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Research paper

Using Theory of Interpersonal Behaviour to Predict Usage Behaviour of Government to Citizen ICT Services among people Affected by the war

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Abstract

As ICT developments profoundly promoted fields such as government to citizen services and disaster management, there is an absent of framework and study to clarify the factors that influence the usage behaviour of the services among people affected by a non-natural disaster. A conceptual framework is developed in this research to measure such factors underpinned on the Theory of Interpersonal behaviour. This paper presents the first phase of this research. Literature review is conducted, investigated issue is recognized. Hypotheses and conceptual framework, as well as the research methodology are also described in this paper. Lastly, contribution, limitation and conclusion are also included.

Keywords: Disaster, G2C ICT services, TIB, Usage behaviour, War environment.

1. Introduction

According to [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 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 its interaction with beneficiaries and heighten their work performance and efficiency [2, 3]. Likewise, whereas different countries and reigns currently face various types of disasters, governments are attempting to adopt more ICT to improve emergency response and rescue operations. According to [4], disasters can be 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.

One of the most distinguished difference between the two types of disasters is the behaviour of the affected people with the equipment available to them (e.g. ICT services) to overcome the difficulties in their new situation [4, 5]. However, the existing literature on usage behaviour of ICT services pays particular attention to affected people of natural disaster, and as long as they behave differently from affected people of non-natural disaster due to exposure to various risks and stressors [6-8], thus, there is a need to study the usage behaviour of ICT services among affected people of non-natural disaster separately.

Research on the factors affecting the usage behaviour of ICT services in non-natural disasters (unstable or violent environments) is rare [2, 3]. Existing studies on non-natural disasters had highlighted how websites [9, 10], blogs [11, 12], online forums [13, 14], mobile phones [15], online photo-sharing [13], social networking sites [4, 16, 17], geospatial mapping tools (e.g. Google Maps) [18], and micro-blogging technologies, such as Twitter [11, 19-22], are used by affected people in the early stages of disasters within an affected region to mitigate disaster impacts. However, the researchers neglected the usage behaviour and the role of G2C ICT services during the recovery period after non-natural disasters [2, 4]. 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 G2C ICT services could fit and serve the purpose [2, 23]. Thus, this study seeks to produce a model of critical factors that influence usage behaviour of G2C ICT services among people affected by a non-natural disaster.

2. Natural and Non-Natural Disaster

The term disaster defined in different ways, according to Kreps [24], disasters refer to non-routine events in societies or in regions/communities involving that disrupts the area and cause physical harm. About this, the major defining properties of disaster

events, both natural and non-natural is the duration of the effect, which can be characterised as short or open-ended. Generally speaking, Oliver [25], stated that disasters are processes not events, between societal individuals, groups or organisations, the physical environment and culture comprising of norms and values [4]. Due to the characterization of disasters as an event as opposed to a process, prolonged studies of disaster have not received much attention as researchers have mostly focused on the emergency stages of disaster [26]. In the aftermath of a crisis, the previous routines of daily life may no longer be viable as victims recover from the event. Researchers studying disasters have looked at this recovery process: how affected populations deal with, adapt to, and resume normal social function following a crisis event. By surveying the literature, easy to identify that when disasters occur, human systems often improvise their structures and routines, roles, work facilities and locations, resources, and hours of operation to interact with the new situation. Studies concerning disaster frequently employ socio-temporal models as methodological tools that enable them to describe social phenomena that take place at a particular time before, during, and following a disaster [27, 28]. While several models exist (e.g. [29-33]). Powell's model [30] has been the most extensively utilised model in literature in demonstrating different activities related to the recovery process in light of eight socio-temporal stages namely, pre-disaster, warning, threat, impact, inventory, rescue, remedy and recovery [4]. During the remedy period, citizens begin to gather in a physical place and reconstruct their lives. People collocate and begin to re-establish their social networks: individuals forge new relationships, re-connect with others, and in some cases, relationships can deteriorate. People may also turn to close family members (i.e. parents and siblings) for support. During this phase, people often travel to the site of physical disruption to lending their loved ones hand by helping them rebuild, or, by providing them with financial assistance [34, 35]. The final stage, which is the recovery stage, is characterised by a return to normalcy. In this phase, individuals have either returned to their homes or built homes in new locations, people continue to work and attend school regularly, and other societal activities resume.

