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# Willingness to Pay for Digital Government Services in Egypt: A Contingent Valuation Analysis for Electricity Meter Case

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# الرغبة في الدفع للخدمات الحكومية الرقمية في مصر: تحليل وفقًا لنموذج التقييم المشروط بالتطبيق على خدمة توصيل العداد الكهربائي

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## Abstract

The purpose of this paper is to use field evidence to examine the effective demand of Egyptian citizens for digital governmental services and determine the amount they are willing to pay as extra fees for that service. It also investigates the factors affecting both households' willingness to pay (WTP) and WTP amount for digital governmental services based on their stated preferences. The researchers adopt the Contingent Valuation Method (CVM) to elicit citizens' WTP for the online application for electricity meter, if it becomes available, as well as to determine the WTP amount. The CVM was employed to create a hypothetical market for the online application for electricity meter, based on the stated preferences approach. Researchers developed a survey that was conducted in Greater Cairo and collected in July-August 2020. Results of the two logistic regression models showed some variations in the factors affecting WTP vs. WTP amount. They showed that area of residence, income, education level, knowledge of existing online services, Internet access and use, and the cost of the traditional service have significant effects on WTP, while gender, income, knowledge about exiting online service, and the cost of the traditional service have significant effects on the WTP amount. Among the remarkable results of the study is that age as well as respondents' past experiences with online governmental services, have no significant effect on WTP or WTP amount. The results also indicated that past experience with the traditional services has an insignificant impact on both WTP and WTP amount with regard to the quality and the obstacles facing them. The study provides recommendations to policy makers regarding design, implementation, and financing of digital governmental services. It adds to the relatively limited literature on the application of CVM on digital governmental services and on the electricity sector, and to the very few to be applied in the context of Egypt.

*Keywords:* e-government, e- services, digital services, Contingent Valuation Method (CVM), Willingness to Pay (WTP), government policies, public goods theory, empirical study

**المستخلص**

تهدف الورقة البحثية إلى قياس رغبة الأفراد في دفع رسوم إضافية للحصول على الخدمات الحكومية الرقمية، وتحديد قيمة أو سعر الخدمة الرقمية من خلال قياس رغبة المواطنين في الدفع. كما تهدف إلى تحديد العوامل المؤثرة على كل من رغبة المواطنين في الدفع، وعلى القيمة المالية التي يرغب المواطنون في دفعها للحصول على الخدمة الحكومية الرقمية. اعتمدت الدراسة على استخدام نموذج التقييم المشروط (Contingent Valuation Method)؛ لتحديد "الرغبة في الدفع" (Willingness to Pay, WTP)، وتحديد سعر استرشادي للخدمات العامة. ويعتمد هذا النموذج على بناء سوق افتراضي للخدمة الحكومية الرقمية، ويتم توجيه الأسئلة المباشرة للعينة لاستنباط السعر الذي يرغب الأفراد في دفعه للحصول على منفعة من هذه الخدمة. وقد تم تصميم استبيان لقياس "الرغبة في الدفع" للحصول على خدمة التقديم على عداد كهربائي إلكترونيًا. وقد تم تصميم وجمع بيانات الاستبيان من عينة عشوائية من القاهرة الكبرى في الفترة يوليو–أغسطس 2020. أظهرت نتائج نموذجي الانحدار اللوجيستي اختلاف في بعض العوامل المؤثرة على "الرغبة في الدفع" عن العوامل المؤثرة على القيمة المالية التي يرغب المواطنون في دفعها للحصول على الخدمة الرقمية، فكان محل الإقامة، مستوى الدخل، والتعليم، مستوى معرفة المواطنين بالخدمات الحكومية الرقمية المتاحة، ومدى توفر الإنترنت والقدرة على استخدامه، وتكلفة الخدمة التقليدية من أبرز العوامل المؤثرة على "الرغبة في الدفع". بينما جاء النوع الاجتماعي، ومستوى الدخل، ومستوى معرفة المواطنين بالخدمات الحكومية الرقمية المتاحة، وتكلفة الخدمة التقليدية من أبرز العوامل المؤثرة على القيمة المالية. ومن أبرز نتائج هذه الدراسة أن السن، وخبرة المواطنين بالخدمات الرقمية ليس لهما تأثير على الرغبة في الدفع أو القيمة المالية. كما توصلت الدراسة إلى أن الخبرات السابقة في الحصول على الخدمة التقليدية فيما يتعلق بجودتها أو أي صعوبات مرتبطة بها، لم يكن لهما أيضًا تأثير على "الرغبة في الدفع" أو "القيمة المالية". وطرحت الدراسة عددًا من التوصيات لصانع القرار عند تصميم المشروعات الحكومية الرقمية، وتنفيذها، وتمويلها. وتمثل هذه الدراسة إضافة إلى الأدبيات القليلة التي طبقت نموذج التقييم المشروط على الخدمات الحكومية الرقمية وعلى قطاع الكهرباء.

*الكلمات الدالة: الحكومة الالكترونية، الخدمات الإلكترونية، الخدمات الرقمية، نموذج التقييم المشروط، الرغبة في الدفع، السياسيات الحكومية، نظرية السلع العامة، دراسات تطبيقية*

## Introduction

In today's globalized world, and with the continual development of information technology worldwide, digitalization of governmental services –especially in the aftermath of COVID –19 became inevitable. But, e-governmental services are not only about the use of technology or web-based Internet applications to provide services, but they are more about citizens' empowerment and involvement. They are more about the value citizens give for the digital governmental services.

There are several methods that have been used to value non-market goods, and digitalization of electricity meter's application process is considered one of them. These methods can be divided into two main groups: *i)* indirect methods that are often referred-to as revealed preferences (RP) approaches. They rely on the observation of citizens' behaviour in the market to infer the goods value; *ii)* the direct methods or the stated preferences (SP) approaches. They try to elicit or find the goods' value directly by asking citizens through a representative survey (Aabo, 2005).

The paper depends on SP approaches, because they help seize the value of use and non-use of the public goods, whereas the RP approaches capture the use values only (Aabo, 2005). This is especially important to understand the Egyptian citizens' value of use or non-use of the digital service of the electricity meter.

One of the mostly used SP approaches is called the Contingent Valuation Method (CVM). It is based on a survey/questionnaire directed towards a representative sample of the population. It is based on the creation of a hypothetical market about the good or service of interest. Then, the respondents are asked to state their Willingness to Pay (WTP) for a hypothetical/simulated change in the level of provision of a non-market good or service. It is defined by OECD (2018) as a survey-based stated preference method that aims at eliciting citizens' intended future behaviour in a simulated market.

The CVM idea was introduced by von Ciriacy-Wantrup in 1947, and was later applied in 1963 by Davis when valuing the benefits of outdoor creation (OECD, 2018). By time, CVM became the primarily used method of "Stated-Preferences".

