

## The Influences of Human-Made Disasters on the State of Government to Citizens ICT Services: Users' Perspectives

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### Abstract

*The recent human-made disasters in middle-east harmed the governments' functionality which caused difficulties on various aspects of life for citizens. These affected governments' functions include government to citizens (G2C) ICT services. There is an absence of empirical study to clarify the real situation of the government to citizens ICT services among citizens during a human-made disaster. Where government to citizens ICT services could fit and serve the affected people due to the difficulties and risks that hinder their access to the government sites. This paper attempts to fill this gap in the literature by empirically investigating these services in Iraq as a war-torn country. In this paper, the literature review has been conducted; the investigated issue is recognised by conducting a self-administered survey. Results point out that there is a lack of flexibility when using ICT services, and there is a notable ignorance about the availability of G2C ICT services among IDPs.*

**Keywords:** G2C-ICT services, human-made disaster, war-torn countries, e-services.

### 1. Introduction

According to Kealy and Stapleton [1], the prevalence of Information and Communication Technologies (ICT) has caused various substantial changes in daily life. The rapid developments in ICT profoundly affected society including organizations and governments. Furthermore, it has also promoted emerging fields such as G2C-ICT services (e.g. e-learning, e-commerce, e-health, and e-government) as service dissemination methods. Thus, ICT popularity has re-engineered entire processes and plays a fundamental role globally in serving government agencies and non-governmental organizations to improve their interaction with beneficiaries and heighten their work performance and efficiency [2, 3].

Just as daily life has been influenced positively by the ICT application, it is adversely affected by disasters and calamities negatively. Whereas different countries and regions currently face various types of disasters, governments are attempting to adopt more ICT to improve emergency response and rescue operations. According to [4], disasters are divided into two types: natural disasters, such as earthquakes, floods, and hurricanes, as well as non-natural or human-made disasters, such as war, conflicts, and violence (e.g. ISIS war in Iraq since June 2014).

Researches on ICT applications in non-natural disasters (unstable or violent environments) are rare [2, 3, 5]. Existing studies on applying ICT in non-natural disasters

had highlighted how websites [6-9], blogs [10, 11], health informatics technologies [1, 12-15], online forums [16, 17], mobile phones [18], online photo-sharing [17], social networking sites [4, 19-22], geospatial mapping tools (e.g. Google Maps) [23], and micro-blogging technologies, such as Twitter [11, 24-27], are used by affected people in the early stages of disasters within an affected region to mitigate disaster impacts. However, the researchers neglected the role of government to citizens ICT services during the recovery period after non-natural disasters [2, 3, 5, 28]. In such periods, G2C ICT services are necessary because the affected people find it dangerous and difficult to reach to the government sites and this is where these services could fit and serve the purpose [2, 5, 29].

Moreover, [1, 12] found that post-conflict areas lay large-scale ICT projects (e.g. G2C ICT services) under extreme situations with numerous additional complicating features. The unstable and risky context has a significant effect on the situation of G2C ICT services. In other words, the Iraqi G2C ICT services have likely worsened after the ISIS war erupted [30]. Consequently, steps to investigate the status of the Iraqi G2C ICT services to achieve successful implementation in the war environment are necessary. Therefore, this study seeks to shed light on G2C ICT services status among Internally Displaced Peoples (IDPs) as people affected by a non-natural disaster.

## **2. Literature Review**

### **2.1. G2C ICT Service in Iraq**

Ministry of Science and Technology (MOST) and the Iraq Commission for Computers and Informatics (ICCI) were the two primary centres that worked together to link with public administration agencies with the aid of Wireless Broadband Network (WBBN). WBBN used as the wireless network that serves as the backbone to integrate electronic government and Management Information System (MIS)[31].

