialogues with citizens, here the governance is participatory one. Once the people are involved in the implementation process, inclusive governance appears. Eventually, **RUG appears by keeping in contact with their citizens through a weekly meeting after the implementation process to respond to their changeable needs and wishes constantly** (Schmitt, 2018).

### 2.2 International Examples Implemented Responsive Government (Mechanisms and Tools)

The USA Cities (Chicago, Boston, Washington, D.C.) are real and successful methods, which not only followed the reshaping of government in solving citizens' real-time problems (a mechanism) but also combined with tools of the digital revolution which connect citizens with their government, as presented in both; the Civic Report 2014, and the Case study: Boston's Citywide analytics team by Katherine Hillenbrand (Goldsmith, 2014; Hillenbrand, 2017). To illustrate, Table 1 analyzes the problem of each city, followed by its solution and the utilized digital tools with their functions.

### 2.3 Concluded Principles of Implementing Responsive Urban Government (Mechanisms and Tools)

From all the prior USA cities examples, some principles to implement responsive urban government could be highlighted. Those principles are divided into mechanisms and needed tools. **As for the mechanisms of responsive government, the followings could be concluded:**

1. Responsive government must be **visible to its citizen**. This visibility needs strong support from the top, always operates from the mayor office.
2. The mayor's office works on the concept **of Data Freedom[1]** (a dominant idea in the responsive city). Applying the concept of Data Freedom through establishing offices often related to the mayor's suite, such as **the DoIT analytic center** in Chicago, **MONUM** in Boston, or Boston's **Citywide Analytics Team placed in the DoIT.**

The previous offices work on the concept of Data Freedom via **utilizing visualization tools to manage and display the city performance to its people such as:**

1. The WindyGride, the Dashboard and the CityScore. Besides, a smartphone app is being used by the MONUM office in Boston to report small and big cities' problems that are accompanied by a photo and related to a specific location in the city.
2. Other tools like establishing a platform under the mayor's orders for gathering and visualizing customers' grades of the city services and employees. These different platforms are, for instance, the official governmental website to express citizens' priorities. But this study will keep away the social media

[1] Data freedom: This concept passes through three phases respectively, they are data gathering, data analysis, and finally action taken. It's aims are opening conversation between citizens and their government to generate solutions, besides raising everyone's voice up to the top of his/her government (Goldsmith, 2014, P. 4).

services such as Facebook, Twitter, and Instagram due to the propagation of many unofficial pages with the same name.

Table 1: Case studies of USA cities implemented responsive government

| | | |
|---|---|---|
| **1- Chicago " How Centralized Data Analytics Change the Essence of Government** | Problem/ Aim | Isolation of knowledge and resources in government departments |
| | Solution | Establishing Chicago's **Department of Innovation and Technology (DoIT)**. It is an analytic data center that presents several data sets beneficial to government, businesses, and people through its tools. |
| | Tools/ Function | **1- Chicago's Smart Data Portal**: Via connecting data holders with data users to create beneficial services for citizens and businesses<br>**2- WindyGrid:** A computer application that allows users to view geographic and temporal-based data mapped across the city |
| **2- Boston' s Citywide Analytical Team** | Problem/ Aim | How to manage Boston effectively |
| | Solution | Establishing **the Citywide Analytics Team in DoIT**. It works on:<br>• Bringing the updated data to the mayor to make the appropriate decision.<br>• Providing other organizations with data-driven and insightful information |
| | Tools/ Function | **1- Creating a Dashboard of Boston's performance**: It displays the city's performance to managers and employees for a better quality of life for Boston's people and citizens to engage them around data and priorities.<br>**2-** The City Score: **It shows the city's performance within easily understandable metrics to guide future priorities and projects.** |
| **3-** | Problem/ Aim | The volume of complaints overwhelmed the local officials' abilities to solve them. |

| | | |
|---|---|---|
| | Solution | The **freedom of online data** to engage government with its citizens through establishing the **Mayor's Office of New Urban Mechanics (MONUM)**, dedicated to service delivery and citizen engagement. It is located within the mayor's suite. |
| | Tools/ Function | **1- A Smartphone app:** It is connected by the citizens to report cities' problems that are usually accompanied by a photo and related to a specific location in the city.<br>**2- Meetings at the City Hall:** It presents initiatives to citizens accompanied by activities and focuses on the traditional work of service delivery. |
| **4- Washington, D.C.** | Problem/ Aim | Developing the city services and employees by gathering and visualizing customers' grades. |
| | Solution | The Mayor of Washington, D.C., gave an executive order to establish **a governmental platform** to gather and visualize customers' grades of the city services and employees. |
| | Tools/ Function | Customers use **the DC. Gov website** to input citizens' feedback, then quick remediation of problems is generated. |

Source: The researcher based on (Goldsmith, 2014; Hillenbrand, 2017)

## 2.4 The Definition of Citizen Design Science (CDS)

Citizens' involvement in the design/redesign process within online designing tools to extract information for urban designers and researchers. This is done by developing design tools and experiments, building collaborations with people interested in participatory design and extracting accomplishable insights for urban design through data analysis. This current visualization and designing tools range from simple 2D sketches and maps to 3D and virtual reality models (Mueller et al., 2017).

### 2.4.1 Tools Allowing Citizens to Visualize and Participate in the Design Process

Table 2 shows examples of the latest existing CDS tools. **The UrbanAPI Project** is used by four European cities (Bologna, Vienna, Ruse, and Vitoria-Gasteiz). This project provides tools to urban planners at three different spatial levels; 3D VR, PME, and UGS. **The Quick Urban Analysis Kit** is a simple web application that combines both tasks; active design in workshops with residents and providing citizens' direct feedback. The same table analyzes in detail each application's description and its functions. (UrbanAPI, 2014; Khan, et al., 2014; qua-kit, n.d.).