Subsequently, CVM gained acceptance among scholars and policy makers as an effective method to assess the monetary value of non-market impacts of policies or projects. So, the CVM has been used by researchers, both in developed and developing, countries to estimate the WTP in different sectors. It was widely used in the environmental studies to measure the extent the citizens are willing to pay to protect the environment and to reduce

emissions (Loomis et al., 1996; Mostafa, and Al-Hamdi 2016; Seth et al., 2009; Yang, and Solgaard, 2015). Also, researchers have used the CVM in sports projects and even to assess the support citizens will give to their soccer team (Garcia et al., 2014; Theysohn, 2006; Zawadzki, 2020). Another sector is the tourism and valuing of heritage, some studies investigated the WTP to conserve historic sites and valuing heritage assets (Yung, and Chan, 2015; Porter, 2004).

For the electricity sector, some studies used CVM on the electricity supply side. Like Selasinsky et al. (2017), who used CVM to compare between household's WTP to avoid the electricity supply interruption and willingness to accept (WTA) the continuous electricity supply interruption in Munich, Germany. This approach is also highly valued in developing countries, where resources are rare. Otegbulu (2011) has also studied households' willingness to pay for improved electricity supply to deal with the poor electricity infrastructure in Nigeria.

Despite the wide use of CVM in different sectors, few studies have used it to measure WTP for the adoption of "digital" public services (Shariful Islam et al., 2015; Tassabehji et al., 2019). This research will contribute to literature in this area.

On the other hand, the CVM does not go without criticism, which revolves mainly around the concept that the quality of stated preferences is inferior to observing revealed preferences (FAO, 2000). Some other researchers pointed to some limitations related to its base which is the hypothetical market, not real behaviour (OECD, 2018). Others pointed to limitations like exact understanding of the hypothetical scenario and a lack of meaningful budget restrictions (Aabo, 2005).

But, despite these limitations and criticism, CVM was seen as an effective tool to measure the WTP and to assess the monetary value of non-market goods or services. Yung, and Chan, 2015; and Nam et al. (2014) concluded that a well-designed CVM survey can provide valuable information about individuals' WTP. Nevertheless, it is very vital to consider the above-mentioned limitations when designing the survey and attempting to minimize these errors.

Hence, CVM will be used to estimate the value Egyptian citizens have for the digitalization of electricity meter's application process. The value will reflect a trade-off between the respondents' time/efforts' costs and the benefits they will get from the e-service (Tassabehji et al., 2019). So, the demand for the online service is measured through the desire for the service, as well as the WTP for that service.

The study's aim is to answer two main questions. Firstly, which factors will affect the respondents' effective demand (WTP) for the online application for electricity meter, if

available by the Ministry of Electricity and Energy in Egypt? Secondly, which factors will affect the amount of their willingness to pay (WTP) for online application for electricity meter, if available?

Besides a review of the literature and research questions in the introduction, the rest of the paper is organized as follows: Section 2 explains the steps followed by the researchers to develop the survey that is followed by profile of the sample in Section 3. The empirical results and the discussion are presented in Sections 4 and 5, respectively. Finally, Section 6 concludes the study along with policy recommendations.

**Survey Development**[1]

To develop a survey using the CVM, the literature suggested that the survey should include three main sections: The first one shows the demographic and social characteristics of the sample. The second one focuses on the attitude of the respondents towards the service that will be valued. The third and the most important section of the survey is the contingent scenario or the hypothetical situation (Loomis et al., 1996; OECD 2018).

***In the first section,*** it is vital to understand to what extent the demographic and social characteristics have an impact on the behaviour of the respondents. For example, it is expected that highly educated people or wealthier respondents will have a higher willingness to pay for the service. Also, the gender difference might have an impact on WTP.

***The second section of the survey*** aimed at preparing the respondents for the valuation questions that appear in the third section. Thus, this section mainly focuses on questions that reveal the factors deriving the respondents' attitudes towards the online service. So, in this section, respondents were asked direct questions about their knowledge of the existence of some online governmental services, if they ever used them, and their evaluation for such services. This shall reflect citizens' awareness/knowledge of online governmental services, and whether respondents were willing to use them or not.

Then, respondents were asked a direct question about their experience with the traditional application method for electricity meter and their evaluation of that experience. While the previous set of questions reflected the impact of past experience, in general, with online governmental services, this set of questions reveals the impact of past experience with the traditional application method specific to the service under study–electricity meter.

***The third section of the survey*** started with a description of the contingent scenario or the hypothetical market to the respondents. The hypothetical scenario involves a description of

[1] Available to the Editorial Board.

the policy change or the new service, description of the hypothetical/contingent constructed market, and lastly a description of the method of payment/elicit monetary value. One of the main challenges of CVM is to make a scenario that is understandable and meaningful to respondents, so that they can give a valid and reliable value, despite their lack of experience, or full knowledge of some of the scenario dimensions (OECD, 2018). Therefore, the design of the contingent scenario and value elicitation questions are the core elements of the CVM and the core of survey.

According to OECD (2018); FAO (2000); and Loomis et al., (1996), the contingent market or the social context, in which the hypothetical CV transaction takes place, should clarify the following points:

**a**) **The institution** responsible for the provision of the service (government, NGO, etc.), since it might affect the respondents' WTP, based on their views about the providers' effectiveness, reliability and trust.

**b) The timing of provision**, which explains when the service will be provided, and how long it will take to get it. This has an impact on respondents' demand for the service, since respondents might highly value the service that will be provided in a year compared to the same service that will be provided five years later.

**c) Conditions for provision**, i.e., respondents perceive payment as obligatory (e.g., taxes, fees, user charges) vs. voluntary (e.g., gift or donation). That distinction is very crucial, since voluntary payment encourages free riding. Because they want the service, respondents might overestimate their WTP to encourage the providers to offer the service. At the same time, they do not believe that they would be forced by the service providers to pay the requested amount. They believe that, later on, it will be a voluntary decision to pay or not when the service is offered. Thus, some literature suggested that voluntary payment should be avoided in CVM surveys to avoid bias (OECD, 2018).

The last part of the hypothetical scenario is questions to elicit how much respondents will value the service, if they can get it under the specified conditions described in the scenario.

There are different designs for the elicitation questions: Open-ended questions, bidding game, payment card, single-bounded dichotomous choice, and lastly double-bounded dichotomous choice (Echeverria et al., 2014; OECD, 2018; FAO, 2000). The choice of elicitation format is important as different elicitation formats typically produce different estimates. The dichotomous choice format with one or two follow up questions is nowadays preferred over other alternatives, and it is the most widely used approach in eliciting WTP. It even proved more suitable for developing countries (FAO, 2000). The reason is that the

dichotomous choice format imitates the behaviour of people in regular markets (where people will choose to buy or decline to purchase), and thus reduces the cognitive burden on the respondents of the survey.