Iraq has three main electronic centres for the delivery of G2C ICT services; Baghdad, Nasiriya, and Erbil. Iraqi G2C ICT services project at present reached the two-way interaction stage in Chatfield and Alhujran [32] evaluating stages for G2C ICT services projects development. Moreover, there are other benefits achievable from the expansion of implementing these services in Iraq. Examples are the enhancement of good governance, transparency, and accountability among the agencies; thus, they increase the mutual trust between the government and the citizens. The G2C ICT services reduce the running cost of the government administration, so it makes the government budget more reasonable and masses-friendly. Finally, the government to business service will enhance and strengthen the intra-agency communication within all levels of the government and the entire society as well [31, 33]. Moreover, according to [2, 5], the known advantages of G2C ICT services in stable environments, multiply in unstable and conflicted environments, because of the seriousness of a citizens' movement.

The G2C ICT applications are critical to helping the user achieve the transactions quickly. These services are still the high-priority application that helps citizen (e.g. IDPs) deal with the government offices. Moreover, G2C ICT services make an opportunity available to the beneficiaries to get the benefit from these services, such as reducing the cost of the transactions, improving the quality of the services, increasing the transparency, and by using the online services the citizens will be saved from the explosion, killing, and kidnapping. Therefore, it is imperative to study the usage behaviour and increase the acceptance of G2C ICT services by usage among citizens, especially war-torn citizens, in countries suffering from conflicts and violence.

Moon [34] described a 5-stage model for G2C ICT services at various levels of interaction with its users and the degree of technical sophistication. The model emphasises that there be various stages of G2C ICT services, which reflect the level of

technological sophistication and interaction with users. Each stage is described further in the following:

Stage 1. Simple information dissemination (one-way communication): The government's basic electronic and static data used to view the articles in the website online.

Stage 2. Two-way communication (request and response): At this stage is the interaction between the two represents the mode of interaction between citizens and government at this stage is for the particular government applications can interact with the citizens of these applications, then process and responds to service requests.

Stage 3. Service and financial transactions: At this stage, the government allows for financial transactions through the financial services provided by the government, such as paying taxes and fines and pay the bills of water and electricity in addition to financial aid.

Stage 4. Integration (horizontal and vertical integration): At this stage the government to integrate services and the participation of all the data to enhance efficiency and ease of use and effectiveness of G2C ICT services and this stage is difficult for the government because it will take a long time and many resources to merge services.

Stage 5. Political participation: At this stage is to promote and develop political participation through the Internet, such as electronic voting and opinion polls, where broader and direct interaction with the citizens. At this stage, highlights the political activities online by citizens.

Majority of Iraqi ministries in touch with the Iraqi citizens to deliver many services. It is worth mentioning that many transactions can be accomplished by relying (even partially) on governmental ICT services, which helps to shorten steps and reduce the time and effort to accomplish the transaction [35-37]. Table 1 shows some of these transactions and services categorised by ministries.

**Table 1. Iraqi Governments to Citizen's ICT Services**

Ministry Name	The Services Provider	The Provided Service
<b>Interior</b>	Directorate General of Nationality And Civil Status	-Issuing the ID card
		-Issuing the Nationality certificate
		-Issuing the Birth Certificate
		-Issuing the Death Certificate
		-Issuing the marriage certificate
	Central Office of Information	-Issuing housing cards
		-Renovation citizens information
	General Directorate of Passports	-Issuing passports
		-Granting of the visa and residence card for foreigners
	General Directorate of Traffic	-Issuing driving licences
-Issuing vehicle registration card		
-The query for traffic fines		
<b>Finance</b>	General Insurance Company	-Issuing insurance for life and property
	The Directorate of General Retirement	-Issuing retirement card and amount of salary calculation
	Directorate of Tax	-Providing information and obtaining taxes
<b>Trade</b>	General Company For Foodstuff Trading	-Issuing consolidated food card
<b>Higher</b>	The Directorate of Equivalence	-The ratification of academic

<b>Education</b>	of Degrees	certificates
	The Directorate of Central Admission	-Applying for universities and institutes
<b>Justice</b>	Supreme Judicial Council	-Registration of the marriage contract.
<b>Labour And Social Affairs</b>	Department of Employment And Loans	-Provide jobs for the unemployed
<b>Science and Technology</b>	Directorate of Research and Development	-Issuing Patent certificate

It is noteworthy that the offices belong to directorates of the Ministry of the Interior have suffered the most massive crowds of IDPs [29, 38, 39], because of the lack of identity documents and the seeking of IDPs to issuing missing documents [40].