Table 2: Case Studies of European cities utilizing CDS tools

| | | | |
|---|---|---|---|
| **Firstly, the three applications used in the UrbanAPI Project with its three different spatial levels** | 3D Virtual Reality (3D VR) | The application description | It is a mobile application that allows a 3D virtual reality representation for the planning scenarios by the public administration to experts, policymakers, and citizens. |
| | | The application function | Enabling citizens design, visualization and giving opinions<br>(Scale: local planning projects) |
| | The Public Motion Explorer (PME) | The application description | It is a mobile phone-based application. It helps urban agencies to acquire information regarding the dynamic activities within a city during the day, using 2D/3D web mapping client, population distribution and mobility patterns information. |
| | | The application function | Enabling citizens visualization and giving opinions only<br>(Scale: local level) |
| | The urban growth simulation (UGS) | The application description | It is an ICT simulation tool that works on understanding spatial planning on a regional scale. |
| | | The application function | Enabling citizens design, visualization and giving opinions<br>(Scale: the city and the city-region) |
| **Secondly, The Quick Urban Analysis Kit (qua-kit)** | | The application description | It is a simple web application that replaces citizens' design workshops and provides citizens' direct feedback. |
| | | The application function | Enabling citizens' design, and giving opinions<br>(Scale: local urban design projects) |

Source: The researcher based on (UrbanAPI, 2014,; Khan, et al., 2014; qua-kit, n.d.).

### 2.5 Principles of Implementing Responsive Urban Governance

The concluded table 3 combines the previous tables 1 and 2. It highlights the concluded principles for applying RUG (mechanisms and tools) within the following two domains; **firstly**: the responsive urban government that has to be visible to its citizens. This could be done by reshaping urban government by establishing offices related to the mayor Suite such as DoIT, MONUM, or creating an analytical team in DoIT. These offices' roles, tools, and functions are shown in detail. **Secondly**, the latest CDS tools enable citizens to visualize and participate in the design/redesign of development projects, which are also presented according to their functions and the project's scale.

Table3: Principles of implementing responsive urban governance (RUG)

| | | | | | | |
|---|---|---|---|---|---|---|
| **Principles of Implementing Responsive Urban Governance (RUG) [Mechanisms and Tools]** | 1- Visible Responsive city government | **1.1 Reshaping of urban government by Establishing offices related directly to the mayor suit such as:** | 1.1.1 DoIT | Role | **1. Separating** and analyzing **steams of data to government, to take appropriate decisions**<br>**2. Allowing citizens to access information** | |
| | | | | Tools and function | **The Windy Gride, Smart Data Portal**<br>Displaying and managing city's performance | |
| | | | 1.1.2 Creating analytical team in the DoIT. | Role | Enhancing the methods, the city delivers services to the citizens through:<br>1. **Bringing** the updated data to the mayor to make the appropriate decision.<br>2. **Providing** other organizations with data-driven and insightful information | |
| | | | | Tools and function | **Dashboard and City Score**<br>Displaying and managing city's performance via indicators on large screens | |
| | | | 1.1.3 MONUM office | Role | 1. Engaging government with its citizens through the freedom of online data to enhance the methods the city delivers services to the citizens | |
| | | | | Tools and function | 1. **Smart phone app:** Reporting city's issues by citizen | |
| | | | | | **2. Meetings with citizens in the City Hall** | |
| | | **1.2 Building governmental platform** | | Tools and function | **1. Establishing governmental websites**<br>Inputting citizens' feedbacks, and Expressing citizens' priorities and their feedbacks | |
| | **2- CDS: Visualizing development projects or/and participating in the design process** | | | Tools and function | 1- UrbanAPI Project | 1. **3D VR (Mobil app):** Enabling citizens design, visualization and giving opinions (Scale: local planning projects |
| | | | | | | 2. **UGS (Simulation tool):** Enabling citizens design, visualization and giving opinions (Scale: the city and the city-region) |
| | | | | | | 3. **PME (Mobil app):** Enabling citizens visualization and giving opinions **only** (Scale: local level) |
| | | | | | **2- Qua-Kit (Web app**): Enabling citizens design, visualization and giving opinions (Scale: local urban design projects) | |

Source: The researcher based on (Goldsmith, 2014; Hillenbrand, 2017; UrbanAPI, 2014; Khan et al., 2014; qua-kit, n.d.).

## 3. EGYPT DIGITIZATION EFFORTS

Shifting towards applying RUG in Egypt is not an easy task. However, it can be done through the following three steps. **Firstly,** analyzing Egypt's digital efforts according to the global experiences shown in table 3, they offer clear guidance for governments to shift their strategies toward implementing RUG. These efforts resulted in major and minor questions that guide the analysis of Egypt's digital efforts, as shown in Figure 4.

**Secondly, a matrix is conducted** to compare Egypt's digital efforts with the previously concluded principles of RUG. Accordingly, a proposed framework of responsive Egyptian urban governance is concluded through a **SWOT**. **Eventually, subjected semi-structured interviews** are conducted with the Egyptian experts in the fields of urban planning and design to verify the proposed framework from experts' viewpoints and according to the Egyptian context, as shown in Figure 4