Recently, the double-bounded dichotomous choice format is preferred over the single-dichotomous one, because it catches more information on the "true" WTP of respondents, and accordingly provides more efficient and less biased estimates of WTP (Echeverria et al., 2014).

The double-bounded dichotomous choice format has some limitations related to biases; like the hypothetical bias due to the difference between hypothetical WTP and the real one, and strategic bias of free-riding problem or over-estimation of WTP. However, there is no distinctive or right solution to deal with these biases (Echeverria et al., 2014), but the impact of these biases can be minimized, if the survey is correctly designed (e.g., explain the hypothetical situation and the good or service that will be valued correctly, carefully frame the elicitation questions, questions to help reveal the underlying motivations, among others) (Frey, 2019; Echeverria et al., 2014).

It is important to note that the dichotomous choice approach does not observe WTP directly. But, we can infer that the respondent's WTP amount was greater than the bid value (if the respondent is in favour of the program), or less than the bid amount (if the respondent votes against the plan), and form broad intervals around the respondent's WTP amount. Mean WTP is estimated by fitting special statistical models of the responses (FAO, 2000).

Thus, to improve the precision of WTP estimates, follow-up questions to the dichotomous choice payment questions is used. In some other studies, the follow-up question is followed by an open-ended follow-up question; like what is the most you would pay for...? (FAO, 2000).

In designing the survey, the contingent scenario was designed in a way that aimed to fulfil the required elements mentioned earlier. Thus, the scenario clearly stated that the government is the service provider, the new service is the online application for electricity meter, and the payment is obligatory in a form of user charges added to the user fees needed to get the service. It also described the expected timing of the start of the new service, which is next year, and that the timing for getting the new service will be shorter compared to the traditional method.

The elicitation question in this study is based on double-bounded dichotomous choice with a yes/no answer type and mimics the actual vote of a person with yes (accepting to pay user charges for the new service) means he is voting for the new service, and no (refusing to

pay) means he is voting against the new service. If a person refuses, then he/she is asked a follow-up question about reasons for refusal.

If the respondent is ready to pay user charges, then he/she is asked if he/she agrees to pay EGP 200. Based on the respondent's answer, a follow-up question comes. If the respondent says yes to pay EGP 200, then the amount is increased to EGP 300; in case of no, then the amount is reduced to EGP 100. (The answer is explained as follows: if yes to 200 and no to 300, then WTP falls between 200 and 300. If no to 200 and yes to 100, then WTP falls between 100 and 200. If no to 200, and no to 100, then WTP falls between 0 and 100). Then, it is followed by a question about the motives behind the acceptance of paying the chosen amount.

**Sample Profile**

To answer the study's questions, the researchers used the logistic regression[2] to test the significances of selected independent variables on two dependent variables, willingness to pay (or effective demand) and the amount of WTP. The first stage of regression aims to determine factors affecting respondents' demand for applying online electricity meter, if available, then dependent variable includes two possibilities (yes for accepting to use and pay extra user charge; and no for refusing) to elicit the effective demand for this service. While the second stage of regression aims to determine factors affecting the WTP amount as a dependent variable, then it reflects two classes (willing to pay more than EGP 100 and willing to pay less than EGP 100).

Consequently, the sample[3] of the first stage of regression is 345 respondents (out of 400), then 55 respondents refused to use the service. While for the second stage of regression, the sample is 156 respondents (out of 345), then 189 respondents do not WTP. The questionnaire had been implemented on Greater Cairo that included: Cairo, Giza and Qalyobia. With the help of six field researchers, a total of 400 questionnaires were completed in a face-to-face interview during July-August 2020. It was a preferable collection method to ensure response and to consider the illiteracy rate in some areas. Each questionnaire took around 10-

[2] The researchers started with correlation measures, then adopted the two logistic regression models to test the significance of the independent variables.

[3] The sample size -assuming infinite population- is determined according to the following formula (Keller. G, Warrack, B., 1999).

$n_0 = \frac{z_{\alpha}^2 * p * (1-p)}{e^2}$.

Where $Z_{\alpha}$ is the critical value of the Normal distribution at α (e.g. for a confidence level of 95%, α is 0.05 and the critical value is 1.96), and p is the percentage of specific phenomena and set to be 0.5, as it gives the highest value for sample size, e is the margin error and set to be 0.05. Then the sample size is at least 384 persons.

15 minutes to complete. Table (1) shows the classification of the sample, according to socio-economic characteristics, to the numbers and percentage of respondents in the two stages of regression.

**Table 1**

*Sample Profile*

| **Socio-economic characteristics** | **Sample (1st stage of regression) (n = 400, %)** | **Sample (2nd stage of regression) (n = 345, %)** |
|---|---|---|
| **Residence** | Giza (138, 34.5%)<br>Cairo (156, 39%)<br>Qalyobia (106, 26.5%) | Giza (116, 33.6%)<br>Cairo (144, 41.7%)<br>Qalyobia (85, 24.6%) |
| **Gender** | Male (208, 52%)<br>Female (192, 48%) | Male (186, 54%)<br>Female (159, 46%) |
| **Age** | Less than 40 (209, 52.3%)<br>More than 40 (191, 47.8%) | Less than 40 (190, 55%)<br>More than 40 (155, 45%) |
| **Social status** | Single/engaged (79, 19.8%)<br>Married (289, 72.3%)<br>Divorced/ Widow (32, 8%) | Single/engaged (253, 73%)<br>Others (92, 27%) |
| **Average monthly salary (EGP)** | Less than 1000 (6, 1.5%)<br>1,000-3,000 (233, 58.3%)<br>3,000-5,000 (151, 37.8%)<br>More than 5,000 (10, 2.5%) | Less than 3,000 (198, 57.4%)<br>More than 3,000 (147, 42.6%) |
| **Educational status** | Illiterate (13, 3.3%)<br>Less than intermediate (88, 22%)<br>Intermediate (175, 43.8%)<br>University level (117, 29.3%)<br>Postgraduate (7, 1.8%) | Illiterate and Less than intermediate (68, 20%)<br>Intermediate (158, 46%)<br>University level and Postgraduate (119, 34%) |

***Source:*** Constructed by the authors.

## Empirical Results

The results of logistic regression helped researchers reveal two major findings. Firstly, determining the factors with significant effects on the effective demand (WTP) for online electricity meter, if it available. Secondly, stating the factors that have significant effects on the amount of WTP.