## 2.2. Iraqi Internally Displaced People

Former UN Secretary-General Boutros B. Ghali is the first person attempt to define the term ‘internally displaced persons’ IDP as “Persons or groups who have been forced to flee their homes suddenly or unexpectedly in large numbers, as a result of armed conflict, internal strife, systematic violations of human rights or natural or man-made disaster, and who are within the territory of their own country” [41]. IDPs are among the world’s most vulnerable people. Unlike refugees, IDPs remain in their home countries, as long as they have not crossed any international border to find sanctuary, they are legally under the responsibility and protection of their government [42]. According to the Global Peace Index 2015 report [43], the number of IDPs globally reached its highest level since 1945, with 38 million people historically. Moreover, there are 78 countries became less peaceful which, in turn, maximises the likelihood of increasing the number of IDPs.

At the onset of 2014, significant conflicts began between the Iraqi government forces and the terrorist organisations called the Islamic State of Iraq and Sham (ISIS). The battles raged on until the present time. To this end, the collapse of the Iraqi army as a result of the fighting led to the loss of over 1/3rd of the Iraqi land, that all came under the control of ISIS. This results in the displacement of 3.3 million citizens have driven away from their homes and businesses in the conflicted and occupied areas towards safer locations (North & South Iraq) as well as to the neighbouring countries [44, 45].

The increasing number of displaced people still make many problems in various fields. One of the most significant problems that have arisen is with governmental service’s fields. The Iraqi government, until recently, has one channel based on paperwork in the majority of official transactions such as issuing passports, licence, birth certificates, death certificates, paying the fines, and else. This channel requires the presence of citizens in government offices. However, according to the interview with the General Manager of the Nationality Department [46] and with Director of Immigration and Nationality office in Erbil [38], one of the biggest problems faced by the Iraqi government is the enormous crowds on government offices in IDPs host cities. Which adversely affect the workflow in these offices, or disrupted work completely.

The majority of the services required by the IDPs provided in the Iraqi e-G portal and Ministries’ web pages – these include e-Passport, e-License, e-Fines, e-Birth Certificates and e-Death Certificates [35]. For instance, there are massive congestions on the passport offices made by the displaced citizens seeking to obtain passports [38, 46]. The number of people waiting outside the offices reaches the thousands a day, while the displaced can complete most of this transaction through the Iraqi G2C ICT services [35], this situation indicates to the unwillingness of IDPs to use ICT services provided by the Iraqi government. The two photographs presented in Figure 1 gives a realistic picture of the straitened situation for Iraqi government offices in the host cities.



**Figure 1. Congestion near the Passport Offices in Northern Iraq**

There is a marked distinction between the lives of IDPs compared to the lives of ordinary civilians or lives in the rural areas as the former faced with challenges and they encounter several stressors that could significantly influence their behaviours. This dissimilarity reflected in their interaction and communication with each other and with people around them, with their effective tools that they use in coping with their new situation that may continue for an indefinite period. These stressors can be categories and illustrated as economics [47-49] recovery [44, 50, 51], rebuilding [44, 50-52], loss of physical possessions or resources [47, 53], health [44, 49, 54], family [42, 49], and social stressors [42, 49].