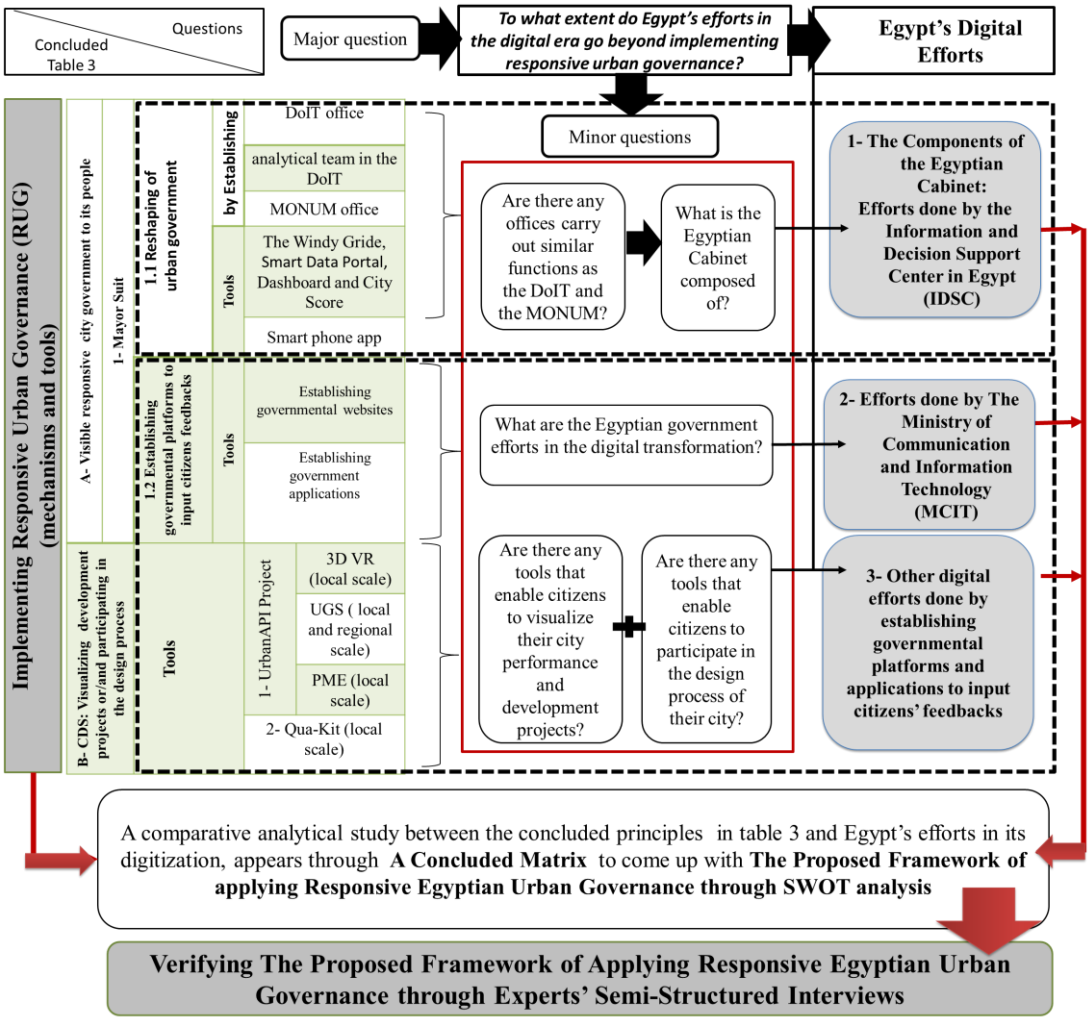



Figure 4: The structure of analyzing Egypt's efforts in its digital transformation according to the concluded table 3

Source: The researcher

### 3.1 Egypt's Digital Efforts by the Information and Decision Support Center (IDSC)

Concerning the reshaping of urban government in the international case studies, it starts from the mayor suite, which includes the placement of some offices related to it, such as the DoIT, and MONUM, in addition to creating the analytical team in the DoIT office. Accordingly, in the current Egyptian case, by searching the components of the Egyptian Cabinet, it is found that there is already the **Information and Decision Support Center in Egypt (IDSC).** It is an affiliation directly related to the Egyptian Cabinet. It is one of Egyptian's leading **Think Tanks** in the field of decision-making support, and it is already exerting efforts in Egypt's Digital Transformation (Council of Ministers, n.d.-a).

#### 3.1.1 The Role of the Information and Decision Support Center

Currently, the IDSC is performing several roles and tasks that meet the requirements and needs of decision-makers. At the same time, it tries to cope with citizens' needs and wishes in Egyptian Society. These roles are highlighted in the present study, as they match the notion mentioned earlier of responsive governance (Council of Ministers, n.d.-a). These roles are shown in the following table (4).

Table 4: The roles of the IDSC

| Role of IDSC | Abbrev -iation | Functions |
|---|---|---|
| **General Policy Formulation** | GPF | Extending information and knowledge to decision-makers that assist them in adopting suitable measures and procedures, which can directly promote development efforts and accomplish comprehensive reform plans |
| **Societal Integration** | SIN | **c**onfirms steady communications with citizens that enable the center to recognize citizens' orientations and opinions on several issues. |
| **Supporting Efforts towards Digital Transformation** | DTE | Supporting relevant authorities towards their digital transformation |
| **Promoting Systems of Facing Crises and Disasters** | FCDS | Establishing strategies and plans to bring down potential risk of disasters. Raising awareness and training programs |
| **Information Support** | SI | Providing a community of knowledge with accurate and updated information to support the decision-makers. Besides, extending the community with knowledge and significant developments. |

Source: (Council of Ministers, n.d.-a).

Regarding **the Societal Integration role,** although it works **on confirming regular communications with citizens** that enable the center to recognize citizens' orientations and opinions on several issues, there is a strong need to activate the tools used to perform that task effectively. Then, **the Information Support role** provides a knowledge community with accurate, updated information and significant developments. The other three remainder roles do not care about citizens' connection with their governments, as shown in table 4 (Council of Ministers, 2021- a).

### 3.1.2 Tools Used by the IDSC

- **The IDSC Application:** It is a mobile phone application. It is an important platform through which the center provides updated data and information to highlight the performance of various sectors (Council of Ministers, 2021-b).
- **The smart dashboard projects:** A tremendous effort related to dealing with big data resulted in the project of information panels for the State of the Prime Minister. This will be done by focusing on economic indicators providing updated, total, and detailed information that supports the process of decision making (Council of Ministers, 2021-c).
- **Egypt's Description by Information:** The center offers a report and a platform with the same previous name to the community and stakeholders. It presents the most important statistics and indicators in various fields, such as economic activities, social activities, and essential services (e.g., population, health, education, and infrastructure ) (Council of Ministers, 2021-d).