***Correlation Measures: Effective Demand (WTP) for Online Applying for Electricity Meter***

By reviewing literatures, we identified the main factors affecting the users' WTP and reclassified them into four groups: demographic variables; knowledge about existing online governmental services; Internet accessibility and usage; and respondents' experience with governmental services, either traditional or digital. Odd ratio, chi-square, gamma and t-test were used to deduce the correlation between the four groups of factors and users' WTP for the online applying for electricity meter, if available.

***Demographic Variables***

Table (2) shows the correlation between socio-economic characteristics and WTP. The results inferred that gender, age and social status have no effect on WTP, while average monthly salary and educational status have a positive effect on WTP, as expected by researchers, whereas residence has a weak effect on WTP. Consequently, users with salary higher than EGP 3,000, whether at intermediate, university, post graduate levels, have more WTP for this digital service, if available.

**Table 2**

*Correlation between Socio-economic Characteristics and WTP*

| **If applying for an electricity meter becomes available online, do you accept paying extra fees (user charges)?** | | | | |
|---|---|---|---|---|
| **Socio-economic characteristics** | **Classifications of respondents** | **Yes** | **No** | **Correlation coefficients** |
| **Residence** | 33.6% from Giza | 43.1% | 56.9% | Chi-square value= 34.726 |
| | 41.8% from Cairo | 61.1% | 38.9% | Chi-square Sig.=0.00<5% |
| | 24.6% from Qalyobia | 21.2% | 78.8% | Uncertainty= 0.06 |
| **Gender** | 53.9% males | 46.2% | 53.8% | Chi-square (0.714-1.673) |
| | 46.1% females | 44% | 56% | Odds ratio = 1.0913 |
| **Age** | 55.1% less than 40 | 42.6% | 57.4% | Chi-square (0.517-1.214) |
| | 44.9% more than 40 | 48.4% | 51.6% | Odds ratio = 0.793 |
| **Social status** | 73.4% married. | 45.1% | 54.9% | Chi-square (0.605-1.577) |
| | 26.6% others | 45.7% | 54.3% | |

| If applying for an electricity meter becomes available online, do you accept paying extra fees (user charges)? | | | | |
|---|---|---|---|---|
| **Socio-economic characteristics** | **Classifications of respondents** | **Yes** | **No** | **Correlation coefficients** |
| | | | | Odds ratio = 0.976 |
| **Average monthly salary (EGP)** | 60% less than 3,000 | 29.3% | 70.7% | Chi-square (0.131-0.328) Odds ratio = 0.207 |
| | 40% more than 3,000 | 66.7% | 33.3% | |
| **Educational level** | 19.7% Illiterate and less than intermediate | 23.5% | 76.5% | Chi-square value= 47.150 Chi-square Sig.=0.000<5% Gamma = (-0.574) |
| | 45.8% intermediate | 36.1% | 63.9% | |
| | 34.5% university level and postgraduate | 69.7% | 30.3% | |

***Source:*** Constructed by the authors.

### *Knowledge About Existing Online Governmental Services*

The findings in table (3) reveal that there is a positive effect of knowledge about existing online governmental services on the users' WTP, as expected by researchers. Then, respondents with more knowledge have a higher WTP to use online applying for an electricity meter, if available.

**Table 3**

*Correlation Between Knowledge About Existing Online Governmental Services and WTP*

| If applying for an electricity meter becomes available online, do you accept paying extra fees (user charges)? | | | | |
|---|---|---|---|---|
| **Socio-economic characteristics** | **Classifications of respondents** | **Yes** | **No** | **Correlation coefficients** |
| **Knowledge of existing online governmental services** | 34% of respondents do not have information about the availability of online governmental services | 20.4% | 79.6% | Confidence interval (0.248,0.570) Odds ratio = 0.376 |
| | 66% of respondents have information about the availability of online governmental services | 54.4% | 45.6% | |

***Source:*** Constructed by the authors.

***Internet Accessibility and Use***

As expected by researchers**,** correlation results in table (4) detect that Internet accessibility and use have a positive effect on users' WTP. Hence, their ability to pay extra user charges to use online applying for an electricity meter, if available, tends to increase with having smartphones, computers, and tablets, debit and credit cards, and past experience in using online banking services or online payments.

**Table 4**

*Correlation Between Internet Accessibility/Use and WTP*

| **If applying for an electricity meter becomes available online, do you accept paying extra fees (user charges?)** | | | | |
|---|---|---|---|---|
| **Internet accessibility and use** | **Classifications of respondents** | **Yes** | **No** | **Correlation coefficients** |
| **Internet accessibility** | 20% of respondents have no access to Internet | 13.7% | 86.3% | Confidence interval (0.135,0.544) Odds ratio = 0.271 |
| | 80% of respondents have access to Internet | 50.7% | 49.3% | |
| **Having smartphones** | 81.7% have smartphones | 51.8% | 48.2% | Chi-square (2.783-11.630) Odds ratio = 5.690 |
| | 18.3% do not have smartphones | 15.9% | 84.1% | |
| **Having computers or tablets** | 49% have computers or tablets | 63.9% | 36.1% | Chi-square (2.99-7.454) Odds ratio = 4.721 |
| | 51% do not have computers or tablets | 27.3% | 72.7% | |
| **Having debit or credit cards** | 27% have debit or credit cards | 73.1% | 26.9% | Chi-square (2.994-8.582) Odds ratio = 5.069 |
| | 73% do not have debit or credit cards | 34.9% | 65.1% | |
| | 30% have experience with | 72.1% | 27.9% | Chi-square (3.083-8.466) |

| If applying for an electricity meter becomes available online, do you accept paying extra fees (user charges?) | | | | |
|---|---|---|---|---|
| **Internet accessibility and use** | **Classifications of respondents** | **Yes** | **No** | **Correlation coefficients** |
| **Using online payments before** | online payments | | | Odds ratio = 5.109 |
| | 70% do not have experience with online payments | 33.6% | 66.4% | |
| **Using online banking services before** | 22.7% have experience with online banking | 78.2% | 21.8% | Chi-square (3.59-11.756)<br>Odds ratio = 6.497 |
| | 77.3% do not have experience with online banking | 35.6% | 64.4% | |

***Source:*** Constructed by the authors.

***Experience with Governmental Services (Traditional or Digital)***

Table (5) summarizes the correlation between the users' experience with governmental services and WTP, by differentiating between their experiences with traditional method to apply for an electricity meter in terms of obstacles, quality, and cost of applying, and their experiences with using other digital governmental services in terms of usage and evaluation of the service into bad, medium, and excellent. Most of the results were not expected by researchers, as all factors related to past experiences with the traditional method have no effect on WTP, except for the quality of traditional services that showed a negative effect. Then, low quality of traditional services means that respondents will have a higher WTP for the online governmental services.

