



**Hungarian University of Agriculture and Life Sciences  
Doctoral School of Economic and Regional Sciences**

# E-government Implementation: Affecting Factors

“Syrian e-government field study”

**Doctoral (Ph.D.) Thesis**

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Gödöllő, Hungary

2023

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# **1. BACKGROUND OF THE WORK AND ITS AIMS**

## **1.1 Introduction**

United Nations General Assembly has expressed that ICT<sup>1</sup> is the easier modern way for interchanging information seamlessly between citizens and governments and asserted the communication technologies' role in boosting knowledge exchange, enhancing development sustainability and technology global inter-collaboration by engaging newest technologies of telecommunication and up to date inventive applications (United Nations, 2012a).

More and more governments started to use ICT technologies as an effective changing tool to set a new relationship with people (UNDESA, 2014), this new digital relation is accompanied with emerging of new terms to describe the new communicating methods with/ within governmental institutions and digital-transformation of services, those terms such as network, tele-, e-, virtual-, cyber-, online, digital and similar became epithets of digital activities of social and governmental entities (Woolgar, 2002).

All the above terms refer to the manner in which a given set of technologies with assumed characteristics and capabilities are used to e-enable an existing set of services and associated organizational and institutional arrangements (McLoughlin and Wilson, 2013).

## **1.2 The Research Motivation**

One important side of implementing governmental e-services this dissertation browses complies with Andréasson's (2015) opinion that the introduction of new IT systems has broad importance for the organization of public institutions, as e-government, by enabling citizens and NGOs of using, assessing, and analyzing information and data, makes public affiliations more accountable, provides the decision-makers with the necessary tools to take more rational decisions, and advances key public values (United Nations, 2016b; Lnenicka, and Nikiforova, 2021; Simonofski et al. 2022).

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<sup>1</sup> Information and Communications Technology.

Also, according to the United Nations (2016) and Fletcher-Brown (2021), e-government, with suitable strategic plans, can assist in generating income, improving skills, creating and finding jobs, and allowing the most vulnerable people to engage more in society by enabling everyone to access to information, data, and online platforms.

But, e-government implementation is not easy to be accomplished since there are many factors and obstacles facing this implementation when it starts to draw on the ground. Considerable studies have observed and discussed this issue as this work does, many of these studies are concerned with discussing the factors affecting e-government in specific cases, countries, regions, or economic groups, but there is no comprehensive research that covers all of these factors worldwide involving different groups of countries, cultures, and economic levels, this study, in one of its goals, collects these factors from more than 200 research, books, articles, papers, and reports concerns in e-government issues covering diversity in the studied backgrounds.

Moreover, much research is concerned with developing countries' e-government implementation, indeed, those countries have respectful differences in the economic situation, cultural background, population, and political and organizational structures and could be placed in various categories (United Nations, 2019). In the case of the Syrian Arab Republic, Syria had a very sharp turn in its economic, social, and political situation in the year 2011 due to the beginning of the Syrian armed conflict that spread over more than twelve years and is still ongoing without any end expectations, this conflict made sever harm to political, organizational, social, and financial structures and significantly destroyed the national infrastructure (World Bank, 2020; 2022).

Syria and those countries who have developing economies or weak infrastructure still have the opportunity to follow up with developed communities by means of digital transformation and building their governments in a virtual form instead of conventional form, by concentrating on the implementation of e-governments, this will reduce cost and time to initiate governments on a modern basis, this idea has been confirmed by United Nations (2014a) e-government survey. So many lower-income countries clearly improved online service delivery and e-governance during the last few years, for instance, by taking the e-participation index as an indicator of e-government development, high gross national income (GNI)- as a proxy of measure for economic development- high GNI is not a necessary condition for

developing e-government and adopting innovative ways of public service delivery (World Bank, 2016).

To measure the level and degree of e-government in a country, United Nations has developed an index to measure national e-government capacities called (EGDI); E-Government Development Index (United Nations, 2012b). This index is a tool for observing the proceeding of e-government implementation over the world and enables to make the comparison of development in implementation among different countries, as this study applies.

By taking a look at the e-government Development Index (EGDI) in United Nations surveys, it is clear that the e-government has been growing rapidly over the past years since 2001 (United Nations, 2018), in this regard, Alassaf et al. (2020) concluded from United Nations surveys that it is not compulsory to be a developed country to be in a Very High or High EGDI level, Alassaf reached this conclusion by comparing EGDI level of countries with their GNI (Gross National Income as an indicator of economic development level set by the United Nations), as he found that there are countries have a high EGDI level despite their low GNI. But, regardless of the latter conclusion, ICT infrastructure in developing countries is still lower than developed countries' ICT infrastructure (United Nations, 2014a; ITU, 2015).

From the above-discussed ideas, this research works on defining and measuring the affecting factors on Syrian e-government implementation to provide a concrete set of information and data necessary for Syrian digital transformation, building modern digital government, and enabling Syria to jump over the lagging caused by the war and other economic, social, organizational, political and technical/ technological problems, keeping in mind that technological innovations offer real opportunities to leap over access barriers (United Nations, 2016). To achieve this goal, the research developed a new tool that can be used by researchers containing all factors affecting e-government worldwide refined in five categories Social, Political, Organizational, Technological, and financial, which make it easier for those interested in e-government to find necessary factors in a specific field of science, this tool is called Five Categories Classification Tool (FCCT) and forms an important essential addition to this dissertation.

### 1.3 Research problems

This research concerns mainly with defining the Social factors affecting e government implementation in the Syrian Arab Republic as an example of developing countries that suffer from armed conflict with damage in the economy, and the main problems this research is trying to answer:

- ▶ What are the Social factors affecting E government Implementation in the Syrian context?
- ▶ What is the impact extent of each of the Social factors on implementing the Syrian e government?

Also, the study concerns with collecting factors affecting e government implementation worldwide and gathering them in tables contain all factors that interfere e government, then developing scales to assess Social and technological factors, hence, this research will answer the following questions:

- ▶ What are the factors affecting e government worldwide?
- ▶ How to assess social factors affecting e government implementation?
- ▶ How to assess social factors affecting e government implementation?

### 1.4 HYPOTHESES OF THE RESEARCH

This research by reviewing the literature collected Social factors affecting e-government implementation worldwide and presented them through the FCCT model and the correspondent social table.

The study found 17 social factors impact the e-government fall into 6 main themes those are; Personal Security Feelings (Trust, Risk, Security, Privacy, Uncertainty), Personal Knowledge (Awareness, ICT knowledge, Ability to use ICT, Education level), Personal Assessment of Syrian e-government (Service Quality, Satisfaction, Compatibility, Usefulness/Benefit), Perceived Image, Personal Response (Attitude, Intention), and Digital Divide.

To define exactly which Social factors affect Syrian national e-government implementation, this study decided to evaluate each of the six main Social themes (containing 17 factors) that interfere with e-governments in the Syrian context, which results in Six main hypotheses and 17 sub-hypotheses stated as follows.

**H1: Citizens' Personal Security Feelings affect e-government implementation in Syria.**



H1.1: Perceived Trust is an affecting factor of e-government implementation in Syria.

H1.2: Perceived Risk is an affecting factor of e-government implementation in Syria.

H1.3: Perceived Security is an affecting factor of e-government implementation in Syria.

H1.4: Perceived Privacy is an affecting factor of e-government implementation in Syria.

H1.5: Perceived Uncertainty is an affecting factor of e-government implementation in Syria.

**H2: Citizens' Personal Knowledge affects e-government implementation in Syria.**

H2.1: Perceived Awareness is an affecting factor of e-government implementation in Syria.

H2.2: ICT Knowledge is an affecting factor of e-government implementation in Syria.

H2.3: Perceived Ability to use ICT is an affecting factor of e-government implementation in Syria.

H2.4: Education Level is an affecting factor of e-government implementation in Syria.

**H3: Citizens' Personal Assessment of Syrian e-government affects its implementation.**

H3.1: Perceived Service Quality is an affecting factor of e-government implementation in Syria.

H3.2: Citizens' Satisfaction is an affecting factor of e-government implementation in Syria.

H3.3: Perceived Compatibility (personal compatibility) is an affecting factor of e-government implementation in Syria.

H3.4: Perceived Usefulness/ Benefit is an affecting factor of e-government implementation in Syria.

**H4: Perceived Image of using e-government an affecting factor of e-government implementation in Syria.**

**H5: Syrians' Personal Response toward e-government effects e-government implementation in Syria.**

H5.1: Citizens' Attitude is an affecting factor of e-government implementation in Syria.

H5.2: Citizens' Intention to use e government is an affecting factor of e-government implementation in Syria.

**H6: The Digital Divide is an affecting factor of e-government implementation in Syria.**

## **2. AIMS AND GOALS OF THE RESEARCH**

This research aims to understand factors affecting e-government implementation that can facilitate or impede this implementation in the context of the Syrian Arab Republic.

### **2.1 Main objective of the study**

The ultimate target of this research is to examine the social factors that affect the Syrian e-government implementation, then, the study determines empirically which of these factors facilitates or impedes the e-government implementation process in Syria.

### **2.2 Sub-objective of the study**

The first objective of this study is to reveal the factors affecting e-government implementation worldwide, obstacles facing it, and supportive elements by reviewing the literature, especially the research accompanied by empirical studies in different countries, regions and covers differences in development levels, income, and culture to give e-government researchers a concrete base for starting their studies with a wide range of affecting factors.

To maximize the benefits of this target the study has developed the Five Category Classification Tool (FCCT), which provides those interested in the e-government context with comprehensive factors affecting the e-government implementation process, refined into five categories (Political, Social, Technological, Organizational, and Financial) to help in building up researches, empirical studies, planning future e-projects, and predicting obstacles that may face the field execution specialized in each branch of the five categories. The FCCT model correlates to five tables contains general items that measure each factor affecting e-government implementation, brief descriptions, and some of the studies that discussed each one of these factors. The mentioned FCCT and the five correlated tables form a powerful tool for empirical e-government studies and a significant addition to this research.

Also, this research targets to develop precise scales for assessing each of the Social and Technological factors affecting e-government, this addition makes it easier for those interested in social and technological disciplines to reap the benefits of the ready scales and start their field research depending on them.

### **3. MATERIAL AND METHODS**

This research splits in two parts, preliminary (exploratory), and empirical research, will be discussed thoroughly in the following paragraphs.

#### **3.1 Preliminary (Or Exploratory) research**

The first part of this study defines factors affecting e government implementation by conducting exploratory research depending on revising secondary data concerning factors affecting e government worldwide covering different countries and regions belonging to diverse cultural and economic groups, then refining these factors in the Five Categories Classification Tool (FCCT) developed by this study to organize and to ease field research stage and other future studies relating e government. In this part of the preliminary (exploratory) research of the study, the results will be classified into five tables each specialized in one of the FCCT disciplines, highlighting the reference studies used to determine each factor accompanied by summarized measures and description, those five tables form the base for the empirical study and the quantitative research.

The next part of the preliminary study is developing preliminary scales measuring Social and Technological groups of factors affecting e government context following FCCT classification, abstracted from previous studies concerned with assessing those factors in cases of e government, e projects, and interacting online.

By the end of this stage, the research will have two preliminary scales for measuring e government Social and Technological affecting factors.

#### **3.2 Empirical research**

The ultimate target of the empirical is developing general scales designed specially to evaluate Social and Technological factors affecting e- government implementation, then elaborating Social scales to suit the Syrian case study as an example of developing countries and countries suffering from armed conflicts, and finally, determining empirically which of Social factors have an influence on Syrian e government.