## 3.2 Egypt's Digital Efforts by The Ministry of Communication and Information Technology (MCIT)

Nowadays, achieving sustainable development and progress needs a strong ICT sector to derive the necessary changes for the ICT revolution that the world is witnessing. This is being done by building Digital Egypt by The Ministry of Communication and Information Technology (MCIT) to improve the national ICT sector (Ministry on Communications and Information Technology, 1999-a), in addition to establishing other government platforms to input citizens' feedbacks.

### 3.2.1 Building Digital Egypt by the MCIT

In alignment with the Egypt vision 2030, the developing the Egyptian ICT sector by the MCIT is achieved by building **"Digital Egypt",** which sets down the foundation of Egypt's transformation into a digital society (Ministry of Information and Communication Technology, 1999-b). It is built on three main pillars:

- **Digital Transformation:** It takes place through understanding the role of ICT in improving the service delivered to citizens faster and simpler. MCIT launched five outlines: Digital Egypt e-platform, mobile applications, call centers (15999), post offices, and citizen service centers.
- **Digital Skills and Jobs**: Building the digital Egyptian society is the first step in promoting Digital Egypt to prepare for the digital transformation era. In this respect, a training plan is implemented by MCIT in cooperation with major

technology companies and global universities to all society segments (i.e., school and university students, graduates, professionals, women, and persons with disabilities), in all fields and at various levels.

- **Digital Innovation:** In the context of supporting sustainable national development and positioning Egypt as a regional innovation hub, MCIT promotes research and development, innovation and entrepreneurship in the field of ICT. The Technology Innovation and Entrepreneurship Center (TIEC) in the Smart Village holds a lot of initiatives and programs to ensure that both people and businesses benefit from ICT in the local industry.

### 3.3 Additional Egyptian Government Efforts

Nowadays, many official government platforms and mobile applications are accessible to the Egyptian people. This study concerns those websites and apps that present recent Egypt's development projects, especially those that allow citizens to express their opinions (as the responsiveness concept highlights that last point). The most famous two of them are:

- **Egypt's Projects Map:** This website is one of the most significant websites that present Egypt's development projects, the President's initiatives, Citizen Services, and Egyptian ideas. Generally, this website enables citizens to like/dislike, leave their comments and rate the projects or the initiatives, besides allowing citizens to view other people's feedback ( Egypt's Projects Map, n.d.-a).

  Furthermore, **the Egyptian Ideas section is considered a step toward the concept of "responsiveness"** as it allows citizens to input their project idea in relation to its responsible name, video, digital file, category, description, and pictures ( Egypt's Projects Map, n.d.-b).

- **Sharek 2030**: It is a mobile application that works as an interactive platform between the people and the Egyptian government. It aims to raise the community awareness of development programs according to each governorate, the undertaken projects by the State, and performance indicators (Ministry of Planning and Economic Development, 2019).
  **Sharek 2030** allows citizens to browse the development projects and the State's initiatives, like/dislike them, and share information. Besides, citizens can write their comments regarding the selected program. **It is considered a step toward the concept of "responsiveness"** as it allows citizens to suggest their initiative by introducing its name, importance, governorate, and geographical location (Ministry of Planning and Economic Development, 2019).

### 3.4 Reviewing Egypt governmental Efforts Regarding the Concluded Principles of RUG

After analyzing Egypt's digital efforts nowadays, it is recommended to compare those efforts with the RUG principles in table 3, which are concluded from the previous successful international examples, as a trial to come up with recommendations aid in shifting Egypt's digital government efforts to the RUG. This could be done through the following two steps:

- **A correlation matrix reviews Egypt's digital efforts with respect to the RUG principles:** The following matrix in table 5, **compares** Egypt's previously analyzed digital efforts by the IDSC, MCIT, and Other digital government efforts (roles and tools), with the concluded principles of applying RUG responsive urban government and CDS according to the successful global examples, that are collected in table 3, as they work as clear guidance for governments to shift their efforts toward RUG. The roles, tools and functions of those principles are also presented.
- **A SWOT Analysis:** Table 6 focuses on the strengths, weaknesses, opportunities, and threats of Egypt's digital government efforts compared with the principles of applying RUG. Thus, recommendations directing Egypt's digital government efforts to the RUG could be concluded.