**Table 5**

*Correlation Between Users' Experience with Governmental Services and WTP*

| **If applying for an electricity meter becomes available online, do you accept paying extra fees (user charges)?** | | | | |
|---|---|---|---|---|
| **Respondents' experience with traditional applying for an electricity meter** | **Classifications of respondents** | **Yes** | **No** | **Correlation coefficients** |
| **Traditional applying for an electricity meter** | 33.6% of respondents applied for electricity meter (for Application made ≥ 5 years ago) | 42.2% | 57.8% | Chi-square value= 0.641<br>Chi-square<br>Sig.=0.726>5% |
| | 6.4% of respondents applied for electricity meter (for Application made ≤ 5 years ago) | 45.5% | 54.5% | |
| | 60% of respondents did not apply for electricity meter | 46.9% | 53.1% | |
| **Facing obstacles in traditional applying for an electricity meters** | 14.2% faced obstacles in applying for electricity meter | 42.9% | 57.1% | Chi-square (0.486-1.647)<br>Odds ratio = 0.894 |
| | 85.8% did not face obstacles in applying for electricity meter | 45.6% | 54.4% | |
| **Quality of traditional application** | 53% evaluate it as low quality | 52% | 48% | Confidence interval<br>(1.032,1.637)<br>Odds ratio = 1.3 |
| | 47% evaluate it as high quality | 40% | 60% | |

| **If applying for an electricity meter becomes available online, do you accept paying extra fees (user charges)?** | | | | |
|---|---|---|---|---|
| **Respondents' experience with traditional applying for an electricity meter** | **Classifications of respondents** | **Yes** | **No** | **Correlation coefficients** |
| **Cost of traditional application** | 43.5 evaluate it as low cost | 47.6% | 52.4% | Confidence interval (0.865,1.378) Odds ratio = 1.092 |
| | 56.5 evaluate it as high cost | 43.6% | 56.4% | |
| **Using online governmental services before** | 9% only of respondents used available online governmental services before | 66.7% | 33.3% | Chi-square (1.193-5.807) Odds ratio = 2.632 |
| | 91% of respondents did not use available online governmental services before | 43.2% | 56.8% | |
| **Evaluating online governmental services that respondents used before** | 28% evaluated it as bad | 77.8% | 22.2% | Chi-square value= 0.5 Chi-square Sig.=0.779>5% |
| | 37.5% evaluated it as medium | 66.7% | 33.3% | |
| | 34.5% evaluated it as excellent | 63.6% | 36.4% | |

***Source:*** Constructed by the authors.

As explained above, some of correlation results reflect unexpected findings for the relation with WTP, such as age, past users' experiences with traditional applying for an electricity meter or other digital governmental services. These contradictory results with researchers' expectations and the mainstream of literatures imposed the need to carry out a further step in our methodology by using logistic regression to test the effects of independent variables on the users' WTP and WTP amount.

***Logistic Regression***

The researchers developed four main hypotheses, (Table 6), and they were tested to reveal the validity of the correlation results. Each hypothesis reflects the researchers' expectations relative to the effect of the four major variables of the study on the WTP and WTP amount.

**Table 6**

*Hypotheses*

| **Independent variables** | **Hypotheses** |
|---|---|
| **Demographic factors ($H_1$)** | |
| **Governorate ($H_{1-1}$)** | The area of residence (governorate) has NO effect on WTP for online application for electricity meter or for WTP amount |
| **Gender ($H_{1-2}$)** | Gender has a negative effect on WTP for online application for electricity meter or for WTP amount |
| **Age ($H_{1-3}$)** | Age has a negative effect on WTP for online application for electricity meter or for WTP amount |
| **Social status ($H_{1-4}$)** | Social status has NO effect on WTP for online application for electricity meter or for WTP amount. |
| **Average monthly salary ($H_{1-5}$)** | **There is a positive relationship between average monthly salary and both WTP and WTP amount**<br>**H5-1**: low-income respondents (with income less than EGP 3000) have LOW WTP (less than EGP 100 pounds).<br>**H5-2**: high-income respondents (with income EGP 3000 and more) have HIGH WTP (more than EGP 100). |
| **Educational level ($H_{1-6}$)** | **There is a positive relationship between the educational level and both WTP and WTP amount**<br>**H6-1**: Illiterate & lower than intermediate educational level respondents have NO WTP<br>**H6-2:** Respondents with intermediate educational level respondents have LOW WTP (less than EGP 100)<br>**H6-3**: Respondents with university level education and above have HIGH WTP (more than EGP 100) |
| **Knowledge about availability of online governmental services ($H_2$)** | |
| | Users' knowledge about availability of online governmental services has a positive effect on WTP and WTP amount |
| **Internet accessibility and usage ($H_3$)** | |
| **Internet accessibility (smart phone – computer – tablet, with Internet access)** | Having an Internet accessibility and ability to use devices to access Internet have a positive effect on WTP and WTP amount |
| **Past experience with governmental services ($H_4$)** | |
| **Past experience with online governmental services ($H_{4-1}$)** | Past experience with online governmental services has a positive effect on WTP and WTP amount |

| Independent variables | Hypotheses |
|---|---|
| **Experience with traditional application and installation of an electricity meter ($H_{4-2}$)** | More obstacles, low quality and high costs of traditional applying have positive effect on WTP and WTP amount. |

***Source:*** Constructed by the authors.

### *Factors Affecting "Effective Demand (WTP)" for Online Applying for an Electricity Meter, If Available (1st Logistic Regression)*

To answer the 1st question of the current study, logistic regression analysis was used to determine factors affecting the respondents' effective demand (WTP) for online applying for an electricity meter, if available. The researchers used the following formula (Agresti, 2007):

$$\text{Log}\left(\frac{\text{P}(\text{X}_\text{i}=1)}{1-\text{P}(\text{X}_\text{i}=1)}\right) = \alpha + \beta_{1(1)} * \text{Gender (female)} + \beta_{3(1)}\,\text{Age (more than 40)} + \beta_{4(1)} * \text{Social status (married)} + \beta_{5(1)} * \text{Averaged monthly salary (more than 3000)} + \beta_{6(1)} * \text{Educational status (Intermediate)} + \beta_{6(2)} * \text{Educational status (University and Post Graduate)} + \beta_{7} * \text{Internet} + \beta_{8}\,\text{banking} + \beta_{9} * \text{Know that you can get some governmental services online} + \beta_{10} * \text{Used any of the online governmental services} + \beta_{11(1)} * \text{Evaluation of the electronic service you have used (Bad)} + \beta_{11(2)} * \text{Evaluation of the electronic service you have used (Medium)} + \beta_{11(2)} * \text{Evaluation of the electronic service you have used (Excellent)} + \beta_{12(1)} * \text{The main problems you faced in getting the electronic governmental services: difficulty in registering data} + \beta_{12(2)} * \text{The main problems you faced in getting the electronic government service is Internet connection} + \beta_{13(1)} * \text{Applied less than 5 year ago for an electricity meter} + \beta_{13(1)} * \text{Applied more than 5 year ago for an electricity meter} + \beta_{13(1)} * \text{Cost trade (high)} + \beta_{14(1)} * \text{General quality (High)} + \beta_{15(1)} * \text{Quality of trade (High)} + \beta_{16(1)} * \text{The main obstacles associated with the traditional method of applying for and installing the electricity meter is crowdedness} + \beta_{16(2)} * \text{The main obstacles associated with the traditional method of applying for and installing the electricity meter: lenghty procedures at electricity company takes long time} + \beta_{16(3)} * \text{The main obstacles associated with the traditional method of applying for and installing the electricity meter: the needed papers}$$