This empirical study is divided into qualitative research and quantitative research.

### **3.2.1 Qualitative research**

The next stage following preliminary research is developing general scales to measure Social and Technological factors affecting e government, those scales offer a ready tool for future research to assess Social and Technological groups of factors affecting implementing e government regarding a specific case study, as this research will do in the next stage by using the scales of the Social category in the pilot survey to reach new Social scales designed especially to suit Syrian case study, those new scales form additional addition as a ready-use tool evaluating Social factors affecting e governments in developing countries and countries suffering from wars and conflicts.

After developing the above-mentioned preliminary scales, this research will perform in-depth interviews by presenting the preliminary scales of social and Technological factors affecting e government implementation worldwide gathered by FCCT to experts in this regard.

In-depth interviews are planned to discuss the Social and Technological preliminary scales in light of constructs' sufficiency, phrasing, reliability, and validity, and propose suggestions. depending on that the research will perform the needed amendments.

Then, the research will initiate two focus groups for open discussions about the scales measuring Social factors affecting Syrian e- government implementation these groups consist of different groups of people covering different ages, education levels, disciplines, official and non-official employees (even former employees), cultural backgrounds, regions, and cities and governorates, another two focus groups will be initiated for Technological factors' scales consisting of people with a technological background of IT Systems.

After in-depth interviews with experts, and making amendments the resulting scales will be revealed to the two initiated focus groups in sequence, the first group identifies items/ questions that have the same meaning in perceptions and thus the same answer within each scale, then the second focus group identifies similarity across scales within each Social and Technological categories, then the research eliminates the repetition and makes amendments suggested by the two focus groups in sequence.

By the end of this stage, the researcher sends the amended scales to experts in e government to validate the scales for use in pilot surveys.

Because of time and budget limitations, at this point, the research will continue further fieldwork (pilot and final surveys) only with Social factors and settles for the reached Technological general scales, proposing conducting fieldwork of Technological factors in future works.

Qualitative research ends by performing a pilot survey of Social factors to reduce the number of items in the scales, and thus reduce the number of questions in the questionnaire by using factor analysis the with varimax rotation method.

At this point of the study, the research decided to assign an independent survey for Digital Divide, as Digital Divide requires a survey alike the surveys allocated for measuring E government indices which need statistics, censuses, and big quantitative data exceed the possibilities of individual research in cost and time frame, but the possibilities of governments or international organizations such as UN, OECD, Eurostat (United Nations, 2014b), hence, the research will use the accepted method used on assessing EG7 (E government level 7)<sup>2</sup> by United Nations Manual for measuring e-Government by directing questionnaire to national experts (United Nations, 2014b, p. 39). So, the Digital Divide questionnaire developed by this study will be addressed to insiders and national experts in the Syrian e government issue and familiar with statistics, in this case, the survey dedicated to assessing the digital divide will be conducted directly after validation of the scale by experts as without going through a pilot survey.

As a result, the pilot survey for assessing Social factors that will be distributed contains all social factors scales except the Digital Divide to be distributed to a sample of the population (Citizens).

Considering the pilot survey results, the research builds up final questionnaires to evaluate Social factors affecting e government implementation in Syria,

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<sup>2</sup>“EG7: Selected Internet-based services available to citizens, by level of sophistication of service, The Internet-based services for which information is sought are:

Enroll to vote for the first time in government elections., Complete and lodge personal income tax return, least complex situation., Obtain unemployment income benefits, least complex situation., Obtain child support allowance, least complex situation., Renew an international passport, least complex situation., Renew a driver's license, least complex situation., Make an official declaration of theft of personal goods (excluding motor vehicle and burglary) to the relevant police., Obtain a copy of a birth certificate for self., Obtain a copy of a marriage certificate for self., Renew registration for a motor vehicle least complex situation” (United Nations, 2014b, p. 25)

validate them, then distribute them in the Quantitative research described in the following paragraph.

### **3.2.2 Quantitative research**

Only the Social group of factors will be examined by this research in the quantitative part of the study due to time and budget limitations for an independent PhD dissertation to perform a field study covers all five groups of factors affecting e government implementation, besides the hinders facing collaboration from politicians and formal employees necessary to conduct Political, Technological, Organizational, and financial surveys in the Syrian current conflict context, in addition to the priority of studying the Social field as the change process and weaknesses corrections in the social context take a long time to be performed (Harrikari and Rauhala, 2014).

The quantitative research begins with the results of the pilot survey to build the final questionnaires to evaluate Social factors affecting e government implementation in Syria, validate them, and distribute them. This research to collect data depends on surveys designed on a Single cross-sectional samples basis and judgmental sampling to represent the studied society regarding demographic distribution over governorates and gender in the Syrian Arab Republic.

Remembering that this research allocates an independent questionnaire to assess the Digital Divide existence and extent in the Syrian case study -that justified in the previous paragraph- and will distribute this individual questionnaire to the experts and insiders in e-government.

Eventually, the surveys get rich data containing the opinions a of wide range of Syrian beneficiaries covering different ages, education levels, businesses, private and government employees, disciplines, cultural backgrounds, regions, cities, and governorates.

The quantitative research will collect data using questionnaires based on the five-scale Likert measure as it is easy to understand and answer by the respondents.

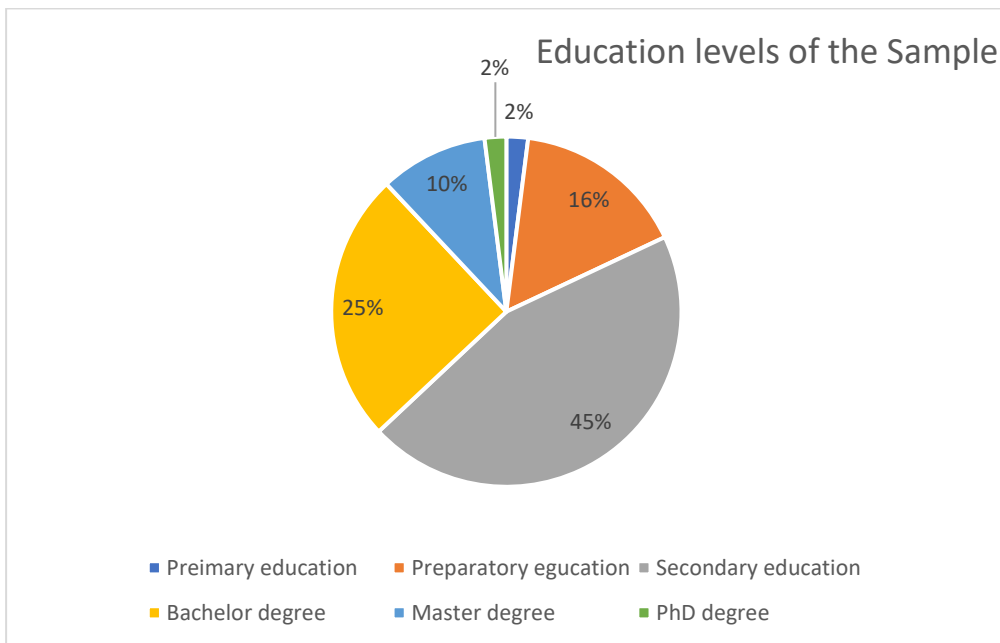
## 4. RESULTS AND DISCUSSIONS

### 4.1 Sample background analysis

This research distributed the social survey on a planned sample base following the statistics of the Syrian population regarding gender and governorate affiliation, see Figure 2.

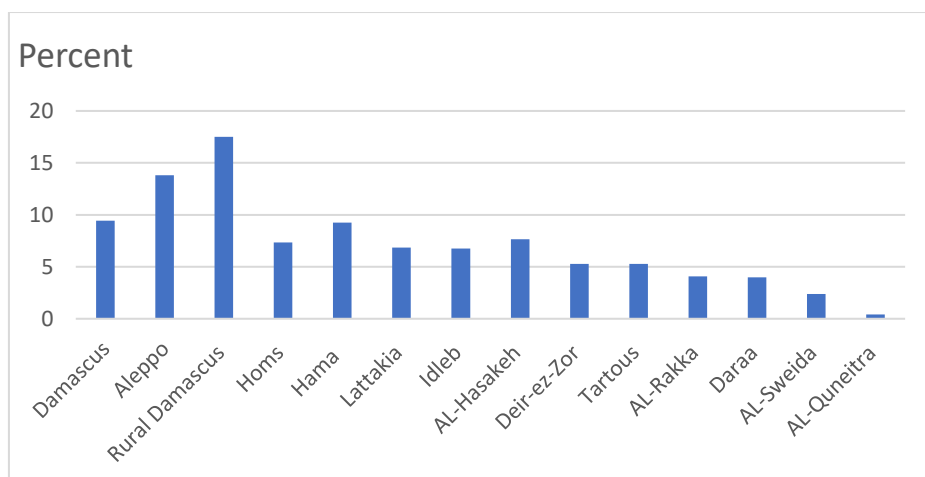
The females form 50% of respondents, and 50% are males. These ratios match real gender percentages in Syria in 2018, according to the CIA Factbook (2020) and the Syrian Central Bureau of Statistics (2018).

Two percent of respondents completed only primary education (first education cycle), 16% completed only the second education cycle (preparatory), 45% have at least secondary education, 25% have a bachelor's degree, 10% master's degree, and 2% have a Ph.D. degree, Figure 1



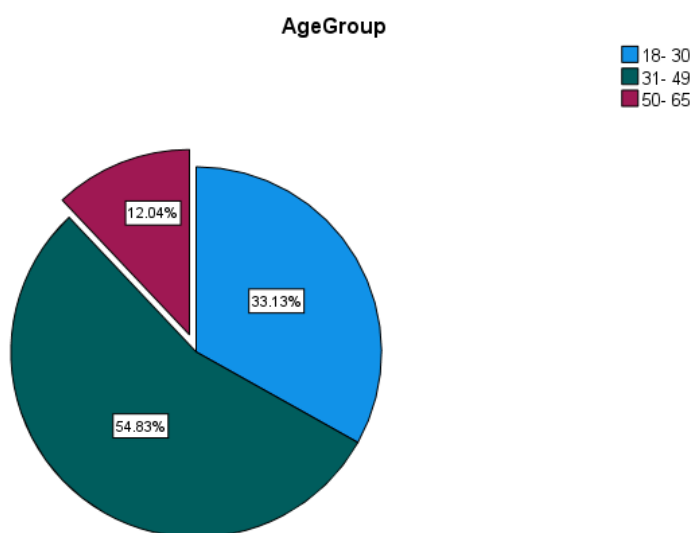
**Figure 1.** Education levels of the sample.  
Source: Author's own development (2022).





**Figure 2.** Syrian population percentage distribution among governorates.  
Source: Author's own development (2022), depending on Syrian Central Bureau of Statistics census of the year 2016, (Syrian Central Bureau of Statistics. 2017).

Analyzing the age groups percentage of the sample, we can notice differences from the official distribution of the Syrian population over age segments described in paragraph 7.2 because this research used different age segment distribution illustrated in Figure 3, besides some of the age segments, due to the current conflict in Syria, have moved out of Syrian territory seeking for a safer place or a better economic situation.