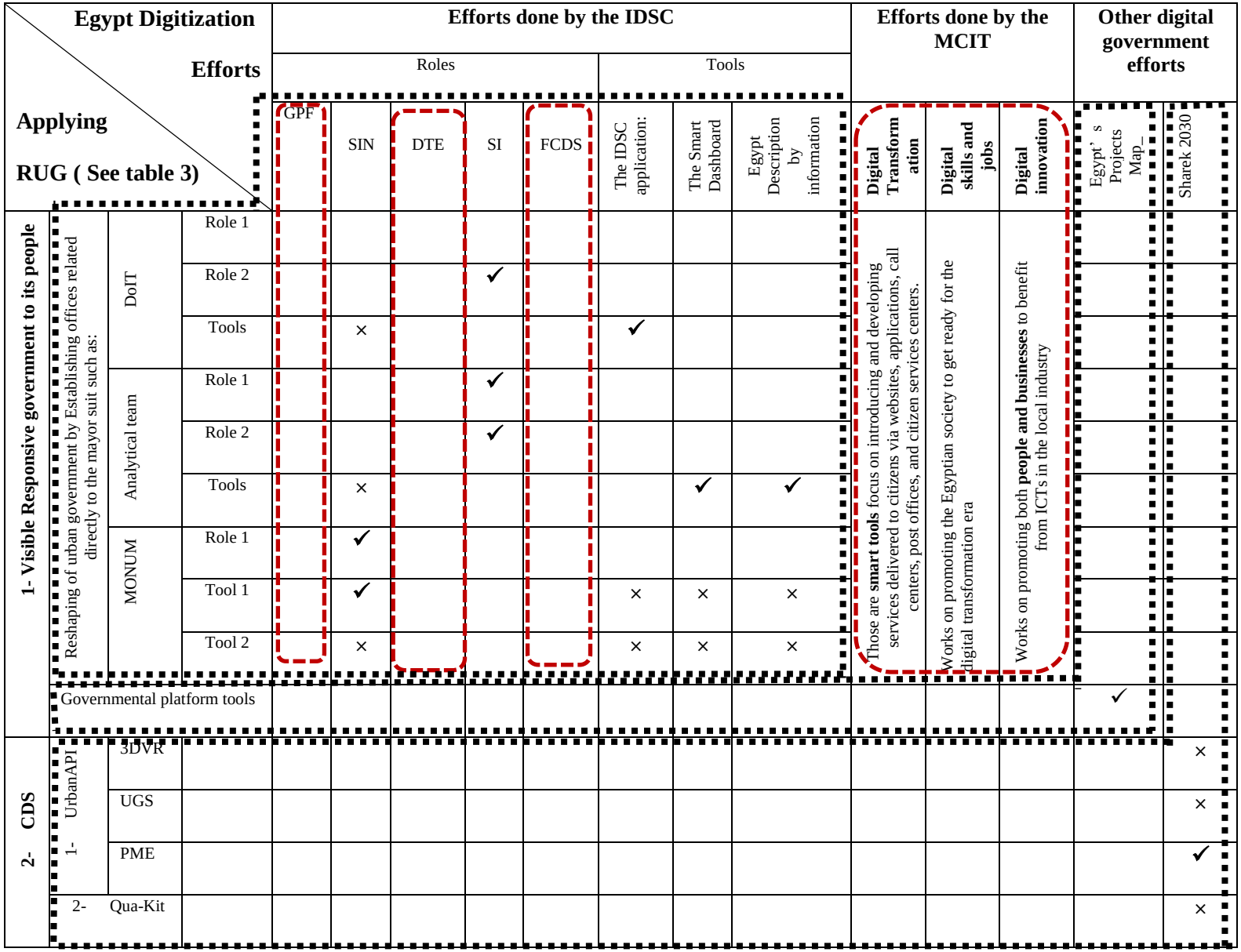
### 3.4.1 Findings of the Correlation Matrix

The roles and tools of the IDSC are reviewed with the roles and tools of the DoIT, MONUM, and the analytical team in DoIT. The findings showed that **the Societal Integration role** matches the MONUM office role. However, **the Societal Integration tools** are not activated to perform their role. Furthermore, **Information Support** allows citizens to access information like the DoIT and enhances how the city delivers services to the citizens like the analytical team in DoIT. All this is done within electronic platforms and apps (Council of Ministers, A, n.d.). The other three roles are not concerned with keeping citizens connected with their government.

Turning **to the digital efforts by the MCIT**, it is found that, **firstly**, the functions of the utilized tools by **the digital transformation** are not practically matching with the functions of the responsive tools used by the global examples. To illustrate, the digital transformation utilized smart tools and their functions to introduce and develop citizen's services, away from enabling them to input their feedback. The ability to input feedback is one of the functions of responsive tools. **Secondly, the other MCIT's two pillars (Digital skills and jobs and Digital innovations)** are essential in promoting the people and businesses to get ready for the digital transformation and to benefit from ICT in the local industry. On the other hand, the global examples do not expose such vital roles.

Eventually, in Egypt's Other digital government efforts, it is found that the function of Egypt's Projects Map website corresponds to those government websites of the global examples, where both of them allow citizens to visualize their city's performance and express their feedback. In addition, the function of the mobile application Sharek 2030 in Egypt gets along with the PME in the global examples, where both of them enable citizens' visualization and give opinions only. Unfortunately, no Egyptian apps would allow citizens to participate in the design process, such as the 3D VR, UGS, and the Qua-Kit in the global examples.

Table 5: A correlation matrix reviews Egypt's digital efforts with respect to the RUG principles




Source: The researcher according to all the prior analysis

Impact range

Extra roles and efforts by Egypt Digital transform

✓ Exist role or tool

× Does not exist role or tool

Table 6: A SWOT Analysis of Egypt's digital transformation

| **Strengths** |
|---|
| • According to the EgovSurvey2020 by the United Nations, Egypt works on increasing investment in infrastructure and online services.<br>• Egypt possesses offices in its affiliates related directly to the Egyptian Cabinet (e.g., IDSC). Thus, direct strong support from the Prime Minister is offered in various fields.<br>• The ability of those offices to perform Think Tanks' role in decision-making support (e.g., general policy formulation, supporting digital transformation, and promoting systems of facing crises and disasters).<br>• Egypt already owns and utilizes practical visualization tools of responsive government to stakeholders, such as:<br>✓ **Important governmental platforms**: Provide updated data and information highlighting various sectors' performance. This is done by uploading the related mobile app and then receiving mobile notifications to all new news such as IDSC application and platform and Egypt Description by Information platform.<br>✓ **Reports:** Present the most important Egypt statistics and indicators in various fields, such as economic activities, social activities, and essential services (e.g., population, health, education, and infrastructure), such as the report of Egypt Description by Information.<br>• **Starting the work on Smart Dashboards Project:** As a result of dealing with big data, information panels present Egypt's economic indicators to support the State of the Prime Minister in the local and international forums.<br>• The existence of Egypt's Digital Strategy with its three pillars:<br>✓ **Egypt's digital transformation**: Directing Egypt to be a smart country because it mainly focuses on introducing and developing services delivered to citizens via websites, applications, call centers, and citizen services centers. Thus, the existence of a smart base that will support the transformation to the responsiveness, as a step after the smart one.<br>✓ **Digital skills and jobs programs**: Works on a hierarchal training plan to build digital Egypt society.<br>✓ **Digital innovation programs:** Promotes the people and businesses to benefit from ICT in the local industry.<br>• A trial towards the concept of "responsiveness" has already occurred via official government websites and applications that offer citizens to view all development projects, leave their comments and rate the projects, and view other people's feedback.<br>• Adding a crucial section to those official government websites and apps, such as **Citizen's Proposed Project** or **Initiative,** is a step toward a responsive government, as it allows the people to input their project idea or initiative. |
| **Weaknesses** |