**Table 7**

*Model Summary*

| Log likelihood | Cox & Snell r square | Nagelkerke r square |
|---|---|---|
| **390.086** | 0.218 | 0.292 |

***Source:*** Constructed by the authors.

As shown in table (7), the estimated model explains 29.2% of the variations accept paying extra fees to get the online service, while table (8) demonstrates that the model is appropriately specified for the following reasons:[4]

- 72.1% is correctly identified by the estimated model as those who accept paying extra fees to get the online service from those already accepted paying extra fees to get the online service. This is an acceptable percentage.
- 68.6% is correctly identified by the estimated model as those who do not accept paying extra fees to get the online service from those who already did not accept paying extra fees to get the online service. This is an acceptable percentage.
- The overall correct classified percentage is 70.7%.

**Table 8**

*Classification Table*

| | | Predicted | | |
|---|---|---|---|---|
| **Observed** | | **Do you accept paying extra fees (user charges) to get the online service?** | | |
| | | **No** | **Yes** | **Percentage correct** |
| **Do you accept paying extra fees (user charges) to get the online service?** | No | 137 | 52 | 72.1% |
| | Yes | 49 | 107 | 68.6% |
| **Overall percentage** | | | | **70.7%** |

***Source:*** Constructed by the authors.

[4] By using forward stepwise method, the model excluded the insignificant variables because their p-value (>0.05).

Table (9) summarizes the model's results for significant variables with p-value (<0.05).

**Table 9**

*Table of Coefficients*

| Explanatory Variables | B | S.E. | Wald | df | sig | Exp (B) |
|---|---|---|---|---|---|---|
| **Knowledge (know that they can get some governmental services online)** | 0.760 | 0.320 | 5.618 | 1 | 0.018 | 2.137 |
| **Cost of traditional applying for an electricity meter (High)** | -0.524 | 0.269 | 3.800 | 1 | 0.051 | 1.688 |
| **Averaged monthly salary (<EGP 3,000)** | 0.845 | 0.290 | 8.460 | 1 | 0.004 | 2.327 |
| **Educational status** | | | 7.941 | 1 | 0.019 | |
| **Educational status (Intermediate)** | 0.371 | 0.356 | 1.088 | 1 | 0.297 | 1.450 |
| **Educational status (University and Postgraduate)** | 1.060 | 0.408 | 6.739 | 1 | 0.009 | 2.887 |
| **Internet use (use any of online banking or online payment before)** | 0.819 | 0.282 | 8.419 | 1 | 0.004 | 2.269 |
| **Constant** | -2.320 | 0.427 | 29.574 | 1 | 0.000 | 0.098 |

***Source:*** Constructed by the authors.

Table (9) concludes the logistic regression results. Regarding the demographic factors (H1), gender, age and social status have an insignificant effect on WTP, while average monthly salary and educational status have a significant effect on WTP. Users with high salaries (more than EGP 3,000) and high levels of education (university level and higher) could use this digital service, and pay user charge as extra fees for benefit. Concerning hypothesis (H2), the users' knowledge about availability of online governmental services has a positive effect on WTP. Similarly, hypothesis (H3) had been accepted, as having an Internet access, and ability to use devices to access Internet have a positive effect on WTP. Lastly, past experience with online governmental services (H4-1) has an insignificant effect on WTP. But past experience with traditional application and installation of electricity meter (H4-2) reveals a surprising result, as cost of applying for an electricity meter using traditional channel has a negative effect on WTP, while quality and obstacles of the traditional applying have an insignificant effect on WTP. The last result was not expected by researchers, as paying a high cost for traditional services

usually pushes the users to transfer to the other alternative as online services. This could be justified by the confidence factor, as 90.5% of respondents expressed low confidence in government as an online service provider, while 9.5% only of respondents expressed high confidence.

***Factors Affecting "WTP Amount" for Online Applying for An Electricity Meter, If Available (2nd Logistic Regression)***

To elicit the amount of WTP, we used the double-bounded dichotomous choice. Table (10) concludes results that were extracted by analysing the respondents' answers to questions based on this approach. Out of 156 respondents, 68% accepted to pay WTP less than EGP 100 and 32% accepted to pay more than EGP 100 as user charges for online applying for electricity meter, if available. Consequently, the dependent variable in the following logistic regression equation will be WTP amount that will include two classes, more than EGP 100 and less than EGP 100.

**Table 10**

*Categories of WTP Amount*

| User charge categories | Number of respondents | Number of respondents |
|---|---|---|
| **Refuse paying (0)** | | 189 |
| **(1-100)** | 156 | 106 |
| **(100-200)** | | 0 |
| **(201- 300)** | | 6 |
| **More than 300** | | 44 |
| **Total** | | 345 |

***Source:*** Constructed by the authors.

To answer the 2nd question of the current study, logistic regression analysis had been used to determine factors affecting WTP amount, using the following equation (Agresti, A., 2007):

$$\text{Log}\left(\frac{P(X_i = 1)}{1 - P(X_i = 1)}\right) = \alpha + \beta_{1(1)} * \text{Gender (female)} + \beta_{3(1)} \text{Age (more than 40)}$$
$$+\beta_{4(1)} * \text{Social status (married)}$$
$$+ \beta_{5(1)} * \text{Averaged monthly salary (more than 3000)}$$
$$+ \beta_{6(1)} * \text{Educational status (Intermediate)}$$
$$+ \text{Educational status(University level and Post Graduate)} + \beta_7 * \text{Internet}$$
$$+ \beta_8 \text{ banking} + \beta_9 * \text{Know that you can get some governmental services online} + \beta_{10} * \text{Used any of the online governmental services}$$
$$+ \beta_{11(1)} * \text{Evaluation of the electronic service you have used (bad)}$$
$$+ \beta_{11(2)} * \text{Evaluation of the electronic service you have used (Medium)}$$
$$+ \beta_{11(2)} * \text{Evaluation of the electronic service you have used (Excellent)}$$
$$+ \beta_{12(1)} * \text{The main problems you faced in getting the electronic government service: Difficulty in registering data} + \beta_{12(2)} * \text{The main problems you faced in getting the electronic the electronic government service: Internet connection} + \beta_{13(1)} * \text{Applied less than 5 year ago for an electricity meter} + \beta_{13(1)} * \text{Applied more than 5 years ago for an electricity meter} + \beta_{13(1)} * \text{Cost of trade (High)}$$
$$+ \beta_{14(1)} * \text{General quality (High)} + \beta_{15(1)} * \text{Quality of trade (High)}$$
$$+ \beta_{16(1)} * \text{The main obstacles associated with the traditional method of applying for and installing the electricity: Crowdeness}$$
$$+ \beta_{16(2)} * \text{The main obstacles associated with the traditional method of applying for and installing the electricity meter: Lengthy procedures at the electricity company}$$
$$+ \beta_{16(3)} \text{ The main obstacles associated with the traditional method of applying for and installing the electricity meter: The needed papers.}$$

