Effectiveness of Usability towards the Accessibility of Government Websites in the Davao Region Based on Citizen's Perceptions

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Abstract **- The government website is a thing that people will know on what is happening with that certain government office and what would be the information a citizen can get with that website. Disseminating of information nowadays is delivered through websites. Government websites can indicate its contact number in case there are users who want to ask questions from a certain government office. It could also indicate the image of the website if what is that website looks like and can also put its address too. However, there are some existing websites developed without considering the user's needs and didn't meet the expectations of the users maybe because it is not easily accessible to all kinds of users. We conducted this research to determine if the government websites are accessible and more effective and efficient. Moreover, the purpose of conducting this study is to know the citizens perception about the 5 websites that are examined. In the result, the mean of the level of usability of the government websites is 4.2158 with a standard deviation of 0.57193. This shows that the level of usability of the government websites is very high while the mean of the level of accessibility of government website is 4.1940 with a standard deviation of 0.59177. This shows that the level of accessibility of government website is high. It has also found out that among the indicators of the usability of government websites, efficiency and satisfaction are the two predictors of the accessibility of government websites. The result of some selected websites followed the consideration on usability and accessibility that is necessary for the existing and future government websites that can be found within Davao region.**

Keywords: **Usability, Accessibility, Government Websites, Davao Region, Efficiency, Satisfaction**

I. INTRODUCTION

A. Background of the study

Government websites help to enlarge citizen's access to government services and help to increase the dissemination of information to the public. It is the way of the Government by providing better services to their users. Some transactions can be quickly and efficiently conducted through a website. A Government website has become an unambiguous component of public sector. Thus, it serves as an instrument to increase the efficiency and enhance modernization [1]. There are many different Government websites came out from the internet nowadays. Some barangays, municipalities, cities and provinces here in the Philippines have created their own website to post their news and updates. In today's modern age, half of the population uses technology to get information they needed. Though government websites are essential in government-citizen relationship, many government websites are not used all the time especially to those people with disabilities [2]. Abanumy et al. shows that 98 percent of eGovernment websites worldwide are inaccessible by impaired users [3]. Similarly, people without disabilities are using three times more on most websites today than those people with disabilities [4]. In other words, websites may be technically accessible but hard to use or not usable to some certain people.

According to International Organization for Standards (ISO), usability is the extent to which a product, for example a website can be used by certain users to achieve certain goals with effectiveness, efficiency and satisfaction in a context of use [5]. The most important function of the website is the ability to equip citizens in the online services that can save their time from coming into the office. Web usability means that websites are clear, easy for users to use, simple and consistent [6]. Through the use of government website, users can conveniently access the Government information and services. It shows that the users of Government website can gain greater opportunities to participate in democratic processes, because the website can be easily accessed by anyone in anytime and anywhere all throughout its boundaries and limits [7] Also, the accessibility of the website can be defined as the degree to which a website is accessible to the largest possible range of people. On the other hand, accessible website means accessible to all users including those with disabilities or to all levels of people to become more functional. Web accessibility primarily benefits people with disabilities. However, an accessible website designed to meet different user needs, preferences, skills and situations can also benefit people without disabilities in certain situations with its flexibility [8], such as those people who have a slow internet connection, people with minor disabilities such as a broken arm, and people with disabilities due to aging. In other words, government used this important tool to market their institution to prospect users providing government information and

services available online - everywhere and anytime [9].West(2004), in his study, states that the characteristic of the website, that makes it so special, will allow the citizens to seek public services at their own convenience and not just when the government office is open [10]. All in all, a website is sometimes technically accessible but hard to use. Therefore, the designer of the website must provide an understandable information in the interface of the website so that, the user can easily understand it.

This research uses the citizen's perception that will be able to determine the usability and accessibility of the five selected government websites found in Davao region which are thewww.davaotourism.ph for the Davao Tourism Region XI, www.depedroxi.ph for the Department of Education Region XI,www.rsso11.psa.gov.ph for the Philippines Statistics Authority XI, www.region11.dilg.gov.phfor the Official Website of DILG Region 11 and www.region11.dost.ph for the Department of Science and Technology XI. The researcher of the study will make an evaluation for the users to examine on how will the users react to and interact with the Web systems. It also involves the employment of usability metrics to focus on two specific aspects of the experiences of users which are the users perceptions to the website and their interactions with the system. This is to assess what are in the selected government websites that are or aren't usable or accessible to all levels of people. This research will also determine the relationship of a usability towards accessibility of the selected government websites. Through this, maybe some other websites will become more accessible that all people will be able to understand the services offered with a certain government agency that can strengthen the government-citizen relationship through communication and sharing of ideas.

B. Theoretical Framework

The theory used in this research is Technology Acceptance Model (TAM) [11]. It was developed by Fred D. Davis on 1989. This was based on Theory of Reasoned Action by Fishbein and Ajzen's (1975) reasoning that user's behavioural intention is the single best predictor when using an actual system. Fishbein and Ajzen's (1975) also defined that "attitude" is the individual's evaluation of an object and "belief" as a link between an object and defined "behaviour" as a result or intention [12]. TAM allows hypothesizes that Perceived Usefulness is influenced by the Perceived Ease of Use. As applied to this study, the theory holds the researchers' expectation relating to independent variable, Usability as the PU as "the degree to which a person believes that using a specific system would enhance his or her job performance" and the Accessibility as the PEOU as "the degree to which a person believes that using a specific system would be free of effort" [11]. Bagozzi (1982), describes Theory of Reasoned Action as an intuitive, parsimonious and insightful model having an ability to explain the individual's behavior. Davies et al. applied the Technology Acceptance Model (TAM) theory in one of his research studies that was being conducted among 107 MBA students using a word processing application called WriteOne. He applied the theory to know if the perceive usefulness continued to show a strong influence on intention and if the perceive ease of use was less influential. In this research, he also found out that attitude did not fully mediate perceive usefulness and perceive ease of use [11]. One of the research conducted in USA uses the Theory of Reasoned Action (TRA) to help predict the user's behavioural intention. The research was all about the citizen's political participation. They used the TRA to know if the outcome of the study promotes both total and contact activism. In that statement, outcome expectation is operationalized as the individual's belief that e-participation will produce an improved democratic system [13].

C. Conceptual Framework

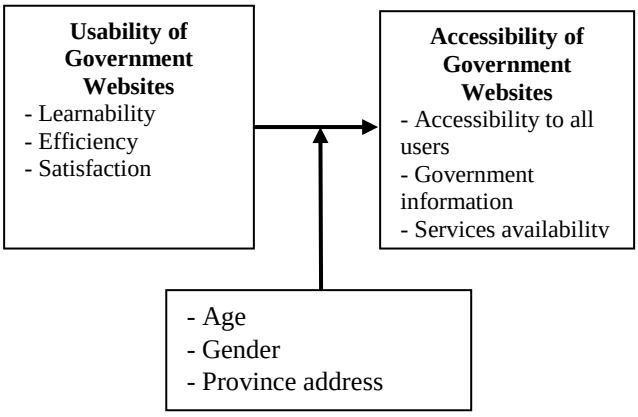

Figure 1. Conceptual Framework of the study

Figure 1 shows what are the benefits and the expectations of the citizen that can be taken from the website and it is the independent variable of the study which is the Usability of Government Websites. It has the following indicators such as: Learnability, Efficiency and Satisfaction. The Dependent variable of the study is the Accessibility of Government Websites that has indicators such as Accessibility of all users, Government information and Services availability. The moderating variables of the study are Age, Gender and Province address.

D. Research Questions

This study intends to find out the type of Usability towards Accessibility of Government Websites in the Davao Region based on citizen's perception. Specifically, this study seeks to answer the following question:

R1. What is the demographic profile of the participants of the study in terms of:

a. Age Group
b. Gender

c. Province address

R2. What is the Level of Usability of Government Websites in Davao Region in terms of:

a. Learnability
b. Efficiency
c. Satisfaction

R3. What is the Level of Learnability in terms of:

a. Accessibility to all users
b. Government information
c. Services Availability

R4. Is there a significant difference in the Usability of Government Websites in Davao Region when grouped according to:

a. Age Group
b. Gender
c. Province or city address

R5. Is there a substantial difference in the Level Accessibility of the Government in Davao Region websites when grouped according to:

a. Age Group
b. Gender
c. Province or city address

R6. Is there a significant relationship between the Usability towards the Accessibility of Government Websites in Davao Region?

R7. Do usability of Government websites influence the Accessibility of Government websites?

E. Null Hypothesis

Ho1: There is no significant difference in the Level of Usability of Government Websites in Davao Region when grouped according to:

a. Age Group
b. Gender
c. Province or city address

Ho2: There is no significant difference in the Level of accessibility of government websites in Davao Region when grouped according to:

a. Age Group
b. Gender
b. Province or city address

Ho3: There is no significant relationship in the Level of Usability towards Accessibility of Government Websites in Davao Region.

Ho4: The usability of government website do not significantly influence the accessibility of government websites.

II. METHODOLOGY

A. Research Design

The researchers of this study used a descriptive survey research design that will describe the characteristics of the website. Answering the research question hypothesis is the central purpose of all research [15].Descriptive survey research is defined as a research method used to describe what is necessary for a researcher to do in collecting the available data through the use of research instruments such as test, questionnaire, interview, or even observation. The main goal of descriptive research is to describe systematically the existing phenomena under the study [16]. This method is appropriate in this study to identify the effectiveness of government websites and uses questionnaire to assess the usability and accessibility of government websites found in Davao Region. The study was conducted within Davao Region. This place was selected for knowing the effect of usability and accessibility of government websites in Davao Region based on citizen's perception.

B. Participants of the Study and Sampling Technique

The respondents of the study are citizens that came from any provinces or cities of Davao Region. The respondents were selected by using convenience sampling. The researchers gave 5 different websites to every person they have selected. Each person was evaluated and given perceptions about the given website.

Convenience sampling belongs to the non-probability sampling. It is used in selecting the participants who are willing to participate in the study [14]. The participant can also be taken from a group of people that is easy to reach. The only criteria of this sampling is whether the participants will agree to participate. Convenience sampling also was appropriate since some citizens didn't have access to the internet since there is crisis of COVID-19 pandemic disease occurs during the conduct of the study. Thus, the researchers have chosen respondents who are willing to be part of the study and can access the internet and as long as he/she isa citizen from the Davao Region.

C. Statistical Treatments

All the responses gathered from survey questionnaire of the respondents were tallied and tabulated using IBM SPSS Statistics. The researchers asked assistance from the statistician to analyse and interpret the results utilizing the appropriate statistical tool.

1. T-test – analysis of two populations means through the use of statistical examination. The formula used to calculate the T Test is,

$$t = \frac{\overline{x_1} - \overline{x_2}}{\sqrt{\frac{{S_1}^2}{N_1} + \frac{{S_2}^2}{N_2}}}$$

Where:

x_1 is the mean of first data set

x_2 is the mean of first data set

S_1^2 is the standard deviation of first data set

S_2^2 is the standard deviation of first data set

N_1 is the number of elements in the first data set N_2 is the number of elements in the first data set

2. ANOVA –way to find out if survey or experiment results are significant. In other words, it will help the study to figure out if you need to reject the null hypothesis or accept the alternate hypothesis.Below are the formula represents one-way ANOVA test:

$$F = \frac{MST}{MSE}$$

Where:

F = Anova Coefficient `

MST = Mean sum of squares due to treatment MSE = Mean sum of squares due to error.

Formula for MST is:

$$MST = \frac{SST}{p-1}$$

$$SST = \sum n(x - \bar{x})^2$$

Where:

SST = Sum of squares due to treatment

p = Total number of populations

n = The total number of samples in a population.

Formula for MSE is:

$$MSE = \frac{SSE}{N-p}$$

$$SSE = \sum(n-1)S^2$$

Where:

SSE = Sum of squares due to error

S = Standard deviation of the samples

N = Total number of observations.

3. Pearson r –it is known as the best method of measuring the association between variables. It gives information about the magnitude of the association, or correlation, as well as the direction of the relationship of two variables. The formula is:

$$r = \frac{n(\Sigma xy) - (\Sigma x)(\Sigma y)}{\sqrt{[n\Sigma x^2 - (\Sigma x)^2][n\Sigma y^2 - (\Sigma y)^2]}}$$

Where:

N = number of pairs of scores

Σxy = sum of the products of paired scores

Σx = sum of x scores

Σy = sum of y scores

Σx2 = sum of squared x scores

Σy2 = sum of squared y scores

D. Research Instrument

This research was adopted from two research studies. The first study is the Usability of Government Websites in Uganda by Edgar Napoleon Asiim we from Swedish Business School, Örebro University and Nena Lim from Sweden Curtin University of Technology, Perth, Australia. This study was conducted in Uganda to investigate the usability of government websites of the said country. The study evaluated four government websites in Uganda according to three perspectives. Results in this study showed that websites are partially usable in the design layout and navigation perspectives but are rather weak in stating legal policies. Moreover, the evaluation framework proposed in the research is useful for any country that wants to do a quick and easy evaluation of their government websites [17].The second study adopted in this resarch is the Accessibility Evaluation on Malaysian E-Government Websites by Mohd Hanapi Abdul Latif and Mohamad Noorman Masrek Universiti Teknologi MARA, Malaysia. This study was conducted with the purpose of classifying the accessibility of e-government websites based on the World Wide Web Consortium (W3C). In addition, the study's intention was to examine webmaster's knowledge and practices pertaining to accessibility. The result of the analysis indicated that there were no Malaysian e-government websites approved with the W3C Priority 1 accessibility checkpoints [18].

E. Data Collection Procedure and Ethical Considerations

The researchers asked permission to the target citizens of the Davao Region and explained to them the purpose of this research and the reason why researchers are asking them to be part of this research. After such, researchers released an informed consent to the target citizens to ask permission to be granted in the knowledge of the possible consequences, typically that which was given with full knowledge of the possible risks and benefits to be used in this research. Upon the approval from the target citizens to do the research and the informed consent being signed, the researchers administered the questionnaires by sending the link of an online survey questionnaire to the target respondents. After the

administration of the questionnaire, the data collected answered online, tallied and subjected to statistical interpretation using appropriate statistical tools.

The researchers gave the informed consent to the respondents after they were being asked by the researchers to participate and explained the purpose of this research. The informed consent catered the protection of the respondents to their confidentiality by assigning codenames to each respondent and kept their responses and any other identifying participant information in the locked cloud storage through the personal possession of the researchers. The informed consent also gave the contact information of the researchers most specifically the project leader in case the respondents have questions regarding the rights as a research participant, or if problems arise which they do not feel, they could discuss. There was an important consideration of the conduct of the study observed since it dealt with different person's capability to connect to the internet, the safety of people with the support of informed consent and its participative interest in joining this research amidst the danger of COVID-19 crisis in the world. The respondent's profiles were protected and respected at all time together with its safety against the pandemic virus. All the responses remained confidential and all the statements quoted were coded to ensure the protection of respondent's profile.

III. RESULTS AND DISCUSSSIONS

All participants of the survey are 18 years old above and lives within Davao Region. The presentation of data in this research study are arranged in the following sequence: The demographic profile of the participants of the study in terms of Age Group, Gender & Province or city address, the Level of Usability of Government Websites in Davao Region in terms of, Learnability, Efficiency & Satisfaction, the Level of Learnability in terms of Accessibility to all users, Government information & Services Availability, a significant difference in the Usability of Government Websites in Davao Region when grouped according to, Age Group, Gender & Province address, a substantial difference in the Level Accessibility of the Government in Davao Region websites when grouped according to, Age Group, Gender & Province or city Address, a significant relationship between the Usability towards the Accessibility of Government Websites in Davao Region and the Usability of Government websites influence the Accessibility of Government websites.

RQ1 What is the demographic profile of the participants of the study in terms of Age Group, Gender, Province or city address?

There are a total of 59 participants in the study, consisting of twenty three males and thirty six females. In participants, some respondents are among the 18 to 25 aged groups which represent the highest percentage. Among the province or city address of the participants, Davao del Norte represents the highest rates. These are shown in tables I, II, and III.

TABLE 1. AGE GROUP

Age Group	Frequency	Percent	Valid Percent	Cumulative Percent
18-25	26	44.1	44.1	44.1
26-30	9	15.3	15.3	59.3
31-35	5	8.5	8.5	67.8
36-40	6	10.2	10.2	78.0
41-50	8	13.6	13.6	91.5
51 and above	5	8.5	8.5	100.0
Total	59	100.0	100.0	100.0

TABLE II. GENDER GROUP PROFILE OF THE RESPONDENTS

Gender	Frequency	Percent	Valid Percent	Cumulative Percent
Male	23	39.0	39.0	39.0
Female	36	61.0	61.0	100.0
Total	59	100.0	100.0	100.0

TABLE III. PROVINCE OR CITY RESIDENCE OF RESPONDENTS

PROVINCE/CITY	Frequency	Percent	Valid Percent	Cumulative Percent
Davao City	9	15.3	15.3	15.3
Davao de Oro	5	8.5	8.5	23.7
Davao Del Norte	20	33.9	33.9	57.6
Davao Oriental	10	16.9	16.9	74.6
Davao Del Sur	6	10.2	10.2	84.7
Davao Occidental	9	15.3	15.3	100.0
Total	59	100.0	100.0	100.0

RQ2 What is the Level of Usability of Government Websites in Davao Region in terms of Learnability, Efficiency, and Satisfaction?

Table IV shows the Level of usability of government websites in the Davao Region. The mean of the level of learnability of the respondents is 4.2305 with a standard deviation of 0.59633. This shows that the learnability of the respondents is very high. The mean of the level of efficiency of the respondents is 4.2576 with a standard deviation of 0.69783. This shows that the efficiency of the respondents is very high. The mean of the level of satisfaction of the respondents is 4.1593 with a standard deviation of 0.54807.

This shows that the satisfaction of the respondents is high. The mean of the level of usability of the government websites is 4.2158 with a standard deviation of 0.57193. This

shows that the level of usability of the government websites is very high.

TABLE IV. LEVEL OF USABILITY OF GOVERNMENT WEBSITES IN THE DAVAO REGION

Usability Indicator	N	Mean	Std. Deviation
Learnability	59	4.2305	.59633
Efficiency	59	4.2576	.69783
Satisfaction	59	4.1593	.54807
Overall Mean	59	4.2158	.57193

RQ3 What is the Level of accessibility of the government websites in terms of Accessibility to all users, Government information, and Services Availability?

Table V shows the Level of Accessibility of government websites in the Davao Region. The mean of the level of accessibility to all users is 4.1458 with a standard deviation of 0.68766. This shows that the level of accessibility to all users is high. The mean of the level of government information is 4.2610 with a standard deviation of 0.57446. This shows that the level of government information is very high.

The mean of the level of services availability is 4.1751 with a standard deviation of 0.62929. This shows that the level of services availability is high. The mean of the level of accessibility of government website is 4.1940 with a standard deviation of 0.59177. This shows that the level of accessibility of government website is high.

TABLE V. LEVEL OF ACCESSIBILITY OF THE GOVERNMENT WEBSITES IN THE DAVAO REGION

Accessibility Indicator	N	Mean	Std. Deviation
Accessibility to all users	59	4.1458	.68766
Government information	59	4.2610	.57446
Service Availability	59	4.1751	.62929
Overall Mean	59	4.1940	.59177

RQ4 Is there a significant difference in the Usability of Government Websites in Davao Region when grouped according to Age Group, Gender, and Province address?

Table VI shows the result that the p-value of the Usability of government websites when grouped according to age group is 0.969>0.05, then we do not reject the null hypothesis. There is no significant difference in the usability of government websites when grouped according to age. This basically interprets that young people, adults and older residents is not a hindrance of using the government websites.

TABLE VI .SIGNIFICANT DIFFERENCE IN THE USABILITY OF GOVERNMENT WEBSITES WHEN GROUPED ACCORDING TO AGE USING ANOVA

Usability Indicator	Sum of Squares	df	Mean Square	F	Sig.
Learnability	.509	5	.102	.268	.929
Efficiency	.404	5	.081	.154	.978
Satisfaction	2.038	5	.408	1.404	.238
Usability (Overall)	.319	5	.064	.181	.969

Table VII shows the result of the significant difference of the usability of government websites when group into gender. Since p-value is 0.223>0.05, then we do not reject the null hypothesis. There is no significant difference in the usability of government websites when grouped according to gender. This is equality towards the two genders as it shows that whether a person is male or female there is no differences in their perspective of usability towards government websites.

TABLE VII. SIGNIFICANT DIFFERENCE IN THE USABILITY OF GOVERNMENT WEBSITES WHEN GROUPED ACCORDING TO GENDER USING ANOVA

Usability Indicator	Sum of Squares	df	Mean Square	F	Sig.
Learnability	.315	1	.315	.883	.351
Efficiency	.989	1	.989	2.068	.156
Satisfaction	.304	1	.304	1.011	.319
Usability (Overall)	.493	1	.493	1.521	.223

In the table VIII, it shows the result of the ANOVA tests. Since p-value of the analysis conducted for the significant difference is 0.843>0.05, then we do not reject the null hypothesis. There is no significant difference in the usability of government websites when grouped according to province address. This shows that the entire Davao regions can utilize the government websites.

TABLE VIII. SIGNIFICANT DIFFERENCE IN THE USABILITY OF GOVERNMENT WEBSITES WHEN GROUPED ACCORDING TO PROVINCE OR CITY ADDRESS USING ANOVA

Usability Indicator	Sum of Squares	df	Mean Square	F	Sig.
Learnability	1.730	5	.346	.971	.444
Efficiency	.989	1	.989	2.068	.156
Satisfaction	.862	5	.172	.552	.736
Usability (Overall)	.699	5	.140	.406	.843

RQ5Is there a substantial difference in the Level Accessibility of the Government in Davao Region websites when grouped according to Age Group, Gender, Province Address?

Table IX shows the significant difference in the accessibility of government websites when grouped according to age. Since p-value is 0.547>0.05, then we do not reject the null hypothesis. There is no significant difference in accessibility of government websites when grouped according to age.

TABLE XI. SIGNIFICANT DIFFERENCE IN THE ACCESSIBILITY OF GOVERNMENT WEBSITES WHEN GROUPED ACCORDING TO AGE USING ANOVA

Accessibility Indicator	Sum of Squares	df	Mean Square	F	Sig.
Accessibility to all users	2.569	5	.514	1.096	.374
Government information	1.105	5	.221	.650	.663
Service Availability	2.008	5	.402	1.016	.418
Accessibility (Overall)	1.443	5	.289	.811	.547

Table X shows the significant difference in the accessibility of government websites when grouped according to gender. In the indicator, accessibility to all users it has a p-value of 0.03. This means that there is a significant difference of accessibility to all users when grouped according to gender. However, in the overall accessibility indicator, the p-value is 0.085>0.05, then we do not reject the null hypothesis. There is no significant difference in accessibility of government websites when grouped according to gender.

TABLE X. SIGNIFICANT DIFFERENCE IN THE ACCESSIBILITY OF GOVERNMENT WEBSITES WHEN GROUPED ACCORDING TO GENDER USING ANOVA

Accessibility Indicator	Sum of Squares	df	Mean Square	F	Sig.
Accessibility to all users	2.197	1	2.197	4.963	.030
Government information	.346	1	.346	1.049	.310
Service Availability	.973	1	.973	2.521	.118
Accessibility (Overall)	1.038	1	1.038	3.070	.085

Table XI shows the significant difference in the accessibility of government websites when grouped according to province or city address of respondents. Since p-value is 0.388>0.05, then we do not reject the null hypothesis. There is no significant difference in the services availability of government websites when grouped according to province address.

TABLE XI. SIGNIFICANT DIFFERENCE IN THE ACCESSIBILITY OF GOVERNMENT WEBSITES WHEN GROUPED ACCORDING TO PROVINCE OR CITY ADDRESS USING ANOVA

Accessibility Indicator	Sum of Squares	df	Mean Square	F	Sig.
Accessibility to all users	3.848	5	.770	1.730	.144
Government information	1.241	5	.248	.735	.601
Service Availability	1.676	5	.335	.834	.531
Accessibility (Overall)	1.860	5	.372	1.068	.388

RQ6. Is there a significant relationship between the Usability towards the Accessibility of Government Websites in Davao Region?

Learnability

Table XII shows the result of analyzing the significant relationship with learnability towards Accessibility to all users, Government information, and Service Availability.

TABLE XII. SIGNIFICANT RELATIONSHIP WITH LEARNABILITY TOWARDS ACCESSIBILITY TO ALL USERS, GOVERNMENT INFORMATION, AND SERVICE AVAILABILITY

Usability Indicator	Analysis	Accessibility to all users	Government information	Service Availability	Over All Accessibility
Learnability	Pearson Correlation	.734**	.729**	.684**	.763**
	Sig. (2-tailed)	.000	.000	.000	.000
	N	59	59	59	59

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

The r-value is 0.763 which means that there is a strong positive relationship in the learnability of government websites and accessibility of government websites. Since p-value is 0.000<0.05, then we reject the null hypothesis. There is a significant relationship in the learnability of government websites and accessibility of government websites.

Efficiency

Table XIII shows the result of analyzing the significant relationship with Efficiency towards Accessibility to all users, Government information, and Service Availability.

TABLE XIII. SIGNIFICANT RELATIONSHIP WITH EFFICIENCY TOWARDS ACCESSIBILITY TO ALL USERS, GOVERNMENT INFORMATION, AND SERVICE AVAILABILITY

Usability Indicator	Analysis	Accessibility to all users	Government information	Service Availability	OverAll Accessibility
Efficiency	Pearson Correlation	.790**	.715**	.723**	.794**
	Sig. (2-tailed)	.000	.000	.000	.000
	N	59	59	59	59

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

The r-value is 0.794 which means that there is a strong positive relationship in the efficiency of government websites and accessibility of government websites. Since p-value is 0.000<0.05, then we reject the null hypothesis. There is a significant relationship in the efficiency of government websites and accessibility of government websites.

Satisfaction

Table XIX shows the result of analyzing the significant relationship with Satisfaction towards Accessibility to all users, Government information, and Service Availability.

TABLE XIX. SIGNIFICANT RELATIONSHIP WITH SATISFACTION TOWARDS ACCESSIBILITY TO ALL USERS, GOVERNMENT INFORMATION, AND SERVICE AVAILABILITY

Usability Indicator	Analysis	Accessibility to all users	Government information	Service Availability	OverAll Accessibility
Satisfaction	Pearson Correlation	.770**	.746**	.738**	.801**
	Sig. (2-tailed)	.000	.000	.000	.000
	N	59	59	59	59

The r-value is 0.801 which means that there is a very high positive relationship in the satisfaction of government websites and accessibility of government websites. Since p-value is 0.000<0.05, then we reject the null hypothesis. There is a significant relationship in the satisfaction of government websites and accessibility of government websites.

Usability (Overall)

Table XX shows the result of analyzing the significant relationship with Usability towards Accessibility of government websites in Davao Region.

TABLE XX. SIGNIFICANT RELATIONSHIP WITH USABILITY TOWARDS ACCESSIBILITY OF GOVERNMENT WEBSITES IN THE DAVAO REGION

Usability	Analysis	Accessibility (Overall)
Usability (Overall)	Pearson Correlation	.844**
	Sig. (2-tailed)	.000
	N	59

The r-value is 0.844 which means that there is a very high positive relationship in the usability of government websites and accessibility of government websites. Since *p*-value is 0.000<0.05, then we reject the null hypothesis. There is a significant relationship in the usability of government websites and accessibility of government websites.

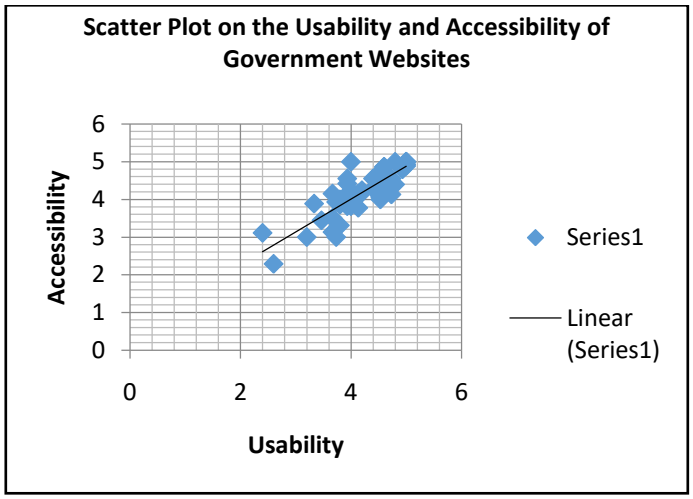

Fig. 2 Scatterplot of data values

The blue dots represent the 59 coordinates which stand as the scores of each respondent in the independent and dependent variables. The black line stands for the trend of relationship that represents the arrangement of the dots.

RQ7 Do usability of Government websites influence the Accessibility of Government websites?

TABLE XXI. MODEL SUMMARY

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.801[a]	.642	.635	.35727
2	.841[b]	.708	.698	.32538
3	.849[c]	.721	.706	.32113

TABLE XXII. COEFFICIENTS

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.596	.359		1.661	.102
	SaMean	.865	.086	.801	10.106	.000
2	(Constant)	.581	.327		1.777	.081
	SaMean (x_2)	.499	.129	.462	3.877	.000
	EMean (x_1)	.361	.101	.425	3.567	.001
3	(Constant)	.398	.343		1.162	.250
	SaMean	.457	.130	.423	3.514	.001
	EMean	.231	.129	.272	1.781	.080
	LMean	.216	.137	.218	1.578	.120
a. Dependent Variable: AccessMean						

Using stepwise regression, it has found out that among the indicators of the usability of government websites, efficiency and satisfaction are the two predictors of the accessibility of government websites. The prediction is illustrated by the equation $y = 0.361x_1 + 0.499x_2 + 0.581$, with a predictive power of 70.8%.

The feedback of the respondents in this study shows that the 5 websites given to them has a good quality website or it may have satisfied their needs from that website. Haroon Shahzad and Waqas Younas Sandhuin their study found out that, the interest of the people in Pakistan in using the website is increasing due to its high value of usability and ease of accessibility to them [19]. In Saudi, there are a lot of people who have a device on how to easily use and access the website. A researcher in Saudi shows their result in one of their studies made which has a relatively high compliance of Accessibility and it has a low usability based on the respondents of the study [20]. The basis of the respondents on how they rate the website is the quality of the website.

Some people have different opinion on how they understand the website. Even if the website has a good or bad quality, the response of the respondents is either good or bad. Nielson, tested the usability including the speed, page size and broken links traits [21], The people in Malaysia who used the said website wanted the Government to give them more emphasis on specific accessibility and usability feature, and the Government of Malaysia failed to provide them the features they needed and that results a low accessibility and usability of the website in their study. The features and the quality of the website is the most important aspect to the citizens who will use the website.

IV. CONCLUSIONS AND RECOMMENDATIONS

In this paper, the researchers addressed the effectiveness of usability towards the accessibility of government websites in the Davao region based on citizen's perception. 10 websites were selected in this research and 59 respondents participated. The results show that the level of usability of the government websites found in Davao region is very high and the level of accessibility of government website is high. It has also found out that among the indicators of the usability of government websites, efficiency and satisfaction are the two predictors of the accessibility of government websites. Because of this, it is easy to say that citizens in Davao region are satisfied and government websites are very efficient that it is accessible to all users with the provided government information and services. The result of some of the selected websites followed the consideration on usability and accessibility that is necessary for existing and future government websites that can be found in the Davao region.

A number of internet users nowadays are rapidly increasing and people are eager to complete their needs online. The government websites are one of the tools for the public to access information and services provided by the government. So, the government websites should be accessed easily by all kinds of people including differently abled people and with the age group of 50 and above. This should also ensure that the government websites offer not only better services to the general public but also a suitable service to all citizens of the region or the country. Further improvement of the usability and accessibility level in government websites should also be taken into consideration towards ensuring that government websites are openly catered by all citizens.

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REFERENCES

[1]. Centeno C. Van Bavel R. and Burgelman JC (2005). The Electronic Journal of e-Government vol. 3 no. 2, pp. 59-66".
[2]. M.Y. Ivory and A. Chevaller, A study of Automated Website Evaluation Tools, Technical Report UW-CSE-02-10-01, 2002.
[3]. A. Abanumy, A. H Al-Badi and PJ. Mayhew, e-Government Website Accessibility. In Depth Evaluation of Saudi Arabia and Oman, vol. 3. The Electronic Journal of e-Government, pp. 99-106.
[4]. R. Baguma, T. Wanyama, P.V. Bommel and P. Ogao, Web Accessibility In Uganda: A study of Webmaster Perceptions
[5]. International Organization of Standard, "ISO 9241-11 1997," 1998.
[6]. J.J. Cappel and Z. Huang, "A Usability Analysis of Company," vol. 48, pp. 117-123, 2007.
[7]. Fang, Z. (2002) "e-Government in Digital Era: Concept, Practice and Development", International Journal of the Computer, The Internet and Management, vol. 10, no. 2, pp. 1-22.
[8]. Y. Akgül and K. Vatansever, "Web Accessibility Evaluation of Government Websites for People with Disabilities in Turkey," Journal of Advanced Management Science, vol. 4, May 2016.
[9]. M.H.A. Latif and M.N. Masrek, Accessibility Evaluation on Malaysian E-Government studies and Best Practices, 2010.
[10]. West D.M, (2004), "E-Government and the Transformation of Service Delivery and Citizen Attitudes", "Public Administration Review", vol. 64, no. 1, pp. 15-27.
[11]. F.D. Davis, "Perceived Usefulness, Perceived Ease of Use, and User Acceptance of Information Technology." Management Information Systems Research Center, University of Minnesota, vol. 13, no. 319-340, 1989.

[12]. Fishbein M. &Azjen I. (1975). Belief, attitude, intention and behavior: An introduction to theory and research, Reading Mass; Don Mills, Ontario: Addison-Wesley Pub. Co.
[13]. Pattie C., Seyd P. &Whiteley P. (2003) "Citizenship and Civic engagement: Attitudes and behavior in Britain Political Studies, 52, 443-468.
[14]. Cooksey R. &Mcdonald G. (2011), "Surviving and Thriving in Postgraduate Research, Prahran VIC, Tilde University Press".
[15]. H.L. Dulock, "Research Design: Descriptive Research", "Journal of Pediatric Oncology Nursing", vol. 10, No. 4 (October), 1993: pp. 154-157
[16]. H. Atmowardoyo, "Research Methods in TEFL Studies: Descriptive Research, Case Study, Error Analysis, and R & D", "Journal of Language Teaching and Research", Vol. 9, No. 1, pp. 197-204, January 2018
[17]. E. N. Asiimwe & N. Lim, "Usability of Government Websites in Uganda," *Electronic Journal of e-Government*, Vol. 8, no. 1, pp. 1-12, 2010.
[18]. M. H. Abdul Latif & M. N. Masrek, "Accessibility Evaluation on Malaysian E-Government Websites", "*IBIMA Publishing Journal of e-Government Studies and Best Practices*", Vol. 2010 , Article ID 935272, pp. 1-11, 2010.
[19]. Haroon Shahzad & Waqas Younas Sandhu,e-Government Services in Pakistan, 2007
[20]. Hoi-Yan Terry Ma & Panayiotis Zaphiris, The Usability and Content Accessibility of the e-Government in the UK
[21]. Nielson, J., 1994, Usability Engineering. 1st Edn., Morgan Kaufmann, ISBN: 0-12-518406-9, pp.362