| |
|---|
| • The deactivation of some responsive government roles, such as **Societal Integration** ensures the connection between citizens and their government through regular communications with citizens due to the lack of communication tools between citizens and their government.<br>• **Egypt's information panel** presents economic indicators to the Prime Minister **only**, not to all stakeholders.<br>• Despite the existence of both; the official government websites and mobile applications as a step towards the concept of "responsiveness", this step is incomplete due to the inability **to trace each project's performance**. According to the abovementioned responsiveness mentioned by Bige Tuncer, a feedback loop does not end through continuously receiving the population's feedback about their city's performance and wishes.<br>• There are no government websites or mobile applications that allow the Egyptian people to participate in the design/redesign process of projects on their various scales, such as the Qua-Kit or the UrbanAPI Project. |
| **Opportunities** |
| • Egypt is increasing investment in infrastructure and provision of online services according to the EgovSurvey2020 by the United Nations (UN E-Government Knowledgebase, 2020, P.49).<br>• Since the Egyptian government has already completed its Digital Transformation, it would have the will to shift this transformation to the concept of a responsive urban government.<br>• The existence of Digital skills and jobs as a pillar in Digital Egypt initiatives ensures the excellent use of technology by educating the community on how to use and benefit from it to build a digital society based on science and technology.<br>• The existence of Digital innovation as another pillar in Digital Egypt initiatives has positive effects on supporting sustainable national development and positioning Egypt as a regional innovation hub.<br>• Concerning people with limited culture, an essential step in meeting citizen's needs is represented through **Citizen Services Centers** in Edfu, Daraw, and Aswan City. They are the first centres in Egypt where citizens can request government services through a new modern web-enabled system (Egyptian post). |
| **Threats** |
| • The insecurity risk of many false platforms and applications that allow malicious hackers to attack users' data.<br>• Shifting toward a responsive urban government requires applications and platforms and, more importantly, building a civilized community, as they are the ones who get the service. Unfortunately, a group of people reject the use of technology.<br>• The week technological infrastructure in rural areas and remote governorates such as the New Valley. |
| Source: The researcher based on the concluded matrix in table 5 |

### 3.5 The Proposed Framework of Responsive Egyptian Urban Governance (Mechanisms and Tools)

It is evident that Egypt has already completed its Digital Transformation. However, this transformation is probably away from citizen participation. **Shifting toward the Responsive Urban Governance** needs citizen participation in governance of their city as they are the backbone of the responsive city, according to (Tuncer, 2018). This could be done through the following proposed framework of REUG, as shown in table 7.

Table 7: The Proposed framework of responsive Egyptian urban governance

| | | |
|---|---|---|
| **The Proposed Framework of Responsive Egyptian Urban Governance** | **Mechanisms** | Promoting the role of Egypt's offices in its affiliates and relate directly to the Egyptian Cabinet, such as the IDCS, as they are the Think Tank that support decision-making in various fields. |
| | | Reaching simple people in the countryside, through regular campaigns and specialists to raising their awareness of the benefits of utilizing technology. |
| | | Building up strong technological infrastructure in the rural areas and remote governorates. |
| | **Tools** | Allowing citizens to inputting their feedback about the delivered services, expressing their priorities, and tracing the performance as well (from the principle of responsiveness). |
| | | Allowing users and stakeholders to trace the performance of their development project. This could be done via regular **weekly meetings** between **the users of the project and its various stakeholders with the project's government agency** (this weekly meeting is from the responsiveness tools) |
| | | Activating **several government communications tools with citizens** and stakeholders to ensure a steady communication with them. For example, **smart phone apps** that allow citizens to send their problems and allow government to respond quickly to them. |
| | | Egypt works on **the smart dashboard project,** which is a promising visualization tool. However, it is recommended to present indicators to citizens and stakeholders in the various fields, not limited to economic indicators for the Prime Minister only, in pursuance of the **Dashboard and City Score in the international examples** that display and manage a city's performance via public indicators on large screens. |
| | | The need to design **governmental websites and mobile applications** that allow the Egyptian people to participate in the design/redesign process of development projects on their various scales, such those in the international examples (i.e., 3D VR or Qua-Kit), nor simulation tools work on understanding the spatial planning on the regional scale, like the UGS. |

Source: The researcher

### 3.6 Verifying the Proposed Framework of Responsive Egyptian Urban Governance

Semi-structured interviews with urban planning and design experts were held. The analysis of those interviews aims to know the following aspects:

- ❑ To assess the extent to which Egypt's Digital Transformation efforts go beyond the concluded principles of applying RUG as shown in tables 3 (as RUG should be visible government to its people and allowing them to participate in designing their city through CDS). This could be done by knowing the degree of expert's interactions with Egypt's Digital Transformation efforts
- ❑ To verify the proposed framework of responsive Egyptian urban governance from experts' viewpoints within the Egyptian context.