**Figure 3.** Sample age groups distribution.  
Source: Author's own development (2022)

## 4.2 Statistical data analysis

For analytical purposes, this study developed new variables from the answers of the responses for each scale collected in the questionnaires to use in analysis by giving the mean answer of all items of each scale for every respondent. Those new variables are:

The Overall Perceived Awareness, Overall Intention (Willingness) to use e-government services, Overall Perceived e-government services Quality, Overall Attitude toward using e-government services, Overall Perceived Trust, Overall Perceived Risk, Overall Perceived Security, Overall Perceived Privacy, Satisfaction with e-government, Overall Perceived uncertainty, Overall Perceived Compatibility (personal compatibility) of e-government systems, Overall Perceived Usefulness/ Benefit, Overall ICT Knowledge, Overall Perceived ability to use ICT for interacting with e-government, Overall e-government Adoption, and Overall Digital Divide.

The variables “Perceived Image of using e-government” and “Literacy level” were used directly without evolving new variables because they are single-item scales.

This research starts analysis by assessing Social factors affecting the Syrian e-government by calculating the mean answers of each factor, then comparing its value with the middle scale value, which is (3), as the research used the 5 points Likert scale in assessing all measuring items.

SPSS program is used in all data analysis.

### *4.2.1 Citizens’ Perceived Awareness of Syrian e government*

The mean answer of overall perceived awareness reaches 2.8 and significantly less than 3 (the middle of the scale) due to the result of one sample T-test ( $P \text{ value} < \alpha = 0.05$ ), that means the awareness of most Syrian citizens about the national e-government is weak.

More analysis was performed to explain this result.

Fifty-five percent of respondents were familiar with the e-government term before they heard the brief explanation about e-government presented prior filling out the questionnaire.

The brief explanation given during the distribution of the questionnaire prompted the respondents to rethink the concepts and applications they encountered in real life that may be related to e-government.

Forty-five percent of the respondents are aware of the Syrian e-government as their mean answers of awareness of the national e-government exceed the middle of the scale on the five-point Likert scale, but only 15% of respondents are not aware of the Syrian e-government aspects at all.

A deeper analysis of this result shows that the item measures training in the use of e-government ("You have trained to know about all the capacities of e-government service") has the most extremist negative answer as 94% of respondents did not receive enough training on e-government services in Syria.

Furthermore, an investigation of the open question in the pilot survey that asked what kind of services provided by the Syrian e-government the respondent knew about, those services were such as electricity and telephone bill inquiry and pay, registering for issuing a new passport, registering for government-subsidized goods and alike.

In another reading of previous results, there is a clear weakness in training campaigns to explain the possibilities of e-government services.

#### ***4.2.2 Perceived service quality of Syrian e government***

Eighty-six percent of respondents didn't see services provided by the Syrian e-government are good, with bad indices for most of the perceived service quality measuring items, except for two items of system availability dimension their mean answers exceeded the middle of the scale (3) with mean answers of this dimension (3.5). Moreover, this dimension consists of three items; SA1 and SA2 have positive mean answers concerning e-government availability websites 24/7 from everywhere, and SA3 with a negative mean answer about the performance of those websites concerning issues like website freezing, crashing, etc.

The rest of the perceived service quality dimensions mean answers were negative and below the middle of the scale (3), with one exception being almost neutral; they are 2.3, 2.2, and 2.4 for efficiency, fulfillment, and system content, whereas respondents mean answers of e-government websites privacy (relating to service quality PPsq) almost neutral reaching 3.1.

The mean value of all answers of perceived service quality express overall perceived service quality, apparently has a negative indication with 2.7 and significantly below the middle of the scale as a result of one sample T-test ( $P \text{ value} < \alpha = 0.05$ ).

The significance of differences among e-government Perceived Service Quality dimensions approved by conducting Paired Sample T Test.

More analysis shows the mean answer to one of the two questions/items that measure the perceived privacy dimension of perceived service quality PPsq "E-government doesn't share your personal information with other government entities (or any third party). But it is just concerned with the requested service" has a negative direction less than the middle of the scale reaching 2.2. This means the respondents have suspicions about e-government, that it may share their personal information with other governmental entities, whereas most of the respondents see that e-government protects their privacy related to financial transactions, as the mean answer to this question reaches 4; "E-government protects your information when used through its websites (Personal information, credit card, or bank account information)". This result pays attention to the weakness in the government's ability to convince citizens that e-government preserves their privacy by dealing with users anonymously during data analysis, hence the government has to investigate the source of these suspicions, if there is a real intervention in privacy done by governmental agencies through the applications, or generated from a lack of trust in government itself as will be discussed later in paragraph 10.2.3, or from other reasons.

Another looking at the results of citizens' opinions about e-government website efficiency (Efncy overall mean = 2.3 as mentioned before), respondents have a negative evaluation of all items assess this dimension of perceived service quality as they see e-government services' websites not simple nor easy to deal with, they cannot accomplish their tasks through them quickly, and don't provide precise up to date necessary information.

Also, because of the long and inaccurate timeframe of e-government services delivery, respondents have a negative opinion about e-government services fulfillment, conveyed by the answers to questions measuring the fulfillment dimension (Fulmnt). Moreover, we can distinguish negative mean answers to the questions that assess the availability of the website's content and instruction in other local languages besides the international and official languages, which hinders some users from utilizing the services of e-government and may lead to an increase in the digital divide, as will be discussed later.

#### ***4.2.3 Perceived Trust in Syrian e government***

Moving on to reveal respondents' perceived trust in e-government services, we look at the mean answer of respondents to the questions that measure perceived trust (overall PT).

The mean answer of Overall PT reaches 2.9, which shows a little bias to negative. This means citizens have a relatively neutral tendency to trust e-government services, with a little bias to be negative.

Going more in detail, Perceived Trust is divided into two dimensions; trust in e-government and trust in the government itself (Alomari et al., 2009).

The analysis result shows that respondents' trust in e-government (4 items) is positive with a mean answer of 3.2, whereas the mean answer of respondents' trust in government itself (2 items) is negative with only 2.4.

Here, this study advises the government to put plans that aim retaining back the citizens' trust in public institutions by organizing promotional campaigns to shed light on the reliability of government services.

Even though people trust e-government in general as their mean answer to this dimension is 3.2, as mentioned above, people don't trust that e-government will take responsibility for any online insecurity or any error that might occur during dealing with the online portal, and corrects the mistakes, as the mean answer of the question/ item PT3 "E-government takes full responsibility for any insecurity or fault in performing transactions via its services." is only 2.5, this result, from one side indirectly implies signs of weakness in citizens' trust in the government itself as the e-government decision -to take responsibility for correcting mistakes- is taken by officials, from the other side, people don't see e-government systems have potentials to correct mistakes automatically through programmed revisions and feedback procedures, or any possibility enables users to correct mistakes. For example, if a user entered data in an online transaction and realized later it has a defect, then she/ he wants to correct it, or a user accidentally transferred a higher amount for a bill to a public organization and wants to claim access amount, or a citizen has been subject to fraud But, this low trust in e-government responsive behavior faces a high trust in paying through the e-government, as the mean answer of PT4 "You feel confident to pay online by available means through e-government services" reaches 3.9, meaning that people see the general automated system is protected from manipulation, regardless of their conviction that the e-

government doesn't take responsibility for any mistakes that might happen accidentally.

Moreover, people's evaluation of the creditability of e-government by providing guaranteed services PT2 “When you accomplish a task via an e-government service you are sure that task is definitely performed” was almost neutral with little tendency to be positive with mean answer 3.15. Also, citizens expressed positive conceive of e-government reliability PT1 “You believe that you can rely on e-government services to accomplish the available tasks” with mean answer 3.25. Here, the research sees the promising of the last two results to build trust in the Syrian e-government, so, it is a good opportunity for responsible governmental agencies to boost those positive perceived ideas among people of reliability and creditability of e-government by enhancing the quality and speed of e-government services delivery accompanied with planned campaigns and promotion of benefits and advantages of using them.

Furthermore, low trust in the government itself is driven by citizens' perception that government doesn't consider peoples' interests PT6 “You believe that government keeps your best interests in mind.” with a mean answer of only 1.8, and this is a normal result of long years of war and collapsed economy, as peoples in general blame governments for bad economic situations regardless of the causes (Tilley et al., 2018). On the other hand, the respondents' mean answer of PT5 “You can trust the government to carry out online transactions faithfully.” was natural by reaching 3 (the middle of the scale), here some of the interviewees in the focus groups (during the qualitative study of this research) suggested that low trust in government to some extent was driven by some manipulating cases done by some officials who took advantage of the war situation in the current Syrian conflict, but this opinion needs more investigation to reveal the drives behind this perception.

At last, one sample T-test shows that the mean answer of overall Perceived Trust does not significantly differ from 3 (the middle of the scale). This result gives the impression that Syrian Citizens, in general, may have a neutral trust in the national e-government more than a negative trust since the overall trust mean is 2.92 that very close to the middle of the scale, here this research sees an opportunity to flip this result to be positive by concentrating governmental efforts on performing campaigns and promotions about how e-government deals with information, process data, and protect the personal information.

To ensure the reliability of perceived trust results, this study conducted one sample T-test to be sure that the mean answer of Perceived Trust dimensions significantly differs from 3 (the middle of the scale). The results shown in Appendix I confirm the significance of the tests since the P value for all tests  $< \alpha = 0.05$ .

Furthermore, the research carried out paired sample T-test between the two dimensions of Perceived Trust; Trust in e-government and Trust in government, that confirmed the significant difference between them.

#### ***4.2.4 Perceived Risk using Syrian e government***

One of the positive opinions that respondents showed toward Syrian e-government related to perceived risk is that they tend to see services provided by e-government as not risky to use, as the mean answer of this item reaches 3.5, which demonstrates that they see online services become less risky nowadays. Also, respondents considered e-government as a safe channel concerning financial transactions with the mean answer of this item reaching 3.7.

The above results show that citizens see it as not risky to use the Syrian e-government, with an overall perceived risk (PR) mean answer reaching 3.6, and significantly over the middle of the scale, as one sample T-test results confirm.

#### ***4.2.5 Perceived Security of Syrian e government websites Perceived trust in Syrian e government***

Another important positive evaluation of e-government is website security with overall Perceived Security (PS) mean answer of 3.77. This result gives no doubts that respondents see e-government as a secure channel for performing financial transactions with sufficient security features website. This study performed one-sample T-test to ensure that the overall Perceived Security mean answer significantly exceeds 3 (the middle of the scale) and confirmed as P value  $< \alpha = 0.05$ .

#### ***4.2.6 Perceived Privacy of Syrian e government***

Privacy is discussed partially in paragraph 4.2.2 as a dimension of Perceived Service Quality PPsq with the two items PESQ15 (PP1) and PESQ16 (PP2), also, Perceived Privacy -as discussed in the developing scales paragraph-

enfolds besides to PPsq- the Clarity of the website privacy policy (PPp.clrty) which consists of the items (PP3) and (PP4).

In general, respondents tend to consider that e-government has a slight weakness in providing privacy through its websites as the mean answer of the Overall Perceived Privacy reaches 2.9, which is an almost neutral opinion, the two dimensions of perceived privacy (PPsq) and (PPp.clrty) have mean answers reaching 3.1 and 2.7 in sequence. The latter result will be addressed through this research to the Syrian e-government responsible affiliates to enhance the clarity of privacy policy through its websites.

This study performed one sample T-test to ensure that the overall Perceived Privacy mean answer significantly exceeds 3 (the middle of the scale) and confirmed as  $P \text{ value} < \alpha = 0.05$ .