IDPs are facing many challenges and conflicts (kidnapping and killing) as well as insecurity (violence environment). The current conflict affects their life, making their move, travel or gets help more difficult [2, 5, 40, 55]. The Iraqi displaced people are forced to travel frequently from remote areas (where shelters camps) to city centres to achieve many governmental transactions. Consequently, this may expose them to accidents and cause considerable risk to their lives, especially when they are crowding outside the government offices making them targeted by terrorists [56, 57].

Therefore, if the G2C ICT services are implemented efficiently and more broadly among IDPs, this will assist them in accessing the government services, saving their lives, money and time, and even contributing slightly to the alleviation of their daily suffering. Moreover, this will enhance governance transparency and be a more cost-effective use of the government's budget allocated for the IDPs.

However, the existing studies, especially in the Middle East, have neglected IDPs which led to a lack of information and data relating to them, especially in the ICT area. Currently, the Iraqi government is attempting to support IDPs and other citizens through using the G2C ICT services [58] because of their capabilities to provide utility in terms of information and transaction.

### **2.3. Lack of Legal Documentation**

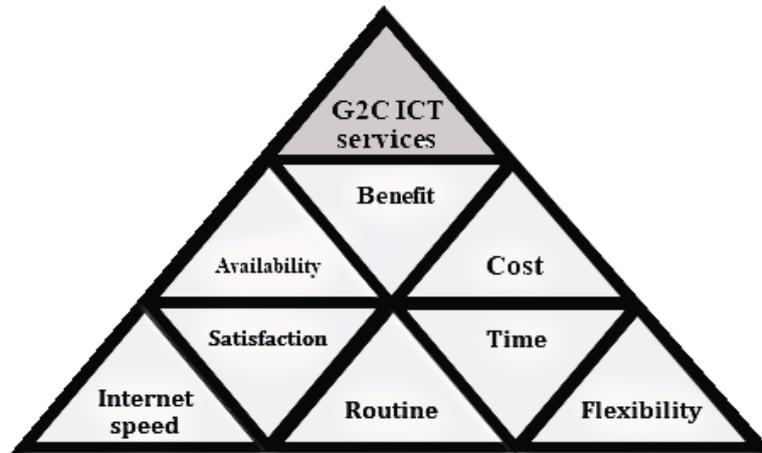
According to the report made by IILHR [40], many displaced families were forced by ISIS to flee quickly without any form of identification, such as their public distribution system (PDS) cards for rations and bank cards. Other IDPs had their documents confiscated by ISIS forces or abandoned them to avoid detection (i.e. Christ, Shabak, Yazidis, Assyrians and Shiites). This issue created some difficulties that further exacerbate the vulnerability of displaced minority members. A late-2014 survey

conducted by USAID indicated that 44% of all IDP families had one or more members without a critical national identity card [40]. In particular, the lack of identification makes some services unavailable to IDPs and restricts their movement. Identity documentation is also critical for registration with the Ministry of Migration and Displacement, which allows the Iraqi government to track IDPs and provide them with Non-Food Items (NFI) support, such as heaters, stoves, blankets, carpets and plastic sheeting.

Without supporting civil status documents, however, IDPs cannot even register with the Ministry of Migration and Displacement. As a result, some IDPs are now trapped in the camps, temporary shelters or along roads and at checkpoints. Moreover, without these documents, IDPs cannot use banks to access their savings [40]. Therefore, great crowds on government offices in cities that received the displaced people to issue missing official documents, which adversely affect the workflow in these offices, or disrupted work completely [38, 46]. The G2C ICT Services provided by the Iraqi government could make a significant difference to those people [2, 5].

### 3. The Material and Method

The main drive of this study is exploring the situation of the Iraqi G2C ICT services among IDPs as people affected by a non-natural disaster. The knowledge resulted from this purpose aims to highlight the main weaknesses from the perspective of the IDP and help the stakeholders to draw an effective strategy to increase the IDPs dependence on G2C ICT services instead of manual transact. The present study examines the eight fundamentals showed in Figure 2 that lead to the success of the application of G2C ICT services [3, 59-61].