This study will be conducted on remedy and recovery stages in non-natural disasters in the form of civil conflict and war environments. War environments are a unique case of Powell's model as people are experiencing several phases concurrently [4]; for instance, victims of the disaster may be working on recovery from a recent attack while facing new threats and warnings. According to prior studies [33, 34], the majority of disasters are small-scale in their extent, and they occur over a short period; however, people who experience war can be subjected to prolonged disruption. Moreover, victims may have to live and adapt to the ever-risky environment and deal with it in their daily lives. This type of victims who are residing in a place rife with the crisis have to develop persistent situational awareness during their day-to-day activities as disruptive forces (bombings and violent killing) can occur anywhere at any time. Hence, the victims' behaviours in war areas are different from those who are affected by natural disasters. The contrasting characteristics of war environments and natural disasters in the latter four phases of Powell's model presented in Table 1.

Table 1: The Dissimilarities in Characteristics of Natural and Non-natural Disaster for Affected People [4].

Phase	Characteristics of natural disaster	Characteristics of a non-natural disaster
Inventory	Individuals ascertain the survival of family and companions (can be difficult).	Difficult to ascertain the survival of family and companions due to an unsafe environment.
Rescue	Individuals engage in pro-social, Altruistic behaviour and lead the initial response effort.	May is not able to trust strangers as they may be insurgents or members of a militia.
Remedy	Individuals try to meet physically; They rebuild social networks; Friends and family arrive to provide support.	Travelling to meet others face-to-face maybe insecure; Cannot trust strangers/difficult to collocate; Distance may separate support networks.
Recovery	Usual life resumes/new norms can emerge.	Disruption turns out to be a piece of routine life/new norms can emerge.

There is a marked distinction between the lives of people affected by nun-natural disaster compared to the lives of ordinary civilians as the former faced with challenges, and they encounter several stressors that could significantly influence their behaviours. This distinction reflected in their interaction with people around them, and with the useful tools they use in coping the new situation, that may continue for an indefinite period. These stressors can be categories and illustrated as: (1) Economics (such as loss of continuing loss of income, loss or lack of employment, impact on house values, lack of help or advice and information for applications to insurers and providers of grants or loans, conflicting information, and applications for insurance pay-outs or delayed or denied) [36-42]. (2) Problems with recovery and rebuilding homes (such as continuing lack of essential services, lack of information or advice to understand the application process for rebuilding the property, progressive damage to houses, continuing to live in temporary accommodation, lack of housing assistance, problems with the restoration of homes or property, and dealing with daily life and recovery processes) [6-8, 36, 38, 40, 42-44]. (3) Losing of physical possessions or resources (such as loss of a car, furniture, appliances and clothing, including items of sentimental value) [6, 8, 37]. (4) Health (such as new or continuing health concerns or conditions, lack of access to healthcare, lack of access to psychosocial care, and lack of access to prescription medication) [8, 37, 40, 45, 46]. (5) Familial (such as breakdown of relationships and loss of intimacy, the collapse in household activities and functioning, breakdown of familial resilience, changes in household composition, parental psychopathology, impact on parenting skills, and physical and mental abuse and neglect of partners or children) [37, 41, 43, 45, 47-49]. (6) Education and schooling (such as lack of education opportunities or facilities, loss of socialisation that is part of attending school, and hanging to new schools or education establishments) [6, 37, 40, 41, 43]. (7) Social (such as physical separation from friends, disruption of social networks and relationships, and reduction in the level of social support) [8, 37, 38, 41, 43, 48, 49].