Furthermore, the research carried out a paired-sample T-test among the two dimensions of Perceived Privacy of e-government websites; Perceived Privacy of service quality (PPsq), and Clarity of website privacy policy (PPp.clrty), the results confirmed the significant difference between them.

#### ***4.2.7 Perceived Satisfaction with Syrian e government***

No doubt that respondents are not satisfied with e-government services as the mean answer of services Satisfaction recorded 1.8, which is distinctly lower than 3 (the middle of the scale). Further investigation declares that most of the items measuring satisfaction have almost neutral values, a deep search for the extreme values of items measuring this satisfaction, that pulled down this result, we can find that satisfaction with enjoyment using e-government to have services is very low with 1.1, and a similar result was found for the support/feedback provided by e-government services with 1.2, those two results draw attention to the necessity for rebuilding e-services' websites in a way that makes interaction via e-government an enjoying experience and to the necessity for boosting support and feedback to the users as e-government is still new for most Syrians, and they need help to proceed with these services in the first period of use, and this complies with the result of assessing respondents' overall Perceived Ability to use ICT (paragraph 4.2.11), which reached 2.5, i.e., most of the users need some help during dealing with e-government services platforms.



To ensure that the overall Satisfaction mean answer significantly exceeds the middle of the scale (3), one sample T-test was conducted and confirmed this result as  $P \text{ value} < \alpha = 0.05$ .

#### ***4.2.8 Perceived Uncertainty dealing with Syrian e government***

The Perceived Uncertainty (PUC) among respondents is high, as the mean answer of the overall Perceived Uncertainty PUC reaches 3.8.

More analysis within the items consisting PUC shows that most respondents prefer to deal with employees physically to guarantee task processing (PUC3 “You consider that the absence of personal contact in e-government services produces uncertain results.” mean answer 3.9), and the respondents generally don’t feel the comfort of interacting via the virtual environment (PUC2 “You don’t feel the comfort to interact in a virtual environment.” mean answer 3.7), besides to the users’ perception that hurdles may confront them in managing online tasks without employees help (PUC1 “In your opinion, the absence of personal contact in e-government services makes it hard to manage the task process.” mean answer 3.8).

The study ensured that the mean answer of overall Perceived Uncertainty significantly exceeds 3 (the middle of the scale) by performing One-sample T-test, as  $P \text{ value} < \alpha = 0.05$ .

#### ***4.2.9 Perceived Syrian e government Compatibility with users’ personality***

In regard to assessing perceived compatibility (personal compatibility), most of the respondents 64.2% don’t feel that performing tasks via e-government websites is compatible with their personality, also, the mean answer of the whole sample of the overall Compatibility with users’ personality is 2.6, as they see dealing with e-government as far from their lifestyle and prefer personal interacting is more preferable.

One-Sample Test shows that the overall Perceived e-government Compatibility with users’ personalities significantly below 3 (the middle of the scale), as  $P \text{ value} = 0.000 < \alpha = 0.05$ .

#### ***4.2.10 Perceived Usefulness/ benefits dealing with e government***

Despite that many results assessing respondents’ opinions toward e-government services tend to be negative, we can find a distinctive positive result about the Perceived Benefit or Usefulness of using e-government services, as 74% of respondents confirm the usefulness of e-government and

its benefits, 18% have a neutral opinion and only 8% don't agree on the usefulness of using e-government services, the mean answer of overall Perceived usefulness is 3.9, this result confirms that Syrian citizens value the usefulness and benefits of using e-government to perform their tasks, regardless of the other aspects that hinder their intention to use it, here, the government has to take the opportunity to enhance the adoption of e-government by overcoming the negatives that come from the other factors while citizens are still convinced by the importance and relevance benefits of using e-government, this should be done as soon as possible before the negatives overshadow the positive conviction and form steady obstacles toward adoption of e-government difficult to overcome.

One sample T-test confirmed that the overall Perceived Benefits mean answer significantly exceeds 3 (the middle of the scale), as  $P \text{ value} < \alpha = 0.05$ .

#### ***4.2.11 ICT knowledge and ability to use ICT for interacting with e government***

Most This paragraph deals with two variables; overall ICT Knowledge (ICTK) and overall Perceived Ability to use ICT for interacting via e-government portal (PAict), as this research will conduct comparisons between the analysis results of those variables.

Most of the respondents (69%) feel that they have enough ICT knowledge, but, this percentage is higher among respondents between 18- 49 years old reaching (85%), whereas it is much lower among respondents between 50- 65 years old (15%), these results give a conceive that citizens under 50 years old are ready to deal with ICT devices necessary to interact with e-government, here if e-government wants to leave no one behind, has to start initiatives to spread ICT knowledge among older generations above 50 years old.

From another perspective, the mean answer of the overall ICT Knowledge reaches 3.2, which is not very far from the middle of the scale.

More analysis tells that the respondents have low self-confidence to use e-government services properly (the mean answer of this item of 2.6) despite that the respondents have high knowledge of using ICT devices and online applications (the mean answers are 3.7, 3.3 in sequence), this discussion revealed one of the important weaknesses which hinder e-government implementation (the low self-confidence to use e-government), depending on that, the government has to find solutions to raise citizens' self-confidence in

using e-government services by starting national training campaigns on using e-government.

In the same context, most of the respondents (64.8%, 651 respondents) feel they have the ability to use ICT for interacting with e-government, also, this percentage is higher among respondents between 18- 49 years old reaching 96% (625 respondents), whereas it is much lower among respondents between 50- 65 years old with only 4 % (26 respondents), the latter forms 28.3% of all respondents of the sample between 55- 64 years (the total number of respondents between 50- 64 years old is 92 respondent).

The mean answer of "overall Perceived Ability to use ICT for interacting via e-government portal" (PAict) reaches 2.8, comparing this result with the "overall ICT knowledge" mean answer of 3.2, leads to the conclusion that Syrians, even if they have enough ICT knowledge in general, they are not familiar to deal with the services provided by the Syrian e-government.

The latter conclusion is supported by item PAict5 "Generally, you don't want any help to manage the dealing of ICT devices (computers, tablets, smartphones) to do the tasks properly." with a mean answer of only 2.2, also supported by item PAict3 "You think that performing tasks through e-government services is easy" with a mean answer of 2.4.

Furthermore, the respondents don't see e-government platforms are clear and understandable with the mean answer of item PAict2 reaching 2.3, whereas the mean answer of item PAict4 measures ICT confidence "You have the confidence to use ICT devices (computers, tablets, smartphones)." reaching 3.8.

Nevertheless, Syrians expressed their ability to learn easily by interacting online with a mean answer of item PAict1 reaching 3.3, but people are not sure if they can catch up with any modifications that may occur to e-government websites (PAict1 mean answer of 2.8).

Those result drive us to the same previous conclusion that government has to starts national training campaigns on using e government to increase citizens' self-ability to use ICT's for interacting with e government independently, especially for older generation.

To ensure that the mean answer of each of ICT knowledge and Perceived Ability to use ICT for interacting with e-government portal are significantly differs from 3 the middle of the scale, One Sample T-test conducted and

confirmed as  $P \text{ value} < \alpha = 0.05$  for two scales. Moreover, the results of Paired Sample T test between two mentioned variables confirmed the significant difference between Citizens' ICT knowledge and their Perceived Ability to use ICT for interacting with e-government.

#### ***4.2.12 The Impact of Education level on Intention to use e government***

Surprisingly, in reverse to the expected result, there is no significant impact of Syrian citizens' Education Level on their intention to use e-government, as the correlation test between the two variables denotes no significant relation as  $P\text{-value} = 0.744 > \alpha = 0.05$  (Correlation test used Kendall's tau-b ( $\tau_b$ ) correlation coefficient), this surprising result with the large sample of 1005 respondents -which forms about 0.05% (0.5 per thousand) of the Syrian population calculated dependent on the Syrian population estimated by The World Bank in 2021 which reaches 21,324,367 (World Bank Website, 2021)- goes against the common consensus in the literature on the relationship between education level and intention to use e-services in general, this drives the research to suppose that the other factors affecting e-government in Syria succeeded in hiding the impact of education level, the same result for the impact of Education level on the Adoption of e-government as will see in paragraph 4.3.3.4.

#### ***4.2.13 Perceived Image of using e-government***

Investigating the respondents' Perceived Image of using e-government (PIMG) shows that most of the respondents (90%) expressed the specialty of persons who use e-government to fulfill their needed services with a mean answer reaching 3.7, this result is an advantage to the Syrian e-government and would boost citizens' adoption if Syrian government concentrates on implementing the national e-government fast enough and overcomes the weaknesses and hinderers in a suitable time frame before this image fades away.

One sample T-test results confirm that the mean answer of the overall Perceived Image of using e-government (PIMG) significantly exceeds 3 (the middle of the scale), as  $P \text{ value} = 0.000 < \alpha = 0.05$ .

#### ***4.2.14 Syrian citizens' Intention toward using e government***

Moving to assess citizens' intentions toward using the national e-government, the research found that 16% of respondents (161 respondents) have this intention, 26% (261 respondents) have a neutral intention, and 58%

(583 respondents) don't intend to use e-government, with a mean answer of overall Intentions toward using e-government 2.9, this result seems close to neutral with a little tendency to be negative, but more analysis to investigate this relative negative result according to relative low intention percentage among respondents (only 16%), the research found that the respondent who has the intention to use e-government (the 16% of respondent), has a high positive bias to outliers positive answers with mean answer reaches 4.5, which reveals a clear decision of them choosing to use e-government whenever they have the chance, whereas the majority of respondents (58%) don't tend to use e-government with mean answer 2.4, which is much closer to the middle of the scale than the previous mean (4.5), here, in theory, people with negative intention need fewer efforts to change their intention toward using e-government to be positive than those who have a positive intention to be negative as their opinion is much far from the middle of the scale by more than double, but this conclusion is weak and need extended research.

On another side, there is a respectful amount of respondents have a neutral intention (26%) toward using e-government, those are very important, since they, with some efforts, may change their intention to the positive side, here this research encourages the Syrian government to conduct expanded research on those who have a neutral intention toward using e-government to know exactly the obstacles that hinder them from deciding to use e-government, and another research focuses on people with the more negative willingness to use e-government.

The research conducted one sample T-test that confirmed the overall Intention differs from 3 (the middle of the scale), as the P value 0.023 is less than  $\alpha = 0.05$ .

Moreover, this research carried out Independent Sample T-test and found no significant difference between women and men in their intention to use e-government, as P value = 0.496 >  $\alpha = 0.05$  (case of equality of variances assumed, as F coefficient of Leven's test has P value = 0.105 >  $\alpha = 0.05$ ).

Furthermore, 24.3% of the youngest studied generation (18- 30) have the highest intention to use e-government services, as the new generation is well-adapted to online services and feels the comfort to deal with the virtual environment, as it is the tool of their era, (31- 49) age group have the second-ranked intentions with 12.9%, whereas only 7.5% of (50- 65) age group intend

to use e-government services if they have an alternative way to fulfill these services rather than e-government.

#### ***4.2.15 Citizens' Attitude toward e government***

All signals this research collected during the fieldwork through in-depth interviews, focus groups, and discussions with experts give the impression that Syrians have a negative attitude toward e-government, also the statical analysis of data collected through the survey confirms this impression, as the mean answer of citizens' overall Attitude toward e-government is 2.75, which is significantly below 3 (the middle of the scale), as one-Sample T-test P- value =  $0.000 < \alpha = 0.05$ .