**Figure 2. The main success' fundamentals of the G2C ICT services application.**

Thus, this study uses eight items with the dichotomous scale (yes or no) adapted and translated to Arabic from previous related literature [3, 59, 60], in order to mildly measure these eight fundamentals as illustrated in Table 2.

**Table 2. The adapted items used in the current study**

Statement	Answer	
1- I am aware of the availability of e-services in Iraq.	Yes	No
2- In general, I am satisfied with the current G2C ICT services in Iraq.	Yes	No
3- I am aware of the benefits of the current G2C ICT services in Iraq.	Yes	No
4- G2C ICT services reduce the regular administrative routine in Iraq.	Yes	No

5- Usage of current G2C ICT services decrease the cost of citizen transaction.	Yes	No
6- Current Use of G2C ICT services enable me to complete transactions more quickly.	Yes	No
7- The current G2C ICT services are flexible.	Yes	No
8- G2C ICT services are affected by Internet speed.	Yes	No

Individual IDP was considered to be the unit of analysis as it is the individual user who utilises the G2C ICT services. After deciding the type of respondents, the list of IDPs' distribution across Iraq provinces obtained from last statistics report and master list issued on 24th of November 2016 by the International Organization for Migration-Iraq Mission [62]. These statistics indicate that Iraq has about 3.3 Million IDPs, distributed in all governorates of the Republic of Iraq. After piloting and pre-testing, the questionnaire, we required a complete security clearance procedure, because of the critical and sensitive circumstances in the study area. After that, we expend 41 days to distribute the 870 copy of the questionnaire to the adult IDPs settled in 30 places. The places located in the top six provinces in terms of the number of IDPs (Baghdad, Dahuk, Erbil, Kirkuk, Sulaymaniyah, and Salahuldeen).

In this study, we used Stratified Random Sampling. It is the most probable sampling design because the researchers can gain more information about a given sample size [63]. Following this further, 870 adult IDPs requested for their opinion concerning the status of G2C ICT services, adequate as a sampling size [63] and consistent with the study objective. Furthermore, regarding data analysis techniques, Statistical Package for Social Sciences (SPSS) V21 used in this study.

#### 4. RESULTS AND DISCUSSION

The researchers collected 503 response, 391 was valid, which represent 77.7% of the respondents. After data entry, we use IBM SPSS V21 for the data analysis process. Table 3 presents the demographic statistics of the respondents for this study.

**Table 3. Demographic Statistics for the respondents**

	Category	Freq.	%		Category	Freq.	%
<b>Gender</b>	Male	250	63.94	<b>Education Level</b>	Ph.D.	9	2.30
	Female	141	36.06		Master	15	3.84
<b>Age</b>	18-23	177	45.27		Diploma	21	5.37
	23-36	133	34.02		Bachelor	157	40.15
	36-46	34	8.70		Sec-School	181	46.29
	46-56	34	8.70		Read/Write	8	2.05
	≥56	13	3.32	<b>Occupation Status</b>	Public sector	72	18.41
<b>Marital Status</b>	Single	272	69.57		Private sector	21	5.37
	Married	101	25.83		Freelancers	75	19.18
	Divorced	5	1.28		Jobless	223	57.03
	Widowed	13	3.32	<b>Monthly Income</b>	≤ 200\$	172	43.99
<b>Former Residential Area</b>	Urban	201	51.41		201- 400\$	85	21.74
	Rural	190	48.59		401 – 600\$	57	14.58
					≥ 601\$	77	19.69

The results for each of the eight fundamentals' items are illustrated in Table 4.