In consequence, as long as it is not reasonable using the available benchmarks from developed countries to developing countries [50, 51]. There is no doubt that it is ill-advised and unreliable employing the benchmarks and facts derived from ICT usage behaviour studies made among citizens lived normal lives, for the citizens who are living under the influence of all this challenges and stresses, which have profound effects on their psychological status according to psychological and health studies mentioned earlier.

3 Conceptual Frameworks

Many theoretical perspectives used by Information System (IS) scholars in studying the reactions of individuals to technology. This research study employs Theory of interpersonal behaviour framework developed by Triandis in 1980 [52], as a theoretical foundation due several studies have confirmed the TIB reliability and validity in a different context. Also due to success in explaining and predicting the behaviour of users towards using or workaround the information systems available to them in simplifying their work, whether entirely

or partially [53, 54]. Furthermore, TIB is established based on a set of significant variables that have proven their strength to gain a comprehensive understanding as to what factors cause behaviour or what determines behaviour in general [55]. Moreover, the TIB is useful in understanding and explaining complex human behaviours especially those behaviours that affected by their physical and social environments [56, 57]. These reasons evidently justify that the TIB is suitable for this study. Triandis proposed a theoretical network of interrelated hypotheses around the constructs of attitude and behaviour, placing them in the broadest possible context. Triandis in 1977 [58] identified that any behaviour is a complex and multifaceted phenomenon, because, in any interpersonal encounter; person perceives to be right will determine a person's behaviour in that particular situation. This behaviour is subsequently determined by the extent to which the person likes or dislikes the behaviour, what others pressure them to do, and the perceived consequences associated with the particular behaviour along with the extent to which the individual values these consequences. Figure 1 is diagrammatically depicted the influential constructs of the conceptual framework for this study based on the TIB and the relations among them leading to their explanation/influence of an individual usage behaviour.

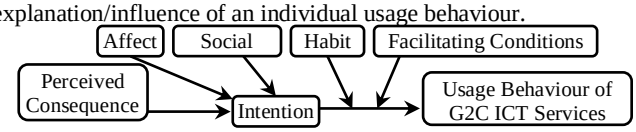

Figure 1: The Conceptual Framework based on TIB

The TIB has verified its competences in behaviour predicting and explanation. The question then arises of why it has not been used in research to the same degree as other psychosocial models. Many scholars [57, 59, 60] state that Triandis' TIB framework is quite complex, not only very complete. The researchers in [60] indicated that scientific scholars used TIB less frequently because they prefer parsimonious (less complex) models. Whereas the TIB has shown to be useful in explaining behaviour, but has been used somewhat infrequently in IS research. Table 2 contains the existing studies, context, and its focus (between 1995 and 2017) that adopted TIB either entirely or partially by a combination with other theories.