Further analysis in this regard of the mean answers of the items composing the Attitude scale shows that people see e-government as an appealing concept and socially like to be looked at as “one of those” who use e-government with mean answers 3.4, 3.5 in sequence, the people answer about “You find it a good idea to use e-government to fulfill your needs.” has a negative direction with a mean answer of 1.8, and have a bad impression of Syrian e-services, as citizens highly prefer the traditional ways with a mean answer of 4.15 (reversed coded question), whereas the mean answer of the question “Your attitude toward e-services is negative because e-services will replace traditional work, and many employees will become jobless.” reached only 2.8 (reversed coded question), the latter reveals that Syrian citizens haven't the tendency to concerns about losing jobs due the reduction of traditional jobs caused by the technology advancement provided by e-government, or at least they don't care due to the very low employment wages.

Here, this study advises government to take advantage of the positive perception towards the e-government concept and the positive social impression of persons dealing with e-government to quickly enhance its services while people still have this positive impression, if it is lost, the government needs prolonged efforts to change the negative image of the Syrian government.

#### ***4.2.16 Citizens' Adoption of e government***

At this stage, the research reaches the important test of Syrian citizens' Adoption of e-government, as many studies confirmed that citizens' adoption is a principal factor in successful and sustainable e-government projects (Kumar et al. 2007; Singh et al. 2019; Mensah et al. 2020).

The statistical analysis shows that most Syrian citizens do not tend to adopt e-government as 76% of respondents' mean answers of overall Adoption were below 3 (the middle of the scale).

The mean answer assessing respondents' overall e-government adoption is 2.2 and significantly differs from 3 (the middle of the scale) depending on the results of the One-Sample T-test.

More analysis of the items assessing Adoption shows that the mean answer of the item "Even if you have other choices, you use e-government to fulfill your needs available via e-government services." was the extremist negative answer between items assessing citizens' adoption with 1.8 which means that most of the Syrian citizens have a negative opinion with e-government drive them to prefer the other channels to fulfill their needs when they have the choice.

#### ***4.2.17 Digital Divide***

Remembering that this research to assess the Digital Divide existence and extent in the Syrian case study, distributed an individual questionnaire to the experts and insiders in e-government and ICTs affairs in Syria as explained in Methodology and quantitative research, paragraphs 3.2.1, also this study distributed and discussed 34 surveys with the pre-contacted list of mentioned experts and insiders<sup>3</sup>.

The mean answer of the overall Digital Divide reaches 3.7<sup>4</sup>, expressing a clear digital divide in Syrian society as it significantly exceeds 3 (the middle of the scale) depending on One Sample T-test results.

Getting in more detail with the items forms the Digital Divide scale., we can see that the mean answer of the item measuring if Syrian people have enough knowledge to deal with e-government reaches 3.3, which is very close to the result reached in the first survey answered by the public.

Also, the experts responded negatively to the question "Government/ NGOs provide enough adequate ICT courses for users." with a mean answer of 2.8. Moreover, when the latter result was discussed with experts while providing them with feedback on the results of this study, they expressed that the Syrian government had planned ambitious adequate ICT courses during the years

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<sup>3</sup> After collecting the filled surveys, the researcher shortly interviewed experts and insiders for providing feedback and discussing the results.

<sup>4</sup> Reader should pay attention that the questionnaire of the Digital Divide contains reversed coded questions.

preceding the Syrian conflict. Unfortunately, during the years of war, those efforts declined for many reasons, whereas the role of NGOs in this regard has been but a few attempts of little or no practical value. In the same context, those courses are not accessible for all with a mean answer to the question measuring this aspect of 2.3, generally, the courses took place in major cities for security reasons.

In this regard, the investigated experts expressed that NGOs may be more able to take the lead in spreading ICT knowledge than the official institutions under the current conflict conditions, hence, the research recommends the government give wide support to NGOs initiatives and provide them with all the possibilities and facilities to start ICT courses on the national base, as the NGOs flexible structure, agility, and international/ regional relations are relatively more suitable for work under conflicts.

From another point of view, e-government portals and initiatives don't provide solutions for people with special needs to engage in the e-government process with a mean answer of 1 which expresses that all experts (respondents) found no solution provided by the e-government system for people with special need to interact through its website.

Also, the ICT infrastructure for ICT courses in public schools is not sufficient with a mean answer of 2.7, this low governmental support for education in providing ICT courses is related, on one side, to the severe reduction in qualified IT trainers (who, during long years of war left out the country), and to the high cost of essential infrastructure to equip all schools with ICT equipment on the other side, besides to the repetitive destruction and stealing of ICT equipment from schools in conflict areas and even in relatively stable areas, this difficult situation in such an important and strategic sector as education needs inventive solutions, such as mobile (roving) centers reaching schools in each area in sequence, providing intensive short courses held by specialists who got sufficient wages, as an example.

This research cannot suggest any solution in this regard because it needs a deep analysis from educational insider experts familiar with the educational sector on the ground, in the same context, respondents declared that no distinguished website gives information about national ICT courses with a mean answer of 1.8 but just some separate mentions on several websites.

Another item of the Digital Divide scale reveals that workplaces haven't sufficient resources (such as PC, Mobile, sufficient internet speed, etc.)to



enable employees to participate in e-government services with a mean answer of 2.1, whereas, the extremist possible negative mean answer of 1 shows consensus among the respondents that e-government project doesn't provide any public places with sufficient infrastructure allocated for public to participate in e-government services or at least public places for interacting online.

Moreover, an important side hasn't been discussed thoroughly in the Syrian context, that is the absence of the local native language of some minority groups rather than the official language (Arabic) on the e-government website may hinders them from interacting independently with e-government with a mean answer of 3.1 (the question is reversed coded), here, upgrading systems to provide multi-languages option containing languages spoken by some Syrian citizens as native languages besides Arabic, such as Aramaic, Arminian, Assyrian, Kurdish, Turkish, and Syriac allows widening e-government spread among more citizens, enhancing chances to be adopted by Syrians, and leaving no one behind.

In another context, the answer of respondents (experts) about if citizens have the means to do their transactions online (credit card, online paying methods...), with a mean answer of 2.2, denoted that most Syrian citizens cannot accomplish or complete their tasks online via e-government services because they have not any online payment means, this result sheds light on a great obstacle may cause Syrian e-government projects to fail, that the government is unable to provide adequate infrastructure for financial transactions.

For more benefit, this research discussed the results with insiders who confirmed the scarcity of such infrastructure (such as credit cards, stable network with a proper internet speed, and properly updated software for accomplishing e-payments) because of sanctions exerted on Syria relating to the current conflict, besides, most citizens don't have a bank account, or have a bank account that doesn't support online payment. To overcome this problem due to insiders, the government has to find a way to convince more people to have a bank account, especially among the new generation, facilitate it, and offer incentives for that, besides to develop the systems all public banks to get along with online banking methods and building a national network for online transaction engaging public and private banks.

In line with the fact that the majority of items measuring the Digital Divide are negative, another opinion presented by respondents (experts) has a mean

answer of 2.9 about if citizens have sufficient private resources to participate in e-government services (PC, Mobile, sufficient internet speed), this opinion is very close to 3 (the middle of the scale) and almost neutral, which gives a perception that about half of Syrians don't have proper tools to interact via e-government portal, keeping in mind the result mentioned previously that e-government initiatives don't afford places equipped with ICT equipment for the public to interact with e-government, drive us to conclude that more than half of Syrian people cannot participate in e-government even if they have the knowledge and ability, here, this study encourages e-government initiatives to plan to establish public places allocated only for interacting with e-government if it wants to be widely adopted by citizens, those public places or centers may establish with the cooperation of NGOs as discussed earlier in this paragraph.

Furthermore, the Digital Divide survey's results denoted that adequate internet fees are not costly but also not cheap, as the mean answer to the question "An adequate internet speed connection fee to use e-government services has a high cost"; (reversed coded question) stands near the middle of the scale with 3.1, and the government has to find solutions to support internet fees to enable more people engaging e-process.

Finally, discussing the extremist negative results of some items (with a mean answer of 1) declares the absolute unavailability of some important aspects that help to bridge the Digital Divide, those aspects are "the means which enable people with special needs from interacting e-government and availability of ICTs-equipped public places (governmental offices or spaces) to enable people who can't afford ICTs necessary to use e-government", in sequence, the absence of mentioned aspects widen the Digital Divide, hamper initiating successful e-government, and result in less adoption by people, also, readers should pay attention that, according to this survey, most vulnerable people were not taken into respect during the building-up of e-government systems, as the local language of some minorities is not supported besides the people with certain special needs haven't the tools to involve with e-government, this research recommends upgrading available systems to have a multilanguage interface provides local language and international languages (international languages interface enables Syrians from the second and third generation who born and lived abroad and still have connections and interests in the home territory).

### 4.3 Testing Hypotheses

#### 4.3.1 Methods used to assess relations between variables and e government

As many studies confirmed that citizens' adoption is an important indicator of successful and sustainable e-government projects (Kumar et al, 2007; Singh et al. 2019; Mensah et al. 2020), this study considers any factor significantly correlates with adoption as an affecting factor on e-government implementation. The study used the correlation test for that purpose.

But there are two exceptions for the factors "Intention" and "Digital Divide", and thus to assess the effect of citizens' Intention to use e-government and the Digital Divide, this study will not use the correlation between them and Adoption, as the Adoption scale developed by this research highly depends on the Intention scale as described, where Carter and Belanger (2005) and Carter and Weerakkody (2008) used intention to use e-government as an indicator of e-government adoption also Gefen and Straub (2000) used intention of inquiring and purchasing to assess Adoption, and many other studies in literature do the same.

On the other hand, the Digital Divide data were collected by an independent survey different from the survey used for Adoption, with a different targeted population.

Instead, to decide the existence of an effect of the Digital Divide in the Syrian context and the citizen's Intention effect on the Syrian e-government, this research used One Sample T-test to investigate if the mean answer of each of the two variables significantly differs from the middle of the scale, simultaneously with investigating the opinions of experts and insiders in Syrian context to confirm or reject the existence of this effect and considered Digital Divide and Intention as affecting factors on Syrian e-government.

Also, this research in evaluating correlations between variables depends on the absolute value of  $r$  to assess the strength of the relation between variables regarding Evans (1996) guide suggestions:

The relation is considered very weak when absolute  $r$  is between 0- 0.19.

The relation is considered weak when absolute  $r$  is between 0.2- 0.39.

The relation is considered moderate when absolute  $r$  is between 0.4- 0.59.

The relation is considered strong when absolute  $r$  is between 0.6- 0.79.

The relation is considered very strong when absolute  $r$  is between 0.8- 1.

#### **4.3.2 The relation between Citizens' Personal Security Feelings and Adoption of Syrian e-government**

To find out the relation between Citizens' Personal Security Feelings and Adoption of Syrian e-government, this study will investigate the relation between of each component of Personal Security Feelings theme (Trust, Risk, Security, Privacy, Uncertainty) with Adoption as follows.

##### ***4.3.2.1 The relation between Perceived Trust and Adoption of e-government***

From correlation test results, we can see a significant strong positive relation between Citizens' Perceived Trust and Adoption of e-government as  $P\text{-value} = 0.000 < \alpha = 0.05$  and  $r = 0.625$  regarding Evans (1996) guide suggestions of the relation strength.