The semi-structured interview consists of three parts as follow:

- **Part one:** Measuring experts' daily interaction with the government websites and applications within Egypt's digital transformation.
- **Part two:** Measuring the utilized tools and mechanisms between experts and the government agencies to which the development project belongs within Egypt's digital transformation.
- **Part three**: Measuring the utilized tools and mechanisms between experts and project users within Egypt's digital transformation. Plus, realizing to what extent users participate in giving their opinions throughout the project.

#### 3.6.1 Results of Part One

In figure 5, the majority of experts strongly and moderately follow up the daily news through those significant official government websites, as opposed to 20% to 40% who do not rely on them. The mobile app Sharek 2030 is not successfully used by 80% of experts. Other popular websites are also strongly and moderately used by experts. The most famous are the New Community Authority, the General Organization for Physical Planning, The Electronic Portal for the Egyptian Governorates, The World Bank, and The Central Agency for Public Mobilization.

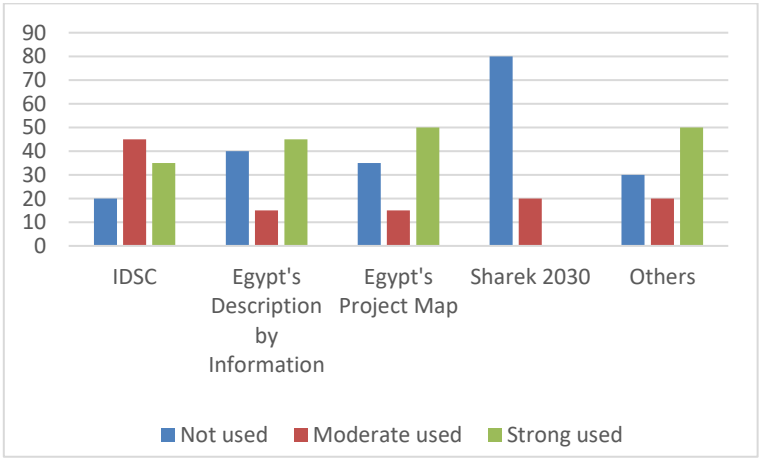



Figure 5: The degree of experts' daily usage of the previous significant official government websites and applications in following up Egypt's development projects

Source: The researcher based on experts' semi-structure interviews

Regarding tracing and sharing opinions on Egypt's development projects, more than half the experts do not participate in giving their views through the previous websites and apps. By asking them about the reason behind the absence of their participation, they answered that they already do not know that those platforms enable them to share their opinions. Additionally, 85% of experts strongly support users' opinion participation. This last is from the essential principles of the responsiveness concept. Besides, a significant number of experts added that they hardly prefer to present those development projects on the city's scale beside the national and regional levels already existing in those powerful platforms and apps.

### 3.6.2 Results of Part Two

By asking experts about the degree of difficulty in communicating with government agencies and institutions, 55% of them agree that this difficulty is moderate. In comparison, 25% of them find it hard to connect with government agencies and institutions. Regarding the tools utilized **by experts,** they indicate that the formal official letters are still used intensely to obtain project information from the related government agency. Contrarily, accessing experts to the server of the corresponding government agency is not used. While e-mails are used moderately by 40% of the experts, the same number of experts do not use them.

When inquiring about experts' preferable tools of communication with the government agency, most experts strongly and moderately prefer life and online meetings, WhatsApp, and emails. However, WhatsApp and emails are not preferred by 30% and 25%, respectively. Transferring to Egypt's Digital Transformation Strategy to build an Egyptian digital society mainly based on the following two programs: Digital Skills and Jobs and Digital Innovation. Unfortunately, 80% of experts neither know nor utilize them in their field of work.

An inquiry is conducted about experts' opinions to establish a mechanism in the form of government offices, work on promoting the connection with the government agency, and whether they prefer those offices to be in direct contact with the Prime Minister's Office to obtain direct support from the Prime Minister. It is found that the majority strongly agree with this idea. The small percentage that disagrees does not prefer the idea of a mediator in the communication process with the agency. Besides, being related to the Prime Minister's office is a kind of increasing burden to that last office.

### 3.6.1 Results of Part Three

70% of the experts strongly prefer users' overall participation in the development projects to know their requirements and needs before starting the project. They are typically using the workshops as the primary tool of this participation. While figure 6 illustrates in detail this participation; first, 45% and 40% of users participate moderately and strongly **throughout the project**, respectively, as opposed to only 15% who do not participate.

Secondly, the majority **do not follow up on the project performance after finishing it**, which is considered one of the main principles of the responsiveness

concept, as is previously shown in The Renovation of Hönggerberg Campus. At the same time, 85% of the experts strongly prefer **the idea of users sharing their designs** through utilizing the latest design tools, such as the previously mentioned CDS tools, only in case of societal awareness in the design field.

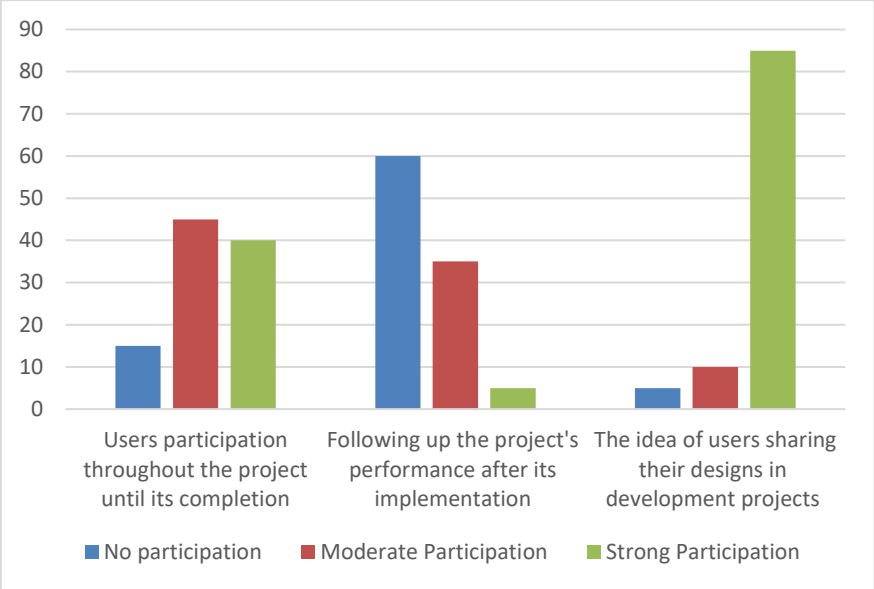



Figure 6: Illustrating in details users' participation throughout the different levels of the development projects.