Table 2: Existing IS Studies that Adopted the Theory of Interpersonal Behaviour

Author & Year	Context	Research Focus
Bergeron et al. (1995) [59]	Executive IS	Affect, Habits Hierarchies, Facilitating Conditions, Consequences, Social factors, and Behaviour.
Pare and Elam (1995) [61]	Personal use of the computer	Beliefs, Social norms, Enjoyment, Perceived Usefulness, Anxiety, Departmental Facilitating Conditions, Habits, Organizational Facilitating Conditions, and PC Use.
Cheung (2000) [62]	Personal use of the Internet	Affect, Complexity, Near-term Consequences, Facilitating Conditions, Social factors, Long-term Consequences, and Current Usage.
Gagnon et al. (2003) [63]	Telemedicine adoption by physicians	Affect, Intention, Perceived Social Norms, Personal Normative belief, Role beliefs, Personal Normative Belief, Habits, Perceived Consequences, Facilitating Conditions, Self-Identity, and Behaviour.
George (2003) [64]	Executive IS	Habits, Facilitating Conditions, Affect, Consequences, Social Factors, and Behaviour.
Woon and Pee (2004) [65]	Personal use of the Internet	Social Factors, Affect, Intention, Perceived Consequences, Job Satisfaction, Facilitating Conditions, Habits, and Internet Abuse Behaviour.
Ikart and Ditsa (2004) [66]	Executive IS	Attitudes towards using, Habits, Social Factors, Facilitating Conditions, Perceived Ease of Use, Perceived Usefulness, and Actual System Use
Gagnon, Sánchez, and Pons (2006) [67]	Health Technology Assessment	Facilitating Conditions, Habit, Social Normative Beliefs, Attitudinal Beliefs, Intention, Personal Normative Beliefs, and Behaviour
Ikart (2007) [68]	Executive IS	Perceived Ease of Use, Social Factors, Facilitating Conditions, Perceived Usefulness, Habits, Attitudes towards Using, and Actual System Use
Pee et al. 2008 [69]	Personal use of the Internet	Social Factors, Perceived Consequences, Habits, Intention, Facilitating Conditions, Affect, and Behaviour.
Robinson (2010) [57]	Software piracy making use	Perceived Consequences, Facilitating Conditions, Social Factors, Intentions, Affect, Habit, and Behaviour.
Moody and Siponen (2013) [70]	Personal use of the Internet	Penalties, Benefits, Attitude, Self-Concept, Roles, Habits, Affect, Intention, Social Factors, Facilitating Conditions, and Behaviour.
Betts et al. (2014) [71]	Personal use of the Internet	Habits, Facilitating Conditions, Affect for Cyberloafing, Intent to Cyberloaf, Distributive Justice, Procedural Justice, Interpersonal Justice, Informational Justice, and Cyberloafing Behaviour.
Nadhrah and Michell (2014) [54]	Healthcare Information Systems	Perceived Behavioural Control, Ease of Use, Facilitating Conditions, Affect, Intention, Professional norm, Social factors, Personal Value, Process impact value, Perceived Behaviour's Consequences, Habits, and Behaviour.
Amin (2016) [72]	Personal use of the Internet	Social factors, Affect, Facilitating conditions, Religious satisfaction, and Internet giving behaviour.

As shown in the previous table, TIB is applied in various IS fields, but there is a lack in examining TIB capability to predict the usage behaviour of ICT services, especially G2C services. Whereas [73] and [51] further found remarkable opportunities for the creation of new knowledge by examining theories in new contexts. Hence, the current study will fulfil the gap. The research model for this study will be used to test empirically the hypothesised relationships among the factors incorporates. Further analysis will be done to determine the relative importance of the independent variables in influencing usage behaviour of G2C ICT service among affected people of nun-natural disasters.

A. The operational definitions of variables

Cavana in [74] indicated that the operational definition is a concept to render what each question is trying to measure by looking at the behavioural variables, facets or properties denoted by the concept. Table 3 encompasses the operational definitions of the involved variables in this study.

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Table 3: The Operational definitions of the Variables

Variable	Operational Definition
1- Social Factor	Normal and important people in the community, who have higher prestige, think and support the use of G2C ICT services to complete the governmental transactions [75, 76].
2- Facilitating Condition	It is necessary to have the knowledge, resources, and Internet experience to use the G2C ICT services facilities in the G2C ICT portal. Moreover, specific information and

	support are available in case of difficulties in accessing the G2C ICT services. Moreover, the researcher thinks that the use of G2C ICT services match with our lifestyle [77].
3- Usage behaviour of G2C ICT services	The G2C ICT services are considered useful as well as providing an easy way for managing our life matters. Moreover, fast Internet access is important in the use of the G2C ICT services [78].
4- Perceived Consequence	The perceived positive and negative consequences for the past usage of the G2C ICT service, beliefs about outcomes from using this service, and evaluation of outcomes for the past usage.
5- Habit	Habit is the experience the affected people have with the use of G2C ICT services and their ability to use the service [52].
6- Intention	Intention refer to the degree to which an affected people is willing to try using the G2C ICT services or the effort amount of affected people is willing to exert to use the services.
7- Affect	This denotes feelings of joy, pleasure, elation, , disgust, depression displeasure, distaste, discontentment, or hatred reflected by an affected people when using the G2C ICT services [58, 76].