This result leads the study to declare that:

*There is a significant impact of Perceived Trust on Citizens' Adoption of e-government.*

In other words, this result confirms Perceived Trust as an affecting factor of Syrian e-government implementation, and thus the sub-Hypothesis H1.1 of this research is accepted.

✓ ***H1.1- Perceived Trust is an affecting factor of e-government implementation in Syria (accepted).***

##### ***4.3.2.2 The relation between Perceived Risk and Adoption of e-government***

From the correlation test results, we can see a significant strong positive relation between Citizens' Perceived Risk and Adoption of e-government as  $P\text{-value} = 0.000 < \alpha = 0.05$  and  $r = 0.622$  regarding Evans (1996) guide suggestions of the relation strength.

This result leads the study to declare that:

*There is a significant impact of Perceived Risk on Citizens' Adoption of e-government.*

In other words, this result confirms Perceived Trust as an affecting factor of Syrian e-government implementation, and thus the sub-Hypothesis H1.2 of this research is accepted.

✓ ***H1.2- Perceived Risk is an affecting factor of e-government implementation in Syria (accepted).***

#### ***4.3.2.3 The relation between Perceived Security and Adoption of e-government***

From correlation test results, we can see a significant moderate positive relation between Citizens' Perceived Security and Adoption of e-government as  $P\text{-value} = 0.000 < \alpha = 0.05$  and  $r = 0.580$  regarding Evans (1996) guide suggestions of the relation strength.

This result leads the study to declare that:

*There is a significant impact of Perceived Security on Citizens' Adoption of e-government.*

In other words, this result confirms Perceived Security as an affecting factor of Syrian e-government implementation, and thus the sub-Hypothesis H1.4 of this research accepted.

✓ ***H1.3- Perceived Security is an affecting factor of e-government implementation in Syria (accepted).***

#### ***4.3.2.4 The relation between Perceived Privacy and Adoption of e-government***

From the correlation test results, we can see a significant moderate positive relation between Citizens' Perceived Privacy and Adoption of e-government as  $P\text{-value} = 0.000 < \alpha = 0.05$  and  $r = 0.522$  regarding Evans (1996) guide suggestions of the relation strength.

This result leads the study to declare that:

*There is a significant impact of Perceived Privacy on Citizens' Adoption of e-government.*

In other words, this result confirms Perceived Privacy as an affecting factor of Syrian e-government implementation, and thus the sub-Hypothesis H1.4 of this research is accepted.

✓ ***H1.4- Perceived Privacy is an affecting factor of e-government implementation in Syria (accepted).***

#### ***4.3.2.5 Relation between Perceived Uncertainty and Adoption of e-government***

From the correlation test results, we can see a significant strong negative relation between Citizens' Perceived Uncertainty dealing with e-government and their Adoption as  $P\text{-value} = 0.000 < \alpha = 0.05$  and  $r = 0.629$  regarding Evans (1996) guide suggestions of the relation strength.

This result leads the study to declare that:

*There is a significant impact of Citizens' Perceived Uncertainty dealing with e-government on Adoption of e-government.*

In other words, this result confirms Citizens' Perceived Uncertainty dealing with e-government as an affecting factor of Syrian e-government implementation, and thus the sub-Hypothesis H1.1 of this research.

✓ ***H1.5- Perceived Uncertainty is an affecting factor of e-government implementation in Syria (accepted).***

By the end of this paragraph 4.3.2, this research proved statistically that each component of Personal Security Feelings theme (Trust, Risk, Security, Privacy, Uncertainty) have a significant impact on Syrian e- government implementation and these results lead the study to accept the first Hypothesis of this research, H1.

***H1- Citizens' Personal Security Feelings affect e-government implementation in Syria (accepted).***

#### **4.3.3The relation between Citizens' Personal Knowledge and Adoption of Syrian e-government**

To find out the relation between Citizens' Personal Knowledge and Adoption of Syrian e-government, this study will investigate the relation between of each component of Personal Knowledge theme (Awareness, ICT knowledge, Ability to use ICT, Education level) with Adoption as follows.

##### ***4.3.3.1 The relation between Perceived Awareness and Adoption of e-government***

From the correlation test results, we can see a significant moderate positive relation between Citizens' Perceived Awareness and Adoption of e-government as  $P\text{-value} = 0.000 < \alpha = 0.05$  and  $r = 0.4$  regarding Evans (1996) guide suggestions of the relation strength.

This result leads the research to declare that:

*There is a significant impact of Perceived Awareness on Citizens' Adoption of e-government.*

In other words, this result confirms Perceived Awareness as an affecting factor of Syrian e-government implementation, and thus the sub-Hypothesis H2.1 of this research is accepted.

#### **4.3.3.2 The relation between ICT Knowledge and Adoption of e-government**

From the correlation test results, we can see a significant strong positive relation between Citizens' ICT Knowledge and their Adoption as  $P\text{-value} = 0.000 < \alpha = 0.05$  and  $r = 0.669$  regarding Evans (1996) guide suggestions of the relation strength.

This result leads the study to declare that:

*There is a significant impact of Citizens' ICT Knowledge on Adoption of e-government.*

In other words, this result confirms Citizens' ICT Knowledge as an affecting factor of Syrian e-government implementation, and thus the sub-Hypothesis H2.2 of this research.

✓ **H2.2- ICT Knowledge is an affecting factor of e-government implementation in Syria (accepted).**

#### **4.3.3.3 The relation between Perceived ICT Ability to use ICT and Adoption of e-government**

From the correlation test results, we can see a significant moderate positive relation between Citizens' Perceived Ability to use ICT for interacting online and Adoption of e-government as  $P\text{-value} = 0.000 < \alpha = 0.05$  and  $r = 0.528$  regarding Evans (1996) guide suggestions of the relation strength.

This result leads the study to declare that:

*There is a significant impact of Perceived Ability to use ICT for interacting online on Citizens' Adoption of e-government.*

In other words, this result confirms Perceived Ability to use ICT for interacting online as an affecting factor of Syrian e-government implementation, and thus the sub-Hypothesis H2.3 of this research.

✓ **H2.3- Perceived Ability to use ICT is an affecting factor of e-government implementation in Syria (accepted).**

#### ***4.3.3.4 The Impact of Education Level on Citizens' Adoption of e-government***

Similar to the result of the impact of Perceived Compatibility (personal compatibility) on Citizens' Adoption of Syrian e-government, this research finds no meaningful relation between Syrian Citizen's education level and their Adoption of national e-government as the result of the correlation test revealed;  $P\text{-value} = 0.051 > \alpha = 0.05$  (Correlation test used Kendall's tau-b ( $\tau_b$ ) correlation coefficient as education level is an ordinal variable.

This result leads the study to declare that:

*There is no significant impact of education level on Citizens' Adoption of Syrian e-government.*

In other words, this result rejects education level to be an affecting factor on Syrian e-government implementation, and thus the sub-Hypothesis H2.4 of this research is rejected.

**✕ H2.4- Education Level is an affecting factor of e-government implementation in Syria. (rejected).**

By the end of this paragraph 4.3.3, this research proved statistically that three component of Personal Knowledge theme (Awareness, ICT knowledge, Ability to use ICT) have a significant impact on Syrian e- government implementation and one component (Education Laval) have no significant impact on it, these results lead the study to accept partially the second Hypothesis of this research, H2.

***H2- Citizens' Personal Knowledge partially affects e-government implementation in Syria (Partially accepted).***

#### **4.3.4 The relation between Citizens' Personal Assessment of the Syrian e-government and Adoption**

To find out the relation between Citizens' Personal Assessment of the Syrian e-government and Adoption, this study will investigate the relation between of each component of Personal Assessment theme (Service Quality, Satisfaction, Compatibility, Usefulness/Benefit) with Adoption as follows.



#### **4.3.4.1 Relation between Perceived Service Quality and Adoption of e-government**

From the correlation test results, we can see a significant weak positive relation between Citizens' perceived service quality and adoption of e-government as  $P\text{-value} = 0.000 < \alpha = 0.05$  and  $r = 0.288$  regarding Evans (1996) guide suggestions of the relation strength.

This result leads the study to declare that:

*There is a significant impact of Perceived Service Quality on Citizens' Adoption of e-government.*

In other words, this result confirms Perceived Service Quality as an affecting factor of Syrian e-government implementation, and thus the sub-Hypothesis H3.1 of this research is accepted.

✓ ***H3.1- Perceived Service Quality is an affecting factor of e-government implementation in Syria (accepted).***

#### **4.3.4.2 Relation between Citizens' Satisfaction and Adoption of e-government**

From correlation test results shown, we can see a significant moderate positive relation between Citizens' Satisfaction with e-government and Adoption of e-government as  $P\text{-value} = 0.000 < \alpha = 0.05$  and  $r = 0.407$  regarding Evans (1996) guide suggestions of the relation strength.

This result leads the study to declare that:

*There is a significant impact of Citizens' Satisfaction with e-government on their Adoption of e-government.*

In other words, this result confirms Citizens' Satisfaction as an affecting factor of Syrian e-government implementation, and thus the sub-Hypothesis 3.2 of this research is accepted.

✓ ***H3.2- Citizens' Satisfaction is an affecting factor of e-government implementation in Syria (accepted).***

#### **4.3.4.3 Relation between Perceived Compatibility (personal compatibility) of e-government systems and Adoption of e-government**

From the correlation test results, we can see a non-significant relation between Perceived Compatibility (personal compatibility) of e-government

systems and Citizens' Adoption of Syrian e-government as  $P\text{-value} = 0.422 > \alpha = 0.05$ .

This result leads the study to declare that:

*There is no significant impact of Perceived Compatibility (personal compatibility) of e-government systems on Syrian Citizens' Adoption of e-government.*

In other words, this result rejects Perceived Compatibility (personal compatibility) of e-government systems to be an affecting factor of Syrian e-government implementation, and thus the sub-Hypothesis 3.3 of this research is rejected.

**✗ H3.3- Perceived Compatibility (personal compatibility) is an affecting factor of e-government implementation in Syria (rejected).**

#### **4.3.4.4 Relation between Perceived Usefulness/ Benefit and Adoption of Syrian e-government**

From the correlation test results, we can see a significant moderate to strong positive relation between Citizens' Perceived Usefulness of dealing with e-government and their Adoption as  $P\text{-value} = 0.000 < \alpha = 0.05$  and  $r = 0.593$  regarding Evans (1996) guide suggestions of the relation strength.

This result leads the study to declare that:

*There is a significant impact of Citizens' Perceived Usefulness of dealing with e-government on Adoption of e-government.*

In other words, this result confirms Citizens' Perceived Usefulness/ Benefit of dealing with e-government as an affecting factor of Syrian e-government implementation, and thus the sub-Hypothesis 3.4 of this research is accepted.

**✓ H3.4- Perceived Usefulness/ Benefit is an affecting factor of e-government implementation in Syria (accepted).**

By the end of this paragraph 4.3.4, this research proved statistically that three component of Personal Knowledge theme (Service Quality, Satisfaction, Usefulness/Benefit) have a significant impact on Syrian e- government implementation and one component (Compatibility) have no significant impact on it, these results lead the study to accept partially the third Hypothesis of this research, H3.

**H3- Citizens' Personal Assessment of Syrian e-government affects its implementation (*Partially accepted*).**

#### **4.3.5 Relation between Perceived Image of using e-government and Citizens' Adoption of e-government**

From the correlation test results, we can see a significant strong positive relation between Perceived Image of using e-government and Citizens' Adoption as  $P\text{-value} = 0.000 < \alpha = 0.05$  and  $r = 0.629$  regarding Evans (1996) guide suggestions of the relation strength.