**Table 11**

*Model Summary*

| Log likelihood | Cox & Snell r square | Nagelkerke r square |
|---|---|---|
| **164.607** | 0.181 | 0.253 |

***Source:*** Constructed by the authors.

As shown in table (11), the estimated model explains 25.3% of the variations are willing. Table (12) demonstrates that the model is appropriately specified for the following reasons:[5]

- 65% correctly identified by the estimated model as willing are less than 100 already willing. This is an acceptable percentage.
- 70% correctly identified by the estimated model as willing are more than 100 already willing. This is an acceptable percentage.
- The overall correct classified percentage is 66.7%.

**Table 12**

*Classification Table*

| | | **Predicted willingness to pay** | | |
|---|---|---|---|---|
| | | Less than 100 | More than 100 | Percentage correct |
| **Willing** | Less than 100 | 69 | 37 | 65.1% |
| | More than 100 | 15 | 35 | 70.0% |
| **Overall percentage** | | | | **66.7%** |

***Source:*** Constructed by the authors.

Table (13) summarizes the model's results for significant variables with p-value (<0.05).

**Table 13**

*Table of Coefficients*

| **Explanatory variables** | **B** | **S.E.** | **Wald** | **df** | **sig** | **Exp (B)** |
|---|---|---|---|---|---|---|
| **Knowledge (know you can get some governmental services online)** | -1.746 | 0.614 | 8.095 | 1 | 0.004 | 0.174 |
| **Cost of traditional applying for electricity meter (high)** | -1.513 | 0.403 | 14.120 | 1 | 0.000 | 0.220 |
| **Gender (female)** | -0.752 | 0.398 | 3.576 | 1 | 0.059 | 0.471 |
| **Averaged monthly salary (more than EGP 3,000)** | 1.288 | 0.465 | 7.666 | 1 | 0.006 | 3.626 |
| **Constant** | 0.964 | 0.641 | 2.266 | 1 | 0.132 | 2.623 |

***Source:*** Constructed by the authors.

[5] By using forward stepwise method, the model excluded the insignificant variables because their p-value (>0.05).

Table (13) concludes the 2nd logistic regression's results. According to demographic factors (H1) findings, age, social status and educational status have an insignificant effect on WTP amount, while gender has a negative significant effect; men have higher WTP (more than EGP 100) compared to women. On the contrary, average monthly salary has a positive effect on WTP; users with salary higher than EGP 3,000 have a high WTP. Regarding (H2), knowledge has a significant negative effect on WTP amount, then if users do not have enough information about availability of new online governmental services they will pay high WTP. Concerning (H3), having Internet accessibility and ability to use devices to access the Internet have an insignificant effect on WTP amount. Similarly, past experience with online governmental services has an insignificant effect of WTP amount. Finally, past experience with traditional application and installation of electricity meter, in terms of costs, has a significant negative effect on WTP amount, while both quality and obstacles of traditional applying have an insignificant effect.

Based on the results of the two logistic models, we conclude that knowledge, cost of traditional services and average monthly salary are common variables affecting both WTP and WTP amount. Knowledge about availability of an online service has a positive effect on WTP, and a negative effect on WTP amount, since users with more knowledge are expected to have a lower WTP amount. However, both cost of the traditional services and the average monthly salary have the same effect on WTP and WTP amount. Users who paid high cost for applying for an electricity meter through the traditional channel have less WTP and low WTP amount, whereas users with high average monthly salary (more than EGP 3,000) have more WTP and are WTP high amount (higher than EGP 200). Besides, education status and Internet use have positive effect on WTP, with insignificant effects on WTP amount, whilst gender has a negative effect on WTP amount, with an insignificant effect on WTP.

**Discussion**

The application of CVM in the digital sector is considered one of the main contributions of this study. The results of the two logistic models showed the factors that affect WTP and WTP amount for the electricity meter online application, if it becomes available online. As for the **demographic factors**, the models showed that “the area of residence” has a significant impact on WTP, but an insignificant impact on WTP amount. The more citizens move towards urban areas and the capital, the more they are willing to pay extra fees to get the online service. However, this variable will not have an impact on the amount itself. This goes in line with the literature, as Otegbulu (2011); and Sriwaranun et al., (2015) found a significant correlation between household residence and their WTP, in the sense that those living in the city or urban

areas are more willing to pay than those living outside the city. On the other hand, Yung, and Chan (2015) did not find a relationship between area of residence and the WTP amount, which further supports our results.

While the results indicated that **gender** has no significant impact on WTP, however, it has a negative impact on the WTP amount. The literature does not offer a streamline on the impact of gender on WTP. For example, Loomis et al., (1996) indicated that gender's impact on WTP was not significant, whereas in the study of Yang, and Solgaard (2015), gender had a significant impact on both WTP and WTP amount. Some studies have hypothesised that women might have a higher WTP for services that will allow them to do less effort. However, when such hypothesis was tested in some developing countries, it was not highly supported, because women have little control over the household finances or refrained from expressing their opinion (FAO, 2000). Our study indicates that men will be ready to pay a higher amount compared to women to get the online service, and this is consistent with FAO (2000) explanation that men are responsible for the household finances.

The study by Al Sayed, and Esmat (2021) showed that **age** has a significant impact on the demand for the online service—younger respondents have a higher demand for the digital services than older ones. But surprisingly, the result of this study indicated that age has no significant effect on WTP or WTP amount. Few studies agreed with this result like (Loomis et al., 1996), while many other studies in the literature revealed that age has a significant impact on WTP like (Nam et al., 2014; Yang and Solgaard, 2015; Yung and Chan 2015; Sriwaranun et al., 2015). They believed that the older the respondents are, the higher is the probability for their WTP and WTP amount. It was explained that the older are expected to have more experience and higher income, and accordingly a higher WTP.