B. Hypotheses of the study

Table 4 illustrate the six hypothesizes proposed for this study.

Table 4: The Hypothesizes of the study

No.	The Study Hypothesis
H1	There is a significant relationship between affected peoples' intention to use the G2C ICT service and their Usage behaviour of the service.
H2	There is a significant relationship between social factors and intentions of affected people to use G2C ICT services.
H3	There is a significant relationship between affected peoples' Affect toward G2C ICT services and their intention to use the services.
H4	There is a significant relationship between perceived consequences of G2C ICT service and affected peoples' intention to use the service.
H5	There is a significant relationship between affected peoples' habit of using the Internet and their Usage Behaviour of G2C ICT service.
H6	Facilitating conditions have a significant moderate effect on the relationship between affected peoples' intention to use G2C ICT service and Usage Behaviour.

4. Materials and Method

Exploring some of the psychological mechanisms and produce a usage behaviour model of G2C ICT services among people affected by a non-natural disaster is the main purpose of this study. The knowledge resulted from this purpose aims at predict and draw effective strategy can that help to increase their dependence on G2C ICT services instead of manual transact. The present study seeks to examine the causal relationships among the antecedents, Facilitating Conditions, Habit, Perceived Consequence, Affect, Social Factors, and Intention on the Usage Behaviour of G2C ICT services in war environments. Thus, the quantitative approach is found suitable for achieving the research objectives. According to [79], quantitative research is one that is formal, systematic and is used to calculate the impacts of interaction among the study variables and examine and define the expected causal relationships. According to this method, the results of analysis can be summarized in the form of statistical values with a high level of confidence [51]. On this basis, the quantitative approach is adopted for this study.

Consequently, individual affected people is considered to be the unit of analysis as it is the individual user who utilizes the G2C ICT services. Specifically, a booklet type questionnaires with instrument adapted from previous studies, after translation and pre-test process, will be distributed to individual adults in sheltering sites inside Iraq. They will requested for their opinion concerning the G2C ICT services, which consistent with the study objectives. After deciding the type of respondents, the task of getting the number of affected people distributed across governorates of Iraq will base on statistics from the International Organization for Migration-Iraq Mission [80]. These statistics indicate that Iraq has about 3.3 Million people directly affected by the war, distributed in all governorates of the Republic of Iraq. The current study will use Systematic Sampling. It is the most probable sampling design because the researchers can gain more information about a given sample size [81]. Following this further, because of the population more than 1000,000, 384 affected people will be adequate as a sampling size [81].

Furthermore, , Statistical Package for Social Sciences (SPSS) v17 will be used in this study as data analysis techniques for reliability, validity, and normality test. On the other hand, Partial Least Squares (PLS-SEM) will be used for factor analysis, path analysis, total effects analysis, and multiple regression analysis. PLS is a form of SEM, and it can evaluate a series of interrelated relationships among latent constructs and their respective measured variable [82]. PLS will be run using Smart-PLS software v3.

5. Conclusion

The authors presented first phase research in this paper i.e. the research background and problem, literature review, objective, hypotheses, the conceptual framework and the research methodology. Research gap identified based on the reviewed literature, in which a framework is developed to clarify the influencing factors that affect the usage behaviour of G2C ICT services among people affected by a non-natural disaster. 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 behaviour of G2C ICT services in such circumstances. The second benefaction of this study is once stakeholder of governmental service recognise which factors had the significant influence on the service usage intention among affected people, this can support them in the development process of the service, and increase citizens' dependence on the services in such dangerous environment. The other contribution of this research is examining the TIB ability in predicting the usage behaviour in the new and complex context, which is war environment, as well as in new domain, which is G2C ICT service field.

In conclusion, this research attempt to fill a significant gap at this time facing G2C services providers in the countries with an unstable situation. Providing adequate and useful G2C services for the citizen in war environments can be a challenge to the providers of the G2C ICT service as there are many unknown influencing factors they required to consider as part of their decision-making. Through a comprehensive framework of these factors, it might help policy makers to justify and establish a better decision.

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