This result leads the study to declare that:

*There is a significant impact of Perceived Image of using e-government on Citizens' Adoption of e-government.*

In other words, this result confirms Perceived Image of using e-government as an affecting factor of Syrian e-government implementation, and thus the fourth Hypothesis H4 of this research is accepted.

✓ **H4- Perceived Image of using e-government an affecting factor of e-government implementation in Syria (*accepted*).**

#### **4.3.6 Assessing the effect of Syrians' Personal Response on e-government implementation in Syria**

To assess the impact of Citizens' Personal Response toward Syrian e-government on e-government implementation in Syria, this study will investigate the effect of each component of Personal Response theme (Attitude, Intention) on Syrian e-government case as follows.

##### **4.3.6.1 Relation between Syrian citizens' Attitude toward e-government and their Adoption of e-government**

From the correlation test results shown in Table 47, we can see a significant moderate positive relation between Syrian citizens' Attitude toward e-government and their Adoption of e-government as  $P\text{-value} = 0.000 < \alpha = 0.05$  and  $r = 0.442$  regarding Evans (1996) guide suggestions of the relation strength.

This result leads the study to declare that:

*There is a significant impact of Syrian citizens' Attitude toward e-government on Adoption of e-government.*

In other words, this result confirms citizens' Attitude toward e-government as an affecting factor of Syrian e-government implementation, and thus the sub-Hypothesis 5.1 of this research is accepted.

✓ ***H5.1- Citizens' Attitude is an affecting factor of e-government implementation in Syria (accepted).***

**Table 1.** Correlation test between Syrian citizens' Attitude and Adoption of e-government.

Correlations		Overall Adoption	Overall Attitude
Overall Attitude	Pearson Correlation	.442**	1
	Sig. (2-tailed)	.000	
	N	1005	1005

\*\* . Correlation is significant at the 0.01 level (2-tailed).

Source: Author's own development (2022).

#### **4.3.6.2 The effect of Syrian citizens' intention to use e-government on e-government implementation**

Since the Adoption scale used in this study depends on intention toward using e-government as citizens' adoption is considered by the majority of studies as a vital signal of e-government success (Zheng et al., 2013; Gilbert et al., 2004; Warkentin et al., 2002), this research considers it is not valuable to assess the relation between Intention and Adoption.

To confirm that Intention is an affecting factor on e-government implementation in the Syrian case, this study decided to assess the existence of the Intention effect on Syrian e-government implementation on the experts and insiders in the Syrian context who confirmed the existence of this effect and considered Intention as an essential drive for citizens to adopt e-government and make its initiatives succeed, which goes in line with all studies this research found in the literature about intention importance in the successful experience of e-government or e-services projects in general, as discussed previously in literature review paragraph, besides considering the result of paragraph 4.2.14 that showed the mean answer of citizens' Intention is significantly differs from the middle of the scale.

This result leads the study to declare that:

*There is a significant impact of Syrian citizens' intention to use e-government on e-government implementation.*

In other words, this result confirms citizens' intention to use e-government as an affecting factor of Syrian e-government implementation, and thus the sub-Hypothesis 5.2 of this research is accepted.

✓ **H5.2- Citizens' Intention to use e government is an affecting factor of e-government implementation in Syria (accepted).**

By the end of this paragraph 4.3.6, this research proved statistically that each component of Personal response toward e-government theme (Attitude, Intention) have a significant impact on Syrian e- government implementation and these results lead the study to accept the fifth Hypothesis of this research, H5.

✓ **H5- Syrians' Personal Response toward e-government affects e-government implementation in Syria.**

#### 4.3.7 The effect of the Digital Divide on Syrian e-government implementation

As this research to assess the Digital Divide in Syria used an independent survey assigned to experts and insiders in Syrian digital affairs and used another survey in assessing citizen Adoption of e-government assigned to the Syrian public (another sample), it is unsound to assess the relation between those two variables, instead of that, this study decided to assess the existence of Digital Divide effect on Syrian e-government implementation depending on the mean answer of the overall Digital Divide calculated from the collected data of the second survey.

The mean answer of the overall Digital Divide reaches 3.7, which significantly surpasses (3 the middle of the scale) according to the results of One Sample T-test, as  $P\text{-value} = 0.003 < \alpha = 0.05$ , paragraph 4.2.17.

This result expresses a clear digital gap between Syrian citizens and confirms Digital Divide as an affecting factor on e-government implementation in the Syrian case.

This result leads the study to declare that:

*There is a significant impact of Digital Divide government on e-government implementation.*

In other words, this result confirms Digital Divide as an affecting factor of Syrian e-government implementation, and thus the sixth Hypothesis H6 of this research is accepted.

✓ ***H6- The Digital Divide is an affecting factor of e-government implementation in Syria.***

Finally, this study accepted fifteenth hypotheses out of seventeen the research proposed and reject two, the following Table 2, summarize the confirmed Hypotheses.

**Table 2.** Hypotheses testing results.

	Hypothesis Nr.	Description	Result
<b>H1</b>	<b>H1</b>	<b>Citizens' Personal Security Feelings affect e-government implementation in Syria.</b>	<b>Accepted</b>
	H1.1	Perceived Trust is an affecting factor of e-government implementation in Syria.	Accepted

	Hypothesis Nr.	Description	Result
	H1.2	Perceived Risk is an affecting factor of e-government implementation in Syria.	Accepted
	H1.3	Perceived Security is an affecting factor of e-government implementation in Syria.	Accepted
	H1.4	Perceived Privacy is an affecting factor of e-government implementation in Syria.	Accepted
	H1.5	Perceived Uncertainty is an affecting factor of e-government implementation in Syria	Accepted
H2	H2	<b>Citizens' Personal Knowledge affects e-government implementation in Syria.</b>	<b>Partially accepted</b>
	H2.1	Perceived Awareness is an affecting factor of e-government implementation in Syria.	Accepted
	H2.2	ICT Knowledge is an affecting factor of e-government implementation in Syria.	Accepted
	H2.3	Perceived ICT Ability is an affecting factor of e-government implementation in Syria.	Accepted
	H2.4	<i>Perceived Compatibility (personal compatibility) is an affecting factor of e-government implementation in Syria.</i>	<i>Rejected</i>
H3	H3	<b>Citizens' Personal Assessment of Syrian e-government affects its implementation.</b>	<b>Partially accepted</b>
	H3.1	Perceived Service Quality is an affecting factor of e-government implementation in Syria.	Accepted
	H3.2	Citizens' Satisfaction is an affecting factor of e-government implementation in Syria.	Accepted
	H3.3	<i>Education Level is an affecting factor of e-government implementation in Syria.</i>	<i>Rejected</i>

	Hypothesis Nr.	Description	Result
	H3.4	Perceived Usefulness/ Benefit is an affecting factor of e-government implementation in Syria.	Accepted
H4	H4	<b>Perceived Image of using e-government an affecting factor of e-government implementation in Syria.</b>	<b>Accepted</b>
H5	H5	<b>Syrians' Personal Response toward e-government affects e-government implementation in Syria.</b>	<b>Accepted</b>
	H5.1	Citizens' Attitude is an affecting factor of e-government implementation in Syria.	Accepted
	H5.2	Citizens' Intention to use e-government is an affecting factor of e-government implementation in Syria.	Accepted
H6	H6	<b>Digital Divide is an affecting factor of e-government implementation in Syria.</b>	<b>Accepted</b>

Source: Author's own development (2023).



## 5. CONCLUSIONS AND RECOMMENDATIONS

One of the important conclusions this study presents is that there are two Social factors considered important in affecting e-government implementation in developed countries with stable economic and political situations, those are the Education level and the Compatibility of electronic systems with the personality of e-government users, the mentioned two factors lost their importance or were hindered by surrounding circumstances to affect the national e-government in developing countries with a collapsed economy suffering from continued 12 years of armed conflict, taking the Syrian Arab Republic as an example of those countries.

Moreover, this study concluded that even though Syrians have enough ICT knowledge, they are not familiar with dealing with the services the Syrian e-government provides.

On the other hand, the research asserts that there is a clear weakness in the training that targets explaining the possibilities of e-government and a shortage in the campaigns that aim to raise citizens' awareness of the national e-government.

From another perspective, citizens have high trust in performing financial transactions using e-government portals, as citizens see it as not risky to use these channels since they see the websites have sufficient security features.

Furthermore, even though Syrians have sufficient ICT knowledge and the ability to deal with e-government, more than half of them are unable to participate in e-government because they cannot afford the necessary ICT devices.

Finally, this research affirms that there is a clear existence of a Digital Divide within Syrian society.

This research recommends the Syrian government:

- Start national training campaigns to increase citizens' self-ability to use ICTs for interacting with e-government independently, especially for the older generation. Besides that, it is important to train the employees to boost support and feedback to the users.
- Give wide support to NGOs initiatives and provide them with all the possibilities to start ICT courses on the national base, as their flexible

structure, agility, and international/ regional relations are relatively more suitable for work under conflicts.

- Establish, with the cooperation of NGOs, public places allocated for interacting with e-government to increase its adoption among citizens.
- Find solutions to support internet costs to enable more people engaging e-process, such as reducing taxes and offering loans for purchasing ICTs equipment.
- Upgrade e-government systems to have a multilanguage interface that provides local languages (such as Aramaic, Arminian, Assyrian, Kurdish, Turkish, and Syriac) and international languages to enable all Syrians in all regions within Syrian territory and those who were born abroad to deal with the national e-government.
- Investigate proper solutions to enable people with special needs to use e-government portals.
- Develop the systems of all public banks to get along with online banking methods and build a national network for online transactions engaging public and private banks.
- Organize promotional campaigns -with the help of specialized accreditable promoting companies- explaining e-government work principles to convince citizens that e-government preserves their privacy by dealing with users anonymously during data analysis.

## **6. NEW SCIENTIFIC ADDITION OF CURRENT RESEARCH**

This research provided new important additions to the literature concerning e-government field of study:

- 1- This research presents the Five Categories Classification Tool (FCCT) Model, which forms with the corresponding tables a ready tool for researchers to find easily the factors affecting e-government refined in five main fields of concern; Social, Technological, Political, Organizational, and Financial disciplines, containing all factors interact with e-government found in the literature with brief hints of measurements and studies, hence, the researchers interested with the e-government context don't have to search for these factors in the literature and can immediately begin their studies depending on these factors, each in his discipline, Figure 4, Tables 1-5.
- 2- The study presents new scales for assessing Social and Technological factors, Tables 10,11.
- 3- The research defines the Social factors affecting e-government implementation in the Syrian context, those are: Perceived Trust, Perceived Risk, Perceived Security, Perceived Privacy, Perceived Uncertainty, Perceived Awareness, ICT Knowledge, Perceived ICT Ability to deal with e-government, Perceived Service Quality, Satisfaction, Perceived Usefulness/ Benefit, Perceived Image of using e-government, Attitude, Intention, and Digital Divide, Figure 11.

The above-mentioned 15 factors considered the social factors affecting e-government context in bad economic countries suffering from armed conflicts and wars (Syrian Arab Republic as an example of those countries).

- 4- This study proved that the Education level is not an affecting factor in the Syrian e-government implementation case, which goes against the common consensus in the literature that there is a relation between education level and intention to use e-services. This drives the research to conclude that the other factors affecting the Syrian e-government succeeded in hiding the impact of the education level.

