

# Service delivery through e-governance: the case of highly urbanized cities in northern Mindanao, Philippines

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**Abstract.** This study explored the new digital opportunity for realizing democracy in public administration. This is a descriptive-evaluative type of research, utilizing a cross sectional survey which aimed to describe and assess the service delivery through e-governance of the two (2) highly urbanized cities in Northern Mindanao, Philippines. Utilizing the mixed methods of qualitative and quantitative research designs, this paper endeavoured to examine the delivery models of e-governance applications did the Local Government Units of Iligan and Cagayan de Oro provide to their constituents in terms of; G2C (Government-to-Citizens), G2B (Government-to-Business), G2E (Government-to-Employees), and G2G (Government-to-Government) Q2. Utilizing a survey questionnaire with a 5-point Likert scale, a total of 234 survey respondents categorized as citizens, business sectors and city hall employees of the locales evaluated the efficiency, effectiveness, responsiveness, and satisfaction of e-governance implementation with regards to the delivery of the following services; administrative services, economic services, health services, and infrastructure services. Moreover, the qualitative data were obtained from the 4 key informants using an interview guide whose responses were analyzed thematically. Analyses of the findings were drawn from the delivery models of E-governance, technology, organization and environment (TOE) framework, and the role of IT in good governance. Data revealed that both LGUs had provided the four delivery models of e-governance. It is also implicit in the findings that the similar provisions and modes of service delivery by the two cities facilitated the furtherance of e-governance in their respective areas of responsibilities.

**Keywords:** e-governance; delivery models of e-governance; service delivery; technology acceptance model (TAM)

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## 1. Introduction

In today's modern society, the internet shaped the ability to communicate, share, distