The Impact of E-government Services on the Citizens Satisfaction in Egypt

دراسة تأثير الخدمات الرقمية على رضا المواطنين بجمهورية مصر العربية

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Abstract

The purpose of this paper is to investigate the impact of the e-government services provided on the "Digital Egypt" e-governmental unified portal in Egypt on citizen satisfaction. And coming from the perspective that has been emphasized from several previous results, the dimensions of the quality assessment could be a strong reflection that is used to assess the citizens' satisfaction as well. So that, a well-known model was used in assessing the quality of website services and its impact on the citizens satisfaction which was the "EGOVSAT" model, in which it was found based on results of assessment that the e-government services have been proved that they have a significant positive impact on the citizens satisfaction and specifically the Utility, the Flexibility and the reliability as subdimensions or parameters of the citizens satisfaction.

However, the rest of the dimensions, which are the Efficiency and the Customization, were having an existing impact but are not recognizable to lead to the citizens' satisfaction, which indicates the need to improve those features or parameters on the website to achieve the citizens' satisfaction from the rest of the features.

Keywords: E-government Services (EGS), Citizens' Satisfaction (CS), Utility (U), Efficiency (E), Flexibility (F), Customization (C), Reliability (R), EGOVSAT Model.

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1. Introduction

In the past, government authorities considered the quality of the public administration sector and the related services they provide to the people, and the level of responsiveness to the public. (Ebrahim & Irani, 2005).

Moreover, various parties are currently putting pressure on governments worldwide to enhance the quality of public services and boost active participation in information provision to the public, both of which are necessary for better effectiveness (Forman, 2005).

Over the past decades, this has changed as several governments have recognized the benefits of implementing electronic governments, which include enhanced efficiency, easier accessibility for citizens to get services, and increased transparency (Ebrahim & Irani, 2005).

To a large degree, the success of e-government programs is dependent on how well the intended users, citizens in general, utilize them (Kumar et al., 2007).

It is argued that the best way to determine the success of public organizations is the measurement of customer satisfaction (Hill et al, 2007)

The latter advantages foster mutual trust, which is a major element influencing how the citizens perceive adoption of e-government (Elsheikh, Cullen, & Hobbs, 2008).

The emergence of the public service quality model generated intense academic discussions, leading to many definitions of the term. As an example, according to Rhee and Rha (2009), this concept comprises four primary dimensions, which are: design quality, process quality, outcome quality, and relationship quality. They explained that “design quality” relates to the service design or policy making stage; how effective a policy is developed and the quality experienced or perceived by the customer with regards to the policy making or service design, whereas “process quality” refers to customers’ perception of quality during the process of service; “outcome quality: refers to customers’ perception of what remains after a serviced process is completed. Finally, “relationship quality” describes the depth and nature of interactions between the parties during the process of service delivery.

Heeks (2003) noted that e-government design often overlooks the actual implementation context, creating a gap that hinders e-government efforts. Consequently, governments must evaluate their enablers and barriers according to their local context to attain the full benefits of e-government. Although this prerequisite is crucial to achieve the intended results of e-government, which include the satisfaction of the public and, eventually, economic development, the majority of developing countries ignore this step (Gebba & Zakaria, 2012).

The majority of studies focus on developed countries whose concepts of service quality and customer service are completely unlike those of developing countries (Khan & Fasih, 2014).

Egypt has been the major player in the politics of the Middle East in recent years, particularly since it reached peace with its enemy in 1979, when it was noted that Egypt changed from being a nation of war to a major player in the process of peace.

The Egyptian government fully comprehends that establishing a robust ICT sector is mandatory to enhance Egypt's competitiveness in the global marketplace, where e-government boosts the accessibility, efficiency, and transparency of public services and is becoming more acknowledged as an essential enabler for changing public governance (Affisco and Soliman, 2006; Akkaya et al.,2012; Kumar et al., 2018).

Adoption of ICT by the Egyptian public sector would preserve business opportunities and would retain Egypt competitive in the Arab world, especially in the investor sectors.

However, Egypt's public administration sector has been facing a major obstacle that has impeded its progress and potential, in addition to the country's economic growth. These obstacles include, but are not limited to, the large number of employees in the public sector, the low degree of transparency, and the comparatively reported high level of corruption (Noll, 2019)

In 2022, the ICT achieved a number of accomplishments at various levels. MCIT extended efforts to establish Digital Egypt, which included numerous projects that promote digital transformation in various areas, attract investments from abroad, create a Digital Egypt that motivates

technological creativity and entrepreneurship, and the industry of electronics industry.

The Regional Data Hub (RDH), WE Schools for Applied Technology, Creative Innovation Hubs, The Egyptian Postal museum, and submarine cable landing stations in Ras Gharib, Zaafarana, and Sid Krir, were among the projects of Digital Egypt, which the President of Egypt officially opened in July 2022. He also released the Digital Egypt Portal, which provides a large variety of digital government services in many sectors (MCIT website).

The Digital Egypt e-governmental Portal has been established in line with the country's strategy for digital transformation and the 2030 Development Plan.

The Digital Egypt portal is a website that provides many governmental services, where one can easily apply for different services and avoid the inconvenience of visiting government offices. Moreover, in line with Egypt's digitization plan and become a paperless country, it will reduce the use of paper documents. To improve the use and convenience of Digital Egypt, the government also announced that a mobile application shall be developed as well.

The portal now provides 182 services by March 2025, in which this number has been steadily increasing as part of Egypt's digital transformation strategy, with targets to launch even more services in the coming period by the Ministry of Communication and Information Technology.

The Ministry was able to cooperate with various government agencies to collect all the information required to begin this massive project, which aims at consolidating all governmental services on one portal called Digital Egypt. The primary objective is to issue personal and governmental documents in a more convenient, quicker, and effortless manner (MCIT website).

However, Studies of e-government users repeatedly show that a considerable portion of the population is dissatisfied with the interaction (United Nations E-government Survey, 2014). Some factors are enablers, which should be taken into consideration to guarantee the e-government's effectiveness and efficiency, whereas other factors are either barriers that

must be avoided or issues that must be resolved and governments must eliminate those barriers and promote the enablers if they aim to experience a successful e-government process and eliminate costly failures and achieve the objectives of satisfaction from the digital transformation on all dimensions the citizens, the governments and the businesses.

2. Theoretical Framework

2.1 E-government Services

The definition of e-government varies, and yet no universally accepted definition exists, However, Tian and Plainfield (2003) and Al-Sebie and Irani (2005) suggest that e-government can be understood from four key perspectives: a) the provision of government services, b) information technology, c) the enhancement of government efficiency, and d) the political perspective.

Numerous definitions of e-government have emerged and been explored in research papers over the past ten years. Despite its somewhat recent inception, e-government research has been notably recognized to be multidisciplinary (Lee et al., 2008). Consequently, many different authors, papers, and fields contribute to the concept of e-government, making it a varied and contested topic. Moreover, variation of the definitions is based on the viewpoints and interests of e-government, in addition to the objectives and principles of the community (Lowery, 2001).

Peng and Chen, (2005) note that some definitions of e-government focus on its areas of influence within the government, while others sound like statements of mission and vision many of those definitions emphasize a restructure toward meeting the need of citizens, and businesses, as well as improvements in the administrative efficiency, cost reduction and enhanced availability of services including round-the-clock access,

These definitions, however, primarily convey the expected results rather than specifying the resources and technology that may or may not make these results available.

For instance, the concept of a citizen-centric government existed long before the emergence of the internet.

And to provide a meaningful definition of e-government, it must explicitly explain what the term “electronic” signifies about government (Hans, 2006).

Beynon-Davies (2005), Hu et al. (2009), Silcock (2001), Jaeger (2003), and Yildiz (2007), described e-government as the application of technology to improve access to and delivery of information and services of the government for the benefit of citizens, commercial partners, and government officials.

Heeks (2001) assessed, the scope of e-government and its services is achieving a composite positive impact that led to the following;

First, the administration, which depends on enhancing government processes by cost reduction, Performance management, and establishing strategic relationships within the government, and Citizen empowerment.

Second, the e-citizens and e-services; through communication with citizens to establish a link between citizens and the government, listening to citizens to promote accountability, enhancing public services, and promoting democracy.

Third, the e-society, using improved government-business relations to foster interactions beyond government borders, supporting community development and improving governance, fostering partnerships, creating new opportunities to enhance social development.

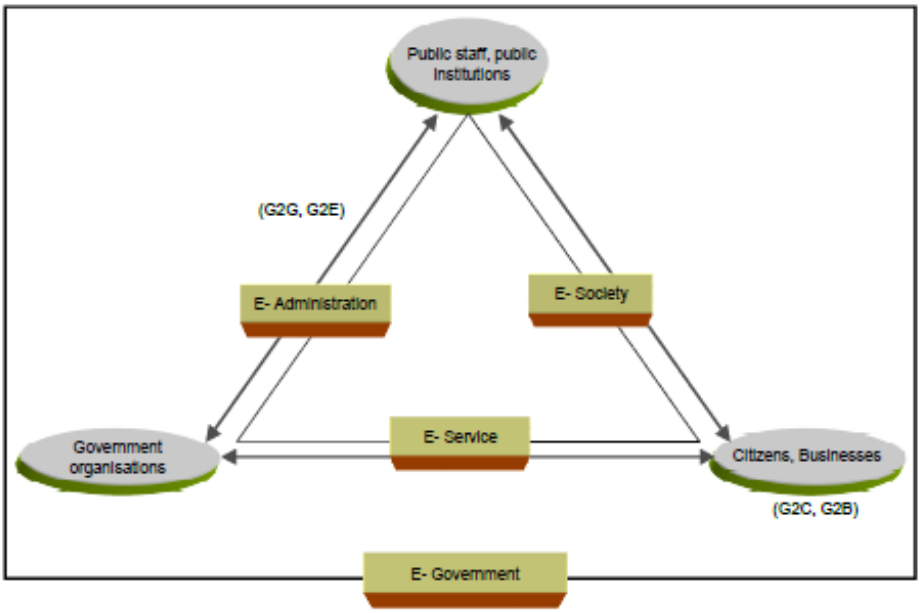


Figure 1: E-government Scope
Source: Heeks (2002b)

Also, Khosrow-Pour (2009) assessed the scope of e-government and its services in the following table as follows;

Removed Boundaries
E-government will aid in dismantling the barriers between agency jurisdictions to enable more incorporated government services across all levels of the government. E-government will enhance easier access, making government services more accessible.
Enhanced Accessibility
Accessing the government in an offline setting can be challenging. Although some tasks can be accomplished over the phone, many others still necessitate an in-person visit to government offices. This creates difficulties for individuals living in distant or regional areas. Electronic government can significantly expand information and services.

Improved Service Quality
The core objective of e-government is to enhance the quality of service for all citizens. Electronic government signifies appropriate and dependable services with reduced costs of compliance and improved value and quality.
Integrated Agencies
Significantly valuable services that improve efficiency for citizens and the government can result from cross-agency initiatives. Cross-agency initiatives are particularly useful when multiple related services require information from different agencies.
Improved Reputation
Electronic government helps project the image of a nation as modern, making it more appealing for tourism, and attracting business investments.
Greater citizen participation
E-government simplifies the process for those citizens who wish to participate

2.2 Citizens' Satisfaction

Various authors have defined satisfaction in different ways Yi, (1990), defined it as the overall result of an individual's perception, assessment, and psychological response to a product's consuming experience.

Hunt (1991) identified that satisfaction depends on a customer's perception of being fairly treated, and also Kotler (2001), described satisfaction as the feeling of contentment or disappointment that arises when a person compares his or her expectations of a product to its perceived performance or result.

Citizens' satisfaction with the services they receive from public entities is linked to their perceptions of those services, which can be used to assess how well the service fulfills their demands and expectations (McDonald & Vangelder, 1998).

The significance of citizen satisfaction can be summed up in one word: "quality". Denhardt & Denhardt (2000); Alford (2002) emphasize that citizens' satisfaction is one of the key objectives of any public entity, which

must listen to citizens, comprehend their demands, and ensure that the services provided align with their expectations.

As to website service quality, or e-service quality, it can be defined as the degree to which a website enables purchase and delivery of goods and services efficiently and effectively (Zeithaml, VA, Parasuram, A., Malhotra, A.,2000).

Academic research has recognized the standards used by customers to evaluate websites in general, and the quality of service delivered via websites specifically. These include availability of information and content, simplicity of use, security and privacy, the style of graphics, and fulfillment (Zeithaml VA, Parasuraman A, Malhotra A, 2002).

Satisfaction of the user is an influential aspect for the constant use of e-government services and directly impacts e-government projects\ success or success (Ali Alawneh, Hasan Al-Refai, Khaldoun Batiha, 2013).

From a consumption perspective, Oliver (1981) describes satisfaction as a combination of psychological conditions or emotional responses that include a combination of the consumer's expectations and the previous feedback regarding the service quality (Parasuraman et al. 1985; Ni et al. 2020).

It is regarded as the pleasant sensation experienced when receiving something desired (Remoaldo et al. 2020).

Therefore, citizen satisfaction with e-government can be viewed as a form of customer satisfaction (Cardozo, 1965). With the advent of e-government, e-services, or digital public services, interactions between the state and citizens are starting to transform (e.g., Pleger et al., 2020).

Determinants of Assessment

The measuring tools or models for citizen satisfaction evaluate major determinants of satisfaction, including the perceived quality of service, which is regarded as one of the most widely studied issues in service marketing (Choi et al.).

The most crucial factor in generating user satisfaction is the product quality or performance of the services provided (Jin & Lim, 2021).

Moreover, Information quality, service quality, and system quality are examples of technical features of systems that have been traditionally used to indirectly study and measure customer satisfaction.

EGOVSAT Model

The EGOVSAT model (Horan and Abhichandani, 2006) has considered a variety of viewpoints and offered a causal framework that includes elements that foster citizen-focused service delivery, openness, confidence, and trust when using online initiatives of the government.

The EGOVSAT has been used to measure significant elements of citizen satisfaction with applications of e-government. It incorporates a variety of measures of performance and emotions. Additionally, the model was implemented in online Advanced Transportation Information Services (ATIS), a type of online service delivery from government to citizens in the United States (Horan et al., 2006).

Although Horan and Abhichandani (2006) applied the EGOVAST model to the transportation system, they also employed it for an e-government portal. While both represent services of the government, their study could not be applied to the same type of sample due to a number of financial and cultural challenges. In other words, while the EGOVAST model has been applied to the ATIS domain (Horan et al., 2006), it is also intended to assess other web-based initiatives from government to citizens (Horan et al., 2006).

It tests 5 dimensions for the quality of services provided, which are the utility, efficiency, flexibility, customization, and reliability, in which their definitions will be shown as follows;

2.2.1 Utility

(Favish et. al., 2005; Muylle, Moenaert and Despontin, 2004; Zhang and Dran, 2001, and Horan et. al., 2006), concurred that utility assesses whether a website is functional and user-friendly.

2.2.2 Efficiency

(Fayish et al., 2005; Huizingh, 2000; Zhang and Dran, 2001, and Horan et. al., 2006), stated that efficiency evaluates the accessibility and arrangement of a website’s features and information. potential futures.

2.2.3 Flexibility

(Zeithaml, et al. 2000 and Horan et. al., 2006), indicated the capability of offering dynamic information, multiple methods to access the information, and the ability to customize the information provided by the website.

2.2.4 Customization

(O'Looney et al. 2001 and Horan et. al., 2006), defined customization as the capacity of a website or service to be tailored or adjusted to better accommodate users' unique requirements and preferences.

2.2.5 Reliability

(Fayish et al. 2005; Muylle et al. 2004; Wang, Tang and Tang 2001; Zeithaml et al.2000; Zhang and Dran, 2001 and Horan et. al., 2006), explained reliability as a method to assess whether the website operates properly both technologically and in terms of content accuracy.

3. Research Model

The research will be using the EGOVSAT model to test the impact of the e-government services provided on the "Digital Egypt" portal on the citizens' satisfaction

The study can be illustrated by the following theoretical framework, as shown in Figure 2

Fig. 2. Research Proposed Model

4. Research Hypotheses:

The research hypotheses that are going to answer the research question in testing the impact of e-government services on the citizens' satisfaction will be as follows;

H1: There is a statistically significant relationship between e-government services and citizen satisfaction.

H1a: There is a statistically significant relationship between e-government services and utility.

H1 b: There is a statistically significant relationship between e-government services and efficiency.

H1c: There is a statistically significant relationship between e-government services and flexibility.

H1d: There is a statistically significant relationship between e-government services and customization.

H1e: There is a statistically significant relationship between e-government services and reliability.

5. Research Methodology

A quantitative, conclusive, applied analytical methodology has been chosen in this study to answer the research questions by identifying the results of the research hypothesis

5.1 Research Instrument

A questionnaire was used, built on previous studies, related to the study variables, with the specific sub-dimensions of the citizens' satisfaction.

The questionnaire was divided into four parts. Part one: the participant background, Part two: the internet experience, Part three: the e-government services questions, and Part four: the citizens' satisfaction questions.

This study used the 5-point Likert scale as in prior studies, and to unify the scale among the variables. The 5-point Likert scale ranges from "Strongly Disagree" (=1) to "Strongly Agree" (=5).

5.2 Sample and Population

The targeted sample was a convenient sample of the users of the "Digital Egypt" e-governmental portal to assess the quality of their experience and their satisfaction with it.

Since the researcher works in a construction company in Egypt, this will allow data collection to be done easily and with confidence.

According to Sekaran, U., & Bougie, R. (2016), the population exceeds roughly 10,000 users (which is far less than the actual number of DE portal users), and its sample size is 384 respondents.

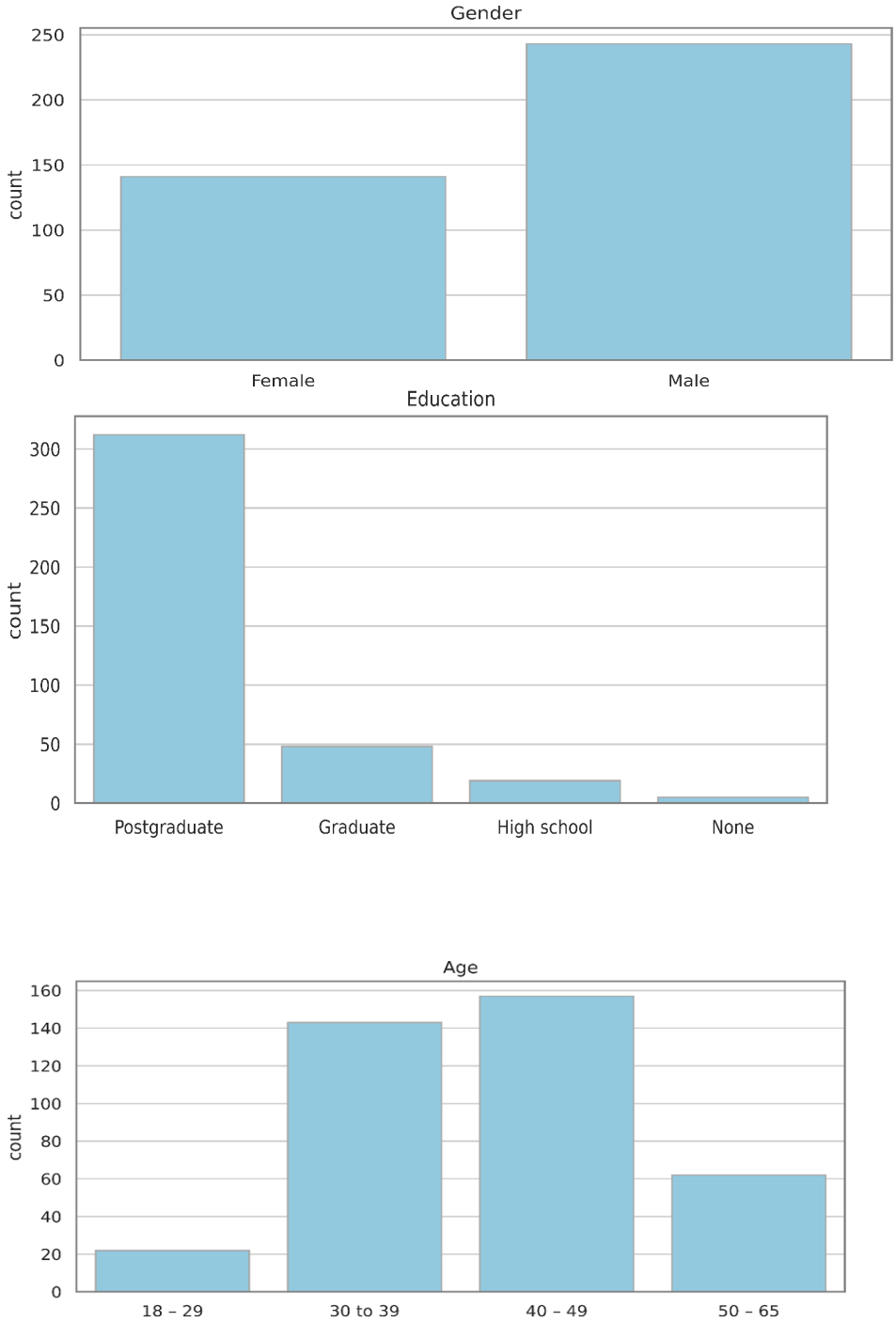
The participants of the study are random users. 500 questionnaires were distributed, and 424 were received, with a response rate of 85 %.

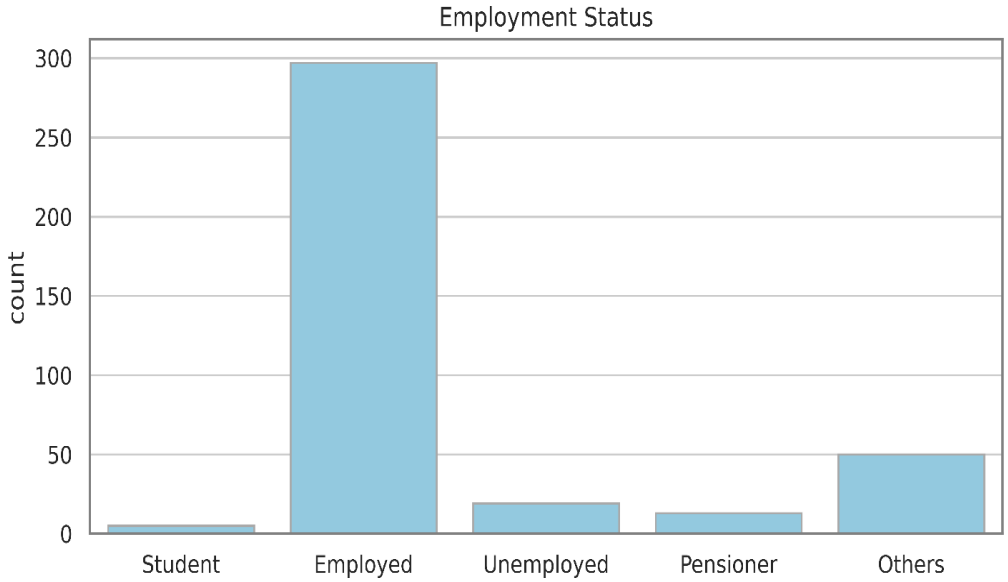
Statistical analysis was applied for the sample using SPSS, and inferential statistical analysis using correlational analysis and regression analysis will be analysed and discussed to prove the existence and the degree of relationships among the Independent Variable dimensions, which are the e-governmental services, and the dependent variable, which is the citizens' satisfaction with its sub-dimensions including 5 variables which are the utility, efficiency, flexibility, customization, and reliability.

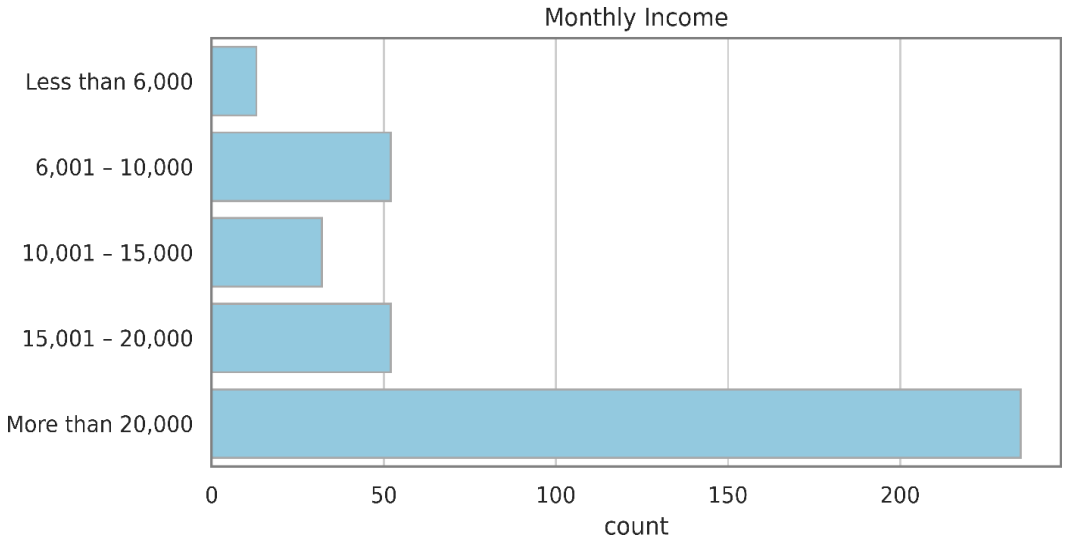
6. Statistical Analysis and Discussion

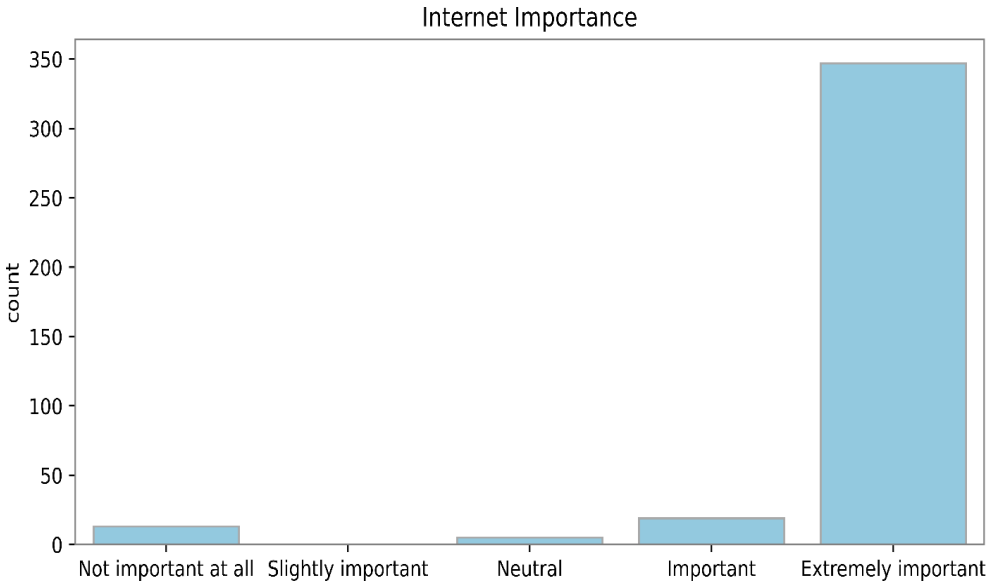
6.1 Demographics:

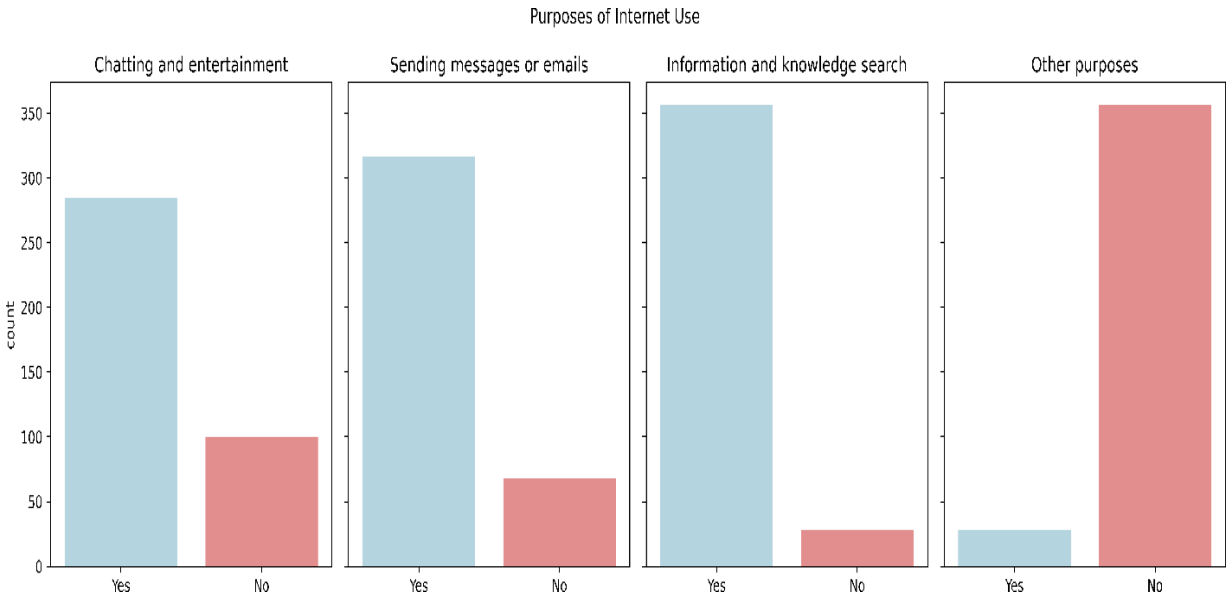
Fig. 3. Demographic Data Charts

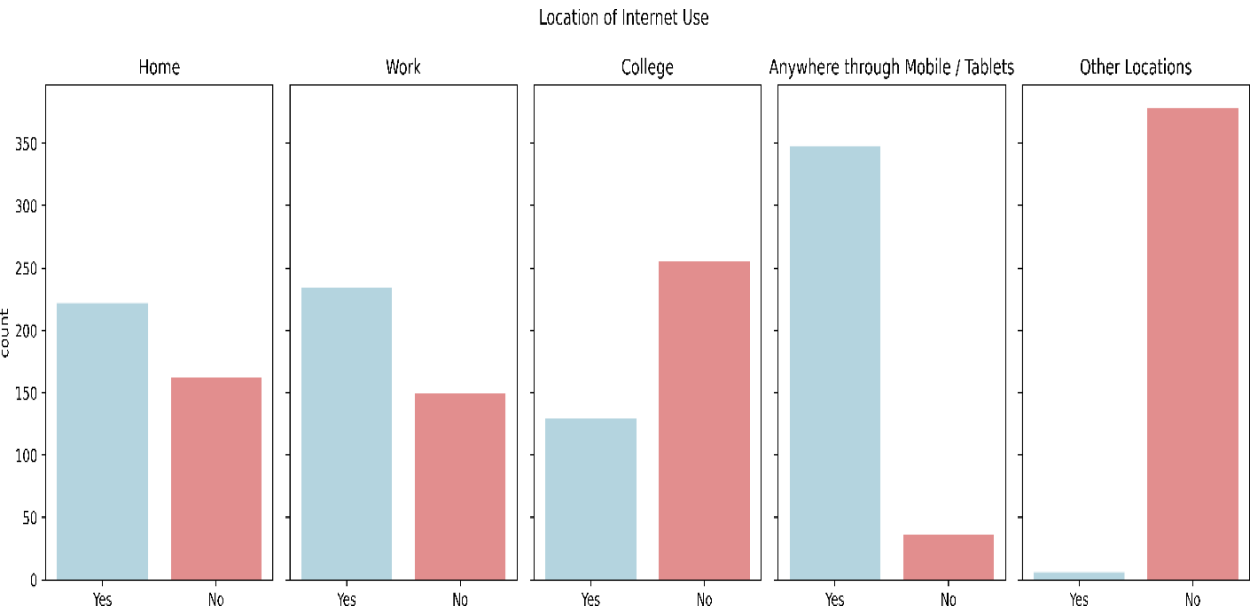



Employment Status
300
250
200
150
100
50
0
count
Student
Employed
Unemployed
Pensioner
Others


Monthly Income
Less than 6,000
6,001 – 10,000
10,001 – 15,000
15,001 – 20,000
More than 20,000
0
50
100
150
200
count


Internet Importance
count
350
300
250
200
150
100
50
0
Not important at all
Slightly important
Neutral
Important
Extremely important


Purposes of Internet Use
Chatting and entertainment
Sending messages or emails
Information and knowledge search
Other purposes
count
350
300
250
200
150
100
50
0
Yes
No



6.2 Statistical Analysis:

The main purpose of this research study is to prove that there is a direct statistically significant relationship between the e-government services as the independent variable and the citizens' satisfaction with its sub-dimensions as the dependent variables.

The main research question is, "Does the e-government service provided on the 'Digital Egypt' e-governmental portal impact the citizens' satisfaction?"

The citizens' satisfaction includes the utility, efficiency, flexibility, customization, and reliability, which focuses on the website services and data quality and their impact on the citizens' satisfaction.

First: Reliability Test

Table 1: Summary of Variables Reliability Test Results

Variable	Dimensions	Number of Items	Dimension Reliability Coefficient

E-government services	----	1-12	**74.6%**	
Dependent Citizen Satisfaction	Utility	13 - 27	**88.8%**	**77.9%**
	Efficiency	28-34	**78.7%**	
	Flexibility	35-40	**76.4%**	
	Customization	41-45	**67.3%**	
	Reliability	46-50	**78.3%**	

Table 2: Reliability Test Results of E-government Services

Items	**Internal Consistency Coefficient**	**Reliability Coefficient (Cronbach's Alpha)**
E-government Services (74.6%)		
1. Have you ever visited any of the e-government websites?	0.244**	**74.6%**
2. To what extent do you see that e-government and using e-government services are important?	0.660**	
3. How long have you been using e-government services?	0.586**	
4. What do you think are the reasons why you use government websites?		
Searching for information.	0.347**	
Submitting online data requests.	0.371**	
Downloading documents	0.429**	
Making payments online	0.402**	
5. What are the most important reasons for not using e-government services on any government website, in your opinion?		
Not knowing about the service/ information offered online.	0.151**	
They prefer the traditional way of providing the service (face-to-face contact).	0.141**	
The government websites do not have the information I want.	0.208**	

An online option for obtaining certain services was not available.	0.191**	
There are no laws or regulations that protect my rights when dealing with the government over the Internet.	0.138**	

(**) Indicates the significance of the correlation at a significance level of 0.01, meaning that the statements' validity is 99%.

Based on the data provided for the independent variable "E-government services" (n=384), the following analysis can be concluded:

The internal consistency coefficients for most of the items in the study are statistically significant (denoted by **), indicating a meaningful correlation between these variables and other aspects of the study.

The Cronbach's Alpha values (74.6%) suggest a relatively good level of reliability for the data, meaning that the items in the study are consistently measuring aspects of e-government services.

Weak correlations (e.g., 0.138** to 0.244**) for some items related to reasons for not using e-government services indicate that these reasons may not be as closely related to other items or may vary more across respondents.

Conclusion

This analysis suggests that while there is general consistency in the responses regarding e-government services, there are still areas where weaker relationships may need further investigation.

Table 3: Reliability Test Results of the Citizens' Satisfaction and its Sub-dimensions

Items	**Internal Consistency Coefficient**	**Reliability Coefficient (Cronbach's Alpha)**
Utility (88.8%)		
1. Compared to existing government services and facilities, did the new e-government portal "Digital Egypt "offer services that are?		
Highly providing the required	0.720**	

information more efficiently		
Highly Helpful in accomplishing the required task	0.247**	
Highly matching with real-life procedures & fees	0.814**	
An extremely wide variety of payment methods	0.665**	**88.8%**
Learning how to use the -e-government portal "Digital Egypt was considered as:	0.686**	
To what extent do you depend on the e-governmental portal "Digital Egypt" rather than any other means of providing the services?	0.800**	
2. The procedures and transactions on the e-government portal "Digital Egypt "are considered to be:		
Highly Easy Registration	0.696**	
Integrating many functions	0.464**	
3. Is the information provided through the e-governmental portal "Digital Egypt "believed to be		
Extremely Accurate	0.422**	
Answering many questions	0.672**	
4. Does the experience of surfing the portal "Digital Egypt "enable you to?		
Request multiple services at a time	0.703**	
Easily change data	0.196**	
5. Does the current e-government portal "Digital Egypt "offer you services that help you in a way		
Easily save your records for future reference	0.763**	
Easily choose your reply or notification method	0.622**	
Easily find your previous records	0.460**	
Efficiency (78.7%)		
1. Did you find the layout? Was the data in the e-government portal "Digital Egypt "accurate?	0.259**	**78.7%**
2. Was the data in the e-government	0.308**	

	portal "Digital Egypt "organized appropriately?		
3.	Did you find the layout of data in the e-government portal "Digital Egypt "to be pleasing?	0.624**	
4.	Were the required steps to accomplish the tasks logically sorted on the e-government portal "Digital Egypt "?	0.592**	
5.	Were the required services speedy and accessible on the e-government portal "Digital Egypt "?	0.328**	
6.	Did the e-government portal "Digital Egypt "integrate many functions?	0.771**	
7.	Did the available e-government portal "Digital Egypt "help me in finding all the wanted services?	0.372**	
Flexibility (76.4%)			
1.	When you tried to use the e-government portal, you found the provided services available 24 hours a day	0.383**	**76.4%**
2.	Was there any facility that allowed you to receive required information in many formats (e.g., figures, Word documents, or PDF formats?	0.699**	
3.	Did you find real-time information (e.g., exchange prices or airport schedules) conveying the latest updates?	0.345**	
4.	Was the e-government portal enabling to request of multiple services at a time (or limited requests once provided)?	0.496**	
5.	Could it change personal data?	0.740**	
6.	Were payment methods limited, or does it offer a variety of payment	0.318**	

methods?		
Customization (67.3%)		
7. Did the portal save your record for future reference?	0.448**	**67.3%**
8. Were you able to choose reply or notification methods?	0.568**	
9. Are you able to determine the day to deliver the required information?	0.390**	
10. Could you find your previous record easily?	0.705**	
11. While logging in, did you find some news that was related to your interests?	0.512**	
12. Were you able to request information the way you wanted to by various means? (e.g., on mobile devices or in e-mail format)?	0.717**	
Reliability (78.3%)		
1. Have you heavily depended on the e-government portal?	0.767**	**78.3%**
2. Did you find that each time you need information available on the e-government portal?	0.840**	
3. Is Whether information provided through the e-government portal believed to answer my questions?	0.262**	
4. Compared to existing government services and facilities, does the new e-government portal appear to match real-life procedures and fees?	0.656**	
5. Compared to existing government services and	0.749**	

facilities, does the new e-government portal appear to be accurate?		

(**) Indicates the significance of the correlation at a significance level of 0.01, meaning that the statements' validity is 99%.

Based on the data provided for the dependent variable "Citizens' Satisfaction" and its subdimensions (n=384), the following analysis can be concluded:

Utility: The portal generally provides useful, efficient, and accurate services, with high user reliance.

Efficiency: Most users find the portal somewhat efficient, though improvements in the layout and speed of services could be made.

Flexibility: The portal offers reasonable flexibility, especially with available services and format options.

Customization: Users find a fair degree of customization, with the ability to personalize notifications, record storage, and service requests.

Reliability: The portal is highly reliable, with users depending on it for accurate, available, and timely information.

Conclusion

This analysis shows that overall, users find the portal functional, but some areas could benefit from further improvements in speed, customization, and the variety of available services

6.3 Correlation Analysis

Table 4: Correlation coefficients between E-government Services and Citizens' Satisfaction

Dimensions	**E-government services**	**Citizen Satisfaction**
E-government services	1	**0.103*** **0.022**
Citizen Satisfaction	0.103*	**1**

	0.022	

Based on the data provided in the above table,
Correlation Coefficient: 0.103*
P-value: < 0.05

Conclusion
There is a **positive and statistically significant** correlation between the provision of e-government services and citizen satisfaction, though the strength of the relationship is relatively weak.

6.3 Regression Analysis
The main goal of regression analysis is to evaluate the average amount of change in the dependent variable due to a one-unit increase in a particular independent variable and holding the other independent variables constant (in the case of multiple regression). R-squared is a statistical measure that evaluates the percentage of explained variation in the dependent variable by the independent variables. When the p-value of the F-statistic is less than the level of significance, the null hypothesis is rejected and the alternative hypothesis is accepted, which indicates that the model is statistically significant overall.
Using the simple regression and ANOVA test, the research hypotheses were tested as follows;
*, **, *** refer to 1%, 5%, and 10% level of significance respectively. P-values are in ()

H1: There is a statistically significant relationship between e-government services and citizen satisfaction.
To test this hypothesis, the researcher conducted a simple regression analysis as shown in the following table:
Table5: Simple Regression Analysis and ANOVA results for the relationship between e-government services and citizen satisfaction

Independent	Dependent	Regression Coefficient (B)	T	P	F	P	Correlation Coefficient (R)	Coefficient of Determination (R^2)

E-government services	**Citizen Satisfaction**	**0.177**	**3.020**	**0.003**	**9.121**	**0.003**	**0.153**	**0.023**

Based on the data provided in the above table, at the significance level ($\alpha \leq 0.05$)

Regression Coefficient (B) = 0.177
This indicates a positive relationship between e-government services and citizen satisfaction, where an increase in e-government services is associated with an increase in citizen satisfaction.
T-value = 3.020
The t-value is greater than 2, suggesting that the regression coefficient is statistically significant.
P-value = **0.003**
Since the p-value is less than the significance level ($\alpha = 0.05$), we reject the null hypothesis and conclude that there is a statistically significant relationship between E-government services and Citizen Satisfaction.
F-value = **9.121**
The F-value indicates that the regression model as a whole is statistically significant.
P-value = **0.003**
Since the p-value is less than 0.05, it confirms that the model is statistically significant.
Correlation Coefficient (R): 0.153
The correlation coefficient suggests a weak positive relationship between E-government services and Citizen Satisfaction.
Coefficient of Determination (R^2): 0.023
The R^2 value indicates that only 2.3% of the variability in E-government services can be explained by citizen satisfaction, suggesting that other factors may contribute more significantly to Citizen Satisfaction. (Should be written in the direction of variation in e-gov service.
Conclusion:
There is a statistically significant, though weak, positive relationship between e-government services and citizen satisfaction.

H1a: There is a statistically significant relationship between e-government services and utility.

Table 6: Simple Regression Analysis and ANOVA results for the relationship between e-government services and utility.

Independent	Dependent	Regression Coefficient (B)	T	P	F	P	Correlation Coefficient (R)	Coefficient of Determination (R^2)
E-government services	Utility	0.276	2.613	0.009	6.826	0.009	0.132	0.012

Based on the results of the simple regression and ANOVA analysis presented in the table:

Regression Coefficient (B) = 0.276

This indicates a positive relationship between E-government services and Utility. As the quality or availability of e-government services increases, the perceived utility also tends to increase.

T-Statistic = 2.613, P-value = 0.009

Since the p-value is less than 0.05, the relationship is statistically significant. This means that *E-government services* have a significant impact on the *Utility*.

F-Statistic = 6.826, P-value = 0.009

The F-test confirms the overall significance of the regression model. Again, the p-value being below 0.05 supports the conclusion that the model fits the data well and the independent variable explains a significant portion of the variation in the dependent variable.

Correlation Coefficient (R) = 0.132

This indicates a weak positive correlation between the two variables.

Coefficient of Determination (R^2) = 0.012

This means that approximately 1.2% of the variance in e-government services can be explained by utility. Although the relationship is statistically significant, the model's explanatory power is limited.

Conclusion:

The analysis supports Hypothesis H1a, confirming a statistically significant—albeit weak—positive relationship between e-government services and utility. This implies that while e-government services influence

utility, other factors may also play an important role and should be explored in further research.

H1b: There is a statistically significant relationship at the significance level ($\alpha \leq 0.05$) between *e-government services* and *efficiency*.

To test this hypothesis, the researcher conducted a simple regression analysis, which is presented in the following table:

Table 7: Simple Regression Analysis and ANOVA results for the relationship between E-government services and Efficiency

Independent	Dependent	Regression Coefficient (B)	T	P	F	P	Correlation Coefficient (R)	Coefficient of Determination (R^2)
E-government services	Efficiency	0.081	1.146	0.252	1.314	0.252	0.059	0.003

Based on the results from the simple regression and ANOVA analysis:

Regression Coefficient (B) = 0.081

This indicates a weak positive relationship between E-government services and Efficiency. However, the impact is minimal.

T-Statistic = 1.146, P-value = 0.252

Since the p-value is greater than 0.05, the relationship is not statistically significant. This means we fail to reject the null hypothesis, and there is insufficient evidence to confirm a significant effect of e-government services on efficiency.

F-Statistic = 1.314, P-value = 0.252

The F-test result supports the t-test, showing that the overall regression model is not statistically significant.

Correlation Coefficient (R) = 0.059

This reflects a very weak positive correlation between the two variables.

Coefficient of Determination (R^2) = 0.003

Only 0.3% of the variance in Efficiency is explained by e-government services, indicating almost no explanatory power in the model.

Conclusion:

The analysis does not support Hypothesis H1b. Although there is a slight positive trend, the relationship between e-government services and efficiency is not statistically significant.

This suggests that improvements in e-government services may not have a measurable or direct effect on perceived efficiency within the scope of the current study.

H1c: There is a statistically significant relationship between e-government services and flexibility.

To test this hypothesis, the researcher conducted a simple regression analysis, which is presented in the following table:

Table 8: Simple Regression Analysis and ANOVA results for the relationship between e-government services and flexibility

Independent	Dependent	Regression Coefficient (B)	T	P	F	P	Correlation Coefficient (R)	Coefficient of Determination (R^2)
E-government services	Flexibility	0.203	2.406	0.017	5.790	0.017	0.122	0.015

Based on the results from the simple regression and ANOVA analysis:

Regression Coefficient (B) = 0.203

This indicates a positive relationship between *E-government services* and *Flexibility*. An increase in the effectiveness or availability of e-government services is associated with an increase in perceived flexibility.

T-Statistic = 2.406, P-value = 0.017

Since the p-value is less than 0.05, the relationship is statistically significant. This suggests that *E-government services* have a meaningful impact on *Flexibility*.

F-Statistic = 5.790, P-value = 0.017

The F-test confirms the significance of the overall regression model.

Correlation Coefficient (R) = 0.122

This represents a weak but positive correlation between the two variables.

Coefficient of Determination (R^2) = 0.015

Approximately 1.5% of the variance in *Flexibility* can be explained by E-government *services*. While the effect is statistically significant, the explanatory power of the model is relatively low.

Conclusion:

The analysis supports Hypothesis H1c, confirming a statistically significant, albeit weak, positive relationship between e-government services and

flexibility. This indicates that e-government services contribute to enhancing flexibility, although other factors may also play a larger role.

H1d: There is a statistically significant relationship at the significance level ($\alpha \leq 0.05$) between e-government *services* and customization.

To test this hypothesis, the researcher conducted a simple regression analysis, which is presented in the following table:

Table 9: Simple Regression Analysis and ANOVA results for the relationship between e-government services and Customization

Independent	Dependent	Regression Coefficient (B)	T	P	F	P	Correlation Coefficient (R)	Coefficient of Determination (R^2)
E-government services	Customization	0.057	0.576	0.565	0.331	0.565	0.029	0.001

Based on the results from the simple regression and ANOVA analysis:

Regression Coefficient (B) = 0.057

This indicates a very weak positive relationship between e-government services and customization. The effect size is minimal.

T-Statistic = 0.576, P-value = 0.565

Since the p-value is significantly greater than 0.05, the relationship is not statistically significant. This means we cannot conclude that E-government services have a meaningful impact on Customization based on this data.

F-Statistic = 0.331, P-value = 0.565

The F-test further confirms that the regression model is not significant.

Correlation Coefficient (R) = 0.029

This shows an extremely weak positive correlation between the variables.

Coefficient of Determination (R^2) = 0.001

Only 0.1% of the variation in *Customization* is explained by e-government services, indicating that the model has no explanatory power.

Conclusion:

The analysis does not support Hypothesis H1d. There is no statistically significant relationship between e-government services and customization. This suggests that customization may not be directly influenced by the level or quality of e-government services, and other variables could be more

relevant in explaining perceived customization.

H1e: There is a statistically significant relationship between E-government services and Reliability.

To test this hypothesis, the researcher conducted a simple regression analysis as shown in the following table:

Table 10: Simple Regression Analysis and ANOVA results for the relationship between e-government services and reliability

Independent	Dependent	Regression Coefficient (B)	T	P	F	P	Correlation Coefficient (R)	Coefficient of Determination (R^2)
E-government services	Reliability	0.265	2.633	0.009	6.930	0.009	0.133	0.018

Based on the results from the simple regression and ANOVA analysis:

Regression Coefficient (B): 0.265

This indicates a positive relationship between e-government services and reliability, where an increase in E-government services is associated with an increase in Reliability.

T-value = 2.633

The t-value is greater than 2, which suggests that the regression coefficient is statistically significant.

P-value = 0.009

Since the p-value is less than the significance level ($\alpha = 0.05$), we reject the null hypothesis and conclude that there is a statistically significant relationship between E-government services and Reliability.

F-value = 6.930

The F-value indicates that the regression model as a whole is statistically significant.

P-value = 0.009

Since the p-value is less than 0.05, it confirms that the model is statistically significant.

Correlation Coefficient (R) = 0.133

The correlation coefficient suggests a weak positive relationship between E-government services and Reliability.

Coefficient of Determination (R^2) = 0.018

The R^2 value indicates that only 1.8% of the variability in reliability can be explained by e-government services, suggesting that other factors may contribute more significantly to Reliability.

Conclusion:

There is a statistically significant, though weak, positive relationship between e-government services and reliability.

Table 11: Summary of Hypothesis Results

No	Hypothesis	Description	Result
1	H1	Impact of e-government services on citizens' satisfaction	Supported
2	H1a	Impact of e-government services on the utility	Supported
3	H1b	Impact of e-government services on the efficiency	Not Supported
4	H1c	Impact of e-government services on the flexibility	Supported
5	H1d	Impact of e-government services on customization	Not Supported
6	H1e	Impact of e-government services on reliability.	Supported

7. Conclusion and Recommendations:

This study examined and analysed the relationships between the e-government services provided on the "Digital Egypt" portal and the citizens' satisfaction with its sub-dimensions, which are the utility, the efficiency, the flexibility, the customization, and the reliability.

Each dimension was assessed using multiple items, and the table below summarizes their mean values and standard deviations.

The study empirically confirms that none of the dimensions exceeded a strong satisfaction level, and Efficiency, Customization, and Reliability were especially weak areas. Users express moderate satisfaction with the utility and flexibility of the portal, but the platform does not appear to deliver consistent, efficient, or Customized services.

And the recommendations to improve that are as follows;

Enhance platform performance to improve perceived efficiency.

Introduce more customization features such as personalized dashboards, preferred communication channels, and service suggestions.

Improve data accuracy and uptime to build user trust in the portal's reliability.

Engage in user feedback loops to identify specific pain points and optimize digital service delivery accordingly.

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