Source: The researcher based on experts' semi-structure interviews

### 3.7 Verifying the Framework of Responsive Egyptian Urban Governance According to Experts' Semi-Structured Interviews

Shifting toward responsive Egyptian urban government needs the following:

- Announcing **Egypt's significant official government platforms and applications** and **Egypt Digital Strategy** towards building a digital society (e.g., Digital Skills and Jobs Programs and Digital Innovation Programs) to stakeholders, as experts do not know them. This should be done via different media such as local radio and television, social media (e.g., Facebook, Twitter, and others), local government websites, mobile messages, emails, and street banners. To encourage different stakeholders, including the society members, to visualize, trace, and participate in their city's governance. Thus, the government recognizes and applies its citizens' changeable needs. Furthermore, an objective conversation could be generated.
- Holding continuous connections between experts and the government agencies through those preferable tools, such as the life and online meetings that could be held weekly, in addition to WhatsApp messages and emails, as those last tools are the fastest nowadays.
- Establishing offices related to the Egyptian Cabinet where their major role in promoting and organizing the relation between experts and government

agencies about the related development project (from the mechanisms of a responsive urban government).

- Presenting the development projects and initiatives on the city's level besides those on the national and regional levels that already exist on those official platforms and applications.
- In case of the existence of societal awareness in the design field, a persistent need calls for utilizing design tools to allow the Egyptian people to participate in the design/redesign process of development projects on their various scales, such as those in the international examples (i.e., The Urban API Project and The Qua-Kit).
- Thus, preparing the community members to participate in the design/redesign of the development projects that affect them through programs such as the Digital Skills and Jobs.

### 3.8 Conclusion

The present paper aims to develop the participatory urban process between citizens and their governments in various fields by using the concept of the responsive city. This concept focuses on strengthening the connection between the people and their governments not only by utilizing the latest ICT tools in order to apply citizens' changeable needs and enable them to express their opinions but also by holding weekly **meetings in the City Hall** to follow up with their city performance where that latter is the primary responsive city tool

The research is looking for ways to apply the concept of a responsive city by analyzing successful global examples. The paper concludes with some **principles of using RUG** that allow citizens to participate in the governance of their city, as shown in Table 3. The table concluded the mechanisms and tools needed to apply RUG within its two principles: responsive urban government and CDS. The findings that emerged from the analysis of the global examples reveal that: **First, the responsive government should be visible to its citizens**. This visibility always starts from the Mayor's Suite through reshaping the urban government, establishing offices related directly to the mayor, and working on the concept of Data Freedom. Those offices are shown in table 3, along with their roles, their utilized tools and their functions**. Secondly, the latest tools and their functions used to apply CDS** that allow citizens to visualize and participate in the design/redesign of their city development projects are also presented in the same table.

On the other side, Egypt’s digitization efforts are highly noticed nowadays. Thus, the study conducted **a correlation matrix** to review Egypt’s digital transformation efforts with the previously concluded principles of RUG, as shown in Table 5. The conclusion showed that Egypt utilized smart tools, not responsive tools, due to the absence of responsive tools functions that enable citizens to input their feedback about the services delivered and express their opinions, besides the lack of weekly meetings between the citizens and the Egyptian government. That last absence does not allow them to follow up on the performance of their city, which is from the crucial responsive tools that differentiate it from the smart one. Furthermore, the Egyptian government does not own CDS tools that enable citizens to participate in the design process, such as the 3D VR, UGS, and the Qua-Kit the global examples. **A proposed framework of**

**responsive Egyptian urban governance (mechanisms and tools)** concluded after performing a SWOT analysis aiming to shift Egypt's digitization efforts towards the RUG's principles, as shown in table 7.

Eventually, **semi-structured interviews** with the Egyptian experts who work in urban planning and design aim to **verify the previously proposed framework of responsive Egyptian urban governance** from Egyptian experts' viewpoints, plus assess the extent to which Egypt's digital transformation efforts go beyond applying principles of RUG (shown in table 3). The results revealed that most of Egypt's significant official government platforms are familiar to experts, as opposed to Egypt's significant official applications (such as Sharek 2030) is unfamiliar to experts, as shown in figure 5. Plus, all the Egypt Digital Strategy efforts toward building a digital society are entirely unknown to experts.

Then, utilizing different media such as local radio and television, and social media to announce Egypt's digital efforts to stakeholders and encourage them to express their opinions in various fields, through those significant government official websites and apps, as experts do not completely know that those websites and apps enable them doing that task. Moreover, activating RUG mechanisms by establishing offices related directly to the Prime Ministry is highly recommended by experts to ensure the connection between them and their governments.

Next, a persistent need calls for utilizing design tools to allow the Egyptian people to participate in the design/redesign process of the development projects on their various scales, in case of the existence of societal awareness in the design field, as presented in figure 6, considering the weekly meeting with stakeholders in the City Hall to follow up their city performance. Furthermore, experts recommended presenting the development projects and initiatives on the city and national and regional levels that already exist in those official platforms and applications. Finally, recommendations toward shifting the Egyptian digitization efforts to applying RUG concerning the Egyptian context are concluded.

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