**Table 4. The analysed results**

Items	Scale	No.	Percentage
Availability of services	Yes	213	54%
	No	178	46%
Satisfaction	Yes	92	24%
	No	299	76%
Benefit	Yes	253	65%
	No	138	35%
Routine	Yes	310	79%
	No	81	21%
Cost	Yes	303	77%
	No	88	23%
Time	Yes	312	80%
	No	79	20%
Flexibility	Yes	176	45%
	No	215	55%
Internet speed	Yes	315	81%
	No	76	19%

Table 4 shows that more than half of the respondents who participated in the availability of G2C ICT services in Iraq answered: "yes" (213). These results showed that about 54% of the respondents confirmed their knowledge about the availability of the services in Iraq. Additionally, the importance of awareness about G2C ICT services was confirmed by the recommendation of users in the comments section of the current study's questionnaire.

Moreover, the second question is related to the satisfaction towards the G2C ICT services, 299 respondents (76%) answered "no"; this means that more than three-quarters of the IDPs surveyed were dissatisfied with G2C ICT services, while the remaining quarter was satisfied. Further, regarding question number three related to the benefit of G2C ICT services, 253 of the respondents (65%) indicated "yes", while 92 gave a "no" response. This means that most of the respondents were conscious of the benefit of the G2C ICT services, but they were dissatisfied with the current services. For the fourth question, the researcher examined the IDP's opinion about how G2C ICT services reduce the regular administrative routine in Iraq. Table 2 shows that 79% agreed, while 21% disagreed with the statement in this question.

Question number five was about the cost and how the usage of current G2C ICT services reduces the cost of citizen's transactions in Iraq. 77% of the IDP surveyed answered "yes", whereas 23 answered "no". This means that the available G2C ICT services are reducing the cost of citizen's transactions in Iraq as of IDP's perspective. Regarding the current G2C ICT services status in Iraq, the sixth question investigated the G2C ICT services time efficiency. 80% of the respondents answered "yes", but 20% answered "no". This means that G2C ICT services are faster than the traditional way or the old way (by going to the office and meet the employee, get an appointment, etc.), based the IDP's viewpoint. Question seven investigated the flexibility of the current G2C ICT services, where 45% of users found the services are flexible, while 55% answered found it not flexible. Finally, for the eighth question related to the Internet speed, this item tested how the G2C ICT services are affected by Internet speed among surveyed IDP, where the majority of them (81%) answered "yes", nonetheless 19% users answered "no". Again, despite supporting the infrastructure (Internet) by the government, the use of G2C ICT services among Iraqis is nevertheless affected by violence and conflicts environment.

This means that more than three-quarters of IDP emphasise internet speed affects online services.

## 5. Conclusion

This paper aimed to clarify the situation of G2C ICT services among Iraqi IDP after ISIS conflict erupted. Authors had presented the results of a survey on the status of G2C ICT services in human made disasters. Some of the interesting findings are there is a certain of awareness among IDPs about the availability of G2C ICT services, however, there should be more effort to increase the awareness level about such beneficial services. Also, most IDPs are not satisfied with the G2C ICT services which means more improvement for these services is needed. Regardless of the positive impression of IDPs about G2C ICT services and their crucial advantages, most IDPs found these services not flexible enough to be utilised in risky-unstable environments.

This research is timely in the management era of non-natural disaster rampant in the world these days, as several governments are trying to understand the factors influencing the usage of G2C ICT services in such circumstances. This paper contributes practically by assisting suppliers of governmental e-service in their endeavour improve the e-service utilization among IDP as the disaster's affected people. The empirical results can support them in the development process of the G2C ICT service and increase citizens' dependence on the services in such dangerous environment. As well, it will support the efforts towards alleviating the overcrowding on the governmental offices in the cities hosting IDPs. On another hand, this study will contribute to the existing body of knowledge in the area of IS studies that focus on long-term displaced people, particularly in the middle east environment, due to the scarcity of such studies in the field. The findings of this study will initiate further research in the field of ICT among displaced people by providing new empirical facts. This paper can be used as agenda-setting for scholars working in the field of conflicts and their effects on the ICT usage behaviour by citizens affected by war.

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