Such difference from the literature can be justified with regard to the difference in the sector, where CVM was applied. While our study was applied to digital services, other studies applied CVM on different sectors; such as the environment, and sports, among others. So, the type of these services, their importance to the respondents, and the extent to which they have alternatives had an impact on their WTP.

**Income level** has a significant effect on both WTP and WTP amount. While few studies referred to income as an insignificant variable regarding WTP (Loomis et al., 1996; Yang, and Solgaard, 2015), many others proved that income is one of the most significant variables affecting respondents' WTP and WTP amount (Otegbulu, 2011; Nam et al., 2014; Gao et al., 2014; Sriwaranun et al., 2015). This means that the higher the income level, the higher the probability for respondents to have a WTP for the service in question.

**Education** is also one of the most significant variables affecting WTP, but it has an insignificant effect on WTP amount. This goes in line with the literature, where higher education reflected a higher probability of WTP (Loomis et al., 1996; Yung, and Chan, 2015; Seth et al., 2009; Gao et al., 2014).

The results of the study have shown that **knowledge** about existing online governmental services has a positive significant impact on respondents' WTP to get the digital service, but it has a negative significant impact on WTP amount. Studies have proven that more knowledge or awareness about the product or the service of interest increases the likelihood of respondents' WTP (Seth et al., 2009; Yang, and Solgaard, 2015; Sriwaranun et al., 2015). The result of this study proves the same with respect to WTP, showing that increasing respondents' knowledge about the service will increase the probability of their willingness to pay to get the service. However, it shows the opposite when it comes to WTP amount, with the results indicating that increasing respondents' knowledge of the service will reduce the amount they are willing to pay as extra fees to get the service. This can be explained that more knowledge about services, though can increase WTP on the one hand, can also increase awareness of alternatives, the ability to compare and evaluate alternatives, and thus reduce the amount a person is willing to pay, on the other hand.

Another important variable that has demonstrated a significant impact on WTP and insignificant impact on WTP amount is **Internet accessibility and use**. Respondents, who have access to the Internet or have experience in using online banking or online payment, showed WTP for the digital service compared to those who do not have access or use. But this variable has no effect on the WTP amount.

One of the remarkable results of this study was the impact of **respondents' past experiences** with online governmental services. The results showed that it has an insignificant effect on both WTP and WTP amount. Though past experience -especially if positive- tends to have a significant impact on WTP according to Sriwaranun et al. (2015) and Nam et al. (2014). This study proves the opposite, but it goes in line with the result of the study of Al Sayed, and Esmat (2021), where past experience with online government service had no effect on the demand for that service. This, in fact, is understandable by looking back at the data. Only 8% of the sample respondents had previous experience with the online governmental services, while 92% had never used any of the online governmental services. So, there is not much previous experience with the e-government service found in the sample. Since very few people had previous experience with online governmental services, it might be difficult for respondents to be willing to pay extra fees for something they had not tried before. Here again

comes the importance of knowledge and awareness variables. If we increase their knowledge level, their WTP may increase.

One of the most valuable results is the impact of **past experience with the traditional service**. The results indicated that past experience with the traditional service has an insignificant impact on both WTP and WTP amount with regard to the quality and the obstacles facing the traditional service. This result is unexpected, because the assumption was that when citizens face more obstacles with the traditional service and/or receive a low-quality service, they may prefer online service. However, the results show that there is no relationship. This means that other variables such as those mentioned above are more important to citizens and have a greater impact on their online service choices

The results have also proven that **the cost of the traditional service** has a negative significant impact on both WTP and WTP amount. In other words, when respondents are exposed to a high cost of a traditional service, they will have a low WTP and a lower WTP amount. The cost of an alternative is considered a significant factor affecting WTP for the service by (Otegbulu, 2011; Tassabehji et al., 2019). The negative relationship the results displayed reflect that citizens are not willing to pay extra charges for the online service, if the cost of the traditional service is already high, and vice-versa, if the cost of the traditional service is low, the WTP extra charges for the online service will be higher. As a matter of fact, this is consistent even with the answers of those who were not willing to pay in the first place, and it shows that the idea of not being able to bear additional cost is a major factor affecting respondents' WTP and WTP amount.[6]

**Conclusion**

The paper aimed to explore the factors that influence citizens' WTP and WTP amount to get the online service using the CVM. The hypothetical nature of CVM gives flexibility in information gathering, however, it also raises some scepticism regarding its accuracy. Despite the limitations of CVM, previous literature concludes that well-designed CVM surveys can provide correct and valuable information about individuals WTP (Nam et al., 2014; Yung, and Chan, 2015).

The results of the two logistic regression models showed that area of residence, salary, education level, knowledge of existing online services, Internet accessibility and use, and the

[6] When they were asked why they refuse to pay, 74% of respondents said they could only afford the cost of the electricity meter, that's why they are not willing to pay extra charges; 29.3% of respondents believed it is unfair to bear the cost of online service, the government should; and 1.06% did not believe that the electricity company can provide the service efficiently.

cost of the traditional service have a significant effect on WTP. Gender, salary, knowledge about exiting online services, and the cost of the traditional service have a significant effect on the WTP amount.

With regards to online service, 55% of respondents did not have WTP for this service, and the reasons behind this are consistent with literature. These reasons are personal financial difficulties and money constraints, the belief that the government should be responsible and bear the cost, citizens' dissatisfaction with past government experiences, and a lack of confidence in government's ability to plan and implement efficient digital projects (Yung, and Chan, 2015).

There are many factor-based policy implications that are indicative of the results. For instance, knowledge of online governmental services is a factor that affects both WTP and WTP amount, as it helps reduce the uncertainty level in citizens' decision-making process. Thus, the government should conduct public campaigns and media coverage to increase citizens' awareness and knowledge of online services and their advantages, and accordingly this may increase their WTP for the service.

The government should also adopt a public participatory approach in proposing or deciding future digitalization projects and in involving more citizens. This will enhance public confidence in the government. On the other hand, the government should pay more attention to technological infrastructure to ensure that citizens have access to Internet as one of the main factors affecting their WTP.

Since both salary and education level have a significant impact on WTP, therefore, the government may start with digital services that target highly educated and middle-income citizens, before scaling up the services to a larger segment of the population.

It is also vital for the government when calculating the extra fees that will be added to the original cost of the traditional service to examine the cost of the traditional service itself, given the significant negative relationship the study indicated between the cost of the traditional service and WTP and WTP amount.

In conclusion, WTP and WTP amount for a digital service are highly dependent on socio-economic variables (salary, education), knowledge about digital services, Internet accessibility, and the cost of a traditional service. In other words, the context in which the service will be implemented has an impact on WTP and WTP amount for that service. There is no e-government service model that fits everyone. Therefore, the government should consider all these factors when designing and implementing future e-governmental services.

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