The Educational level loses its importance in affecting e-government adoption in bad economic countries suffering from armed conflicts (Syrian Arab Republic as an example of those countries).

- 5- This study found that the Perceived Compatibility of e-government systems (personal compatibility) has no significant impact on Syrian e-government Adoption. In other words:

The systems' Compatibility with users' personalities loses its importance in affecting e-government adoption in bad economic countries suffering from armed conflicts (Syrian Arab Republic as an example of those countries).

- 6- The research statistically proved the existence of a Digital Divide in Syria through the years of armed conflict in Syria.

## LIST OF PUBLICATION

### Journals

Alassaf, P., Bahna, M., El-assaf, B.M. (2020). The relation between Online protection regulations and the intention to use e-services/ Age perspective: Case study of Hungary. *HUNGARIAN AGRICULTURAL ENGINEERING*. 2020. Published online: <http://real.mtak.hu/121692/1/38-2020-02-10.17676HAE.2020.38.15.pdf>, DOI: 10.17676/HAE.2020.38.15

Alassaf, P., El-assaf, B. M., Szalay, Z. G. (2023). Worker's Satisfaction and Intention toward Working from Home—Foreign Non-EU Citizens vs. National Workers' Approach: Case Study of Central European Countries (Visegrád Group (V4). *Administrative Sciences*, 13(3), 88. <https://doi.org/10.3390/admsci13030088>

Alassaf, P., Szalay, G. Z. (2020). Transformation toward e-learning: experience from the sudden shift to e-courses at covid-19 time in Central European countries; students' satisfaction perspective. *Studia Mundi – Economica*. 7(3), 75-85. ISSN 2415-9395. Doi: <https://doi.org/10.18531/Studia.Mundi.2020.07.03.75-85>

Alassaf, P., Szalay, G. Z. (2021). Engaging agriculture in e-government, E-agriculture potentials and its contribution in economy. *Journal of Agricultural Informatics*, 11(2). <https://doi.org/10.17700/jai.2020.11.2.576>

Alassaf, P., Szalay, G. Z. (2022). The Impact of 'Compulsory' Shifting to Use e-Services during COVID-19 Pandemic Restrictions Period on e-Services Users' Future Attitude and Intention "Case Study of Central European Countries/Visegrád Group (V4). *Sustainability*, 14, 9935. <https://doi.org/10.3390/su14169935>

Alassaf, P., Zaien, S., Oláh, J. (2020). Factors affecting e-government implementation: developing countries e-opportunities. *Acta Oeconomica Universitatis Selye*. 9(1), 7-23. DOI: <http://dx.doi.org/10.36007/Acta.2020.9.1.1>

Alassaf, P. (2020). THE AFFECTING FACTORS OF SUCCESSFUL E-GOVERNMENT IMPLEMENTATION. *Tishreen University Journal for Research and Scientific Studies - Economic and Legal Sciences Series*, 42(4), 477-491.

Alassaf, P. (2017). Factors influencing rents value of residential units at the city of Latakia during Syrian crise: An empirical study. *Tishreen University*

### **Book Chapter**

Alassaf, P., Szalay, G. Z. (2022). Complications related to online security procedures and its effect on older age intention to use e-transactions. In: Bujdosó, Zoltán (eds.) *Ezerarcú tudomány A MATE Károly Róbert Campusán megrendezett 2022. évi workshop előadásainak összefoglalói* Gyöngyös, Hungary : Magyar Agrár- és Élettudományi Egyetem Károly Róbert Campus (2022) 61 p, 11-11.

### **Conference proceedings**

Alassaf, P. (2019). Governmental influence at macro level on economic growth/ the role of E-government, envision beyond information revolution age. In: Bálint, Horváth; Zsombor, Kápolnai; Péter, Földi (eds.) *V. International Winter Conference of Economics PhD Students and Researchers. Conference Proceedings*. Gödöllő, Hungary. Association of Hungarian PHD and DLA Students (2019) 149 p. pp. 20-26.

Alassaf, P., Szalay, G. Z. (2019). Information systems and business management controlling, implementing e-government as an information control system. In: Illés, Bálint Csaba (eds.). *Proceedings of the International Conference on Management: "People, Planet and Profit: Sustainable business and society"*. Volume I. Gödöllő, Hungary. Szent István Egyetemi Nonprofit Kiadó Kft (2019), 385 p, 140-148.

## REFERENCES

- Alassaf, P., Zaien, S., Oláh, J. (2020): Factors affecting e-government implementation: developing countries e-opportunities. *Acta Oeconomica Universitatis Selye*, 9(1), 7-23. DOI: <http://dx.doi.org/10.36007/Acta.2020.9.1.1>
- Alomari, M., Sandhu, K. and Woods, P. (2009). E-Government Adoption in the Hashemite Kingdom of Jordan: Factors from Social Perspectives. Proceedings of the International Conference for Internet Technology and Secured Transactions. London. 9-12 November 2009. 1-7. DOI: 10.1109/ICITST.2009.5402528
- Andréasson, E. (2015): Digitalisering i den offentliga förvaltningen : IT, värden och legitimitet. *PhD dissertation*. Linköping University Electronic Press. Linköping: Linköping University Electronic Press, 2015, p. 336. <https://doi.org/10.3384/diss.diva-121837>
- Carter, L., Belanger, F. (2005): The utilisation of e-Government services: citizen trust, innovation and acceptance factors. *Information Systems Journal*, 15(1), 5-25.
- Carter, L., Weerakkody, V. (2008): *E-government adoption: A cultural comparison*. *Information Systems Frontiers*, 10(4), 473–482. doi:10.1007/s10796-008-9103-6
- Central Bureau of Statistic. (2017): Indicators estimate of the population in Syria by governorates 2016. *Population and Demographic, Yearbook, Chapter2*. <http://cbssyr.sy/yearbook/2017/Data-Chapter2/TAB-4-2-2017.pdf>.
- Central Bureau of Statistic. (2018): statistical abstract 2018. <http://www.cbssyr.sy/index-EN.htm>.
- Chadwick, A. (2011): Explaining the failure of an online citizen engagement initiative: The role of internal institutional variables. *Journal of Information Technology and Politics*, 8(1), 21–40.
- CIA World Factbook. (2020): Website. [retrieved on February 25th, 2020]: <https://www.cia.gov/the-world-factbook/field/age-structure>
- Evans, J.D. (1996): *Straightforward Statistics for the Behavioral Sciences*. Brooks/Cole Publishing; Pacific Grove, Calif. 1996. ISBN: UCSC:32106013017055
- Fletcher-Brown, J., Turnbull, S., Viglia, G., Chen, T., Pereira, V.

(2021): Vulnerable consumer engagement: How corporate social media can facilitate the replenishment of depleted resources. *International Journal of Research in Marketing*. 38(2), 10.1016/j.ijresmar.2020.06.002

Gefen, D., Straub, D. (2000): The relative importance of perceived ease of use in IS adoption: A study of e-commerce adoption. *Journal of the Association for Information Systems*, 1(8), 1-30. DOI: 10.17705/1jais.00008

Harrikari, T., Rauhala, P.-L. (2014): *Social Change and Social Work: The Changing Societal Conditions of Social Work in Time and Place*. (1st ed.). Routledge. DOI: 10.4324/9781315609423

Kumar, V., Mukerji, B., Irfan, B. and Ajax, P. (2007): Factors for Successful e-Government Adoption: A Conceptual Framework. *The Electronic Journal of e-Government*, 5(1), 63-77.

Lnenicka, M., Nikiforova, A. (2021): *Transparency-by-design: What is the role of open data portals?* *Telematics and Informatics*, 61, 101605. doi: 10.1016/j.tele.2021.101605

McLoughlin, I. and Wilson, R. (2013): *Digital Government at Work, A Social Informatics Perspective*. Oxford University Press. ISBN 978-0-19-955772-1.

Mensah, I. K., Zeng, G., & Luo, C. (2020): E-Government Services Adoption: An Extension of the Unified Model of Electronic Government Adoption. *SAGE Open*, 10(2). doi: 10.1177/2158244020933593

Simonofski, A., Zuiderwijk, A., Clarinval, A., Hammedi, W. (2022): Tailoring open government data portals for lay citizens: A gamification theory approach. *International Journal of Information Management*, 65, 102511, ISSN 0268-4012. doi: 10.1016/j.ijinfomgt.2022.102511.

Singh, H., Kar, A.K., Vigneswara Ilavarasan, P. (2019): *Adoption of e-Government Services: A Case Study on e-Filing System of Income Tax Department of India*. In: Tripathy, A., Subudhi, R., Patnaik, S., Nayak, J. (eds) *Operations Research in Development Sector*. Asset Analytics. Springer, Singapore. [https://doi.org/10.1007/978-981-13-1954-9\\_8](https://doi.org/10.1007/978-981-13-1954-9_8)

Tilley, J., Neundorff, A., Hobolt, S. B. (2018): *When the Pound in People's Pocket Matters: How Changes to Personal Financial Circumstances Affect Party Choice*. *The Journal of Politics*, 80(2), 555–569. doi:10.1086/694549

UNDESA. (2014): *E-government Survey*, E-government for the Future We Want. United Nations. 2014. ISBN: 978-92-1-123198-4. e-ISBN: 978-92-1-056425-0.



United Nations (2012a): Resolution adopted by the General Assembly on 27 July 2012, the future we want. A/RES/66/288.

United Nations (2012b): E-Government Survey 2012. E-Government for the People, New York.

United Nations (2014a): *E-Government Survey*. Online [http://unpan3.un.org/egovkb/Portals/egovkb/Documents/un/2014\\_Survey/EGov\\_Complete\\_Survey-2014.pdf](http://unpan3.un.org/egovkb/Portals/egovkb/Documents/un/2014_Survey/EGov_Complete_Survey-2014.pdf). [Accessed 19.01.2020].

United Nations. (2014b): *Manual for measuring e-Government*. United Nations Economic Commission for Africa. Addis Ababa, Ethiopia.

United Nations (2016): Compendium of innovative practices in Public Governance and Administration for Sustainable Development. *United Nations Publication*. 2016. ISBN: 978-92-1-123206-6.

United Nations (2018): *E-government survey 2018: Gearing e-government to support transformation towards sustainable and resilient societies*. United Nations department of economic and social affairs. United Nations New York. [publicadministration.un.org](http://publicadministration.un.org).

United Nations. (2019): Country classifications. statistical annex. *World Economic Situation and Prospects 2019*, pp 167- 206.

Woolgar, S. (2002): Five Rules of Virtuality, in S. Woolgar (ed.), *Virtual Society? Technology, Cyberbole Reality*, Oxford University Press, Oxford, pp. 1–22. ISBN 978-0199248759.

World Bank. (2020): *The Fallout of War: The Regional Consequences of the Conflict in Syria*. Washington, DC: World Bank. doi:10.1596/978-1-4648-1614-7. License: Creative Commons Attribution CC BY 3.0 IGO

World Bank. (2022): *Syria Economic Monitor: Lost Generation of Syrians*. International Bank for Reconstruction and Development, Washington, DC: World Bank.

World Bank website. (2021). [Available online]: <https://data.worldbank.org/indicator/SP.POP.TOTL?locations=SY>. [Accessed, February 4th ,2023].

World Bank. (2016): *World Development Report 2016: Digital Dividends*. Washington, DC: World Bank. doi:10.1596/978-1-4648-0671-1. License: Creative Commons Attribution CC BY 3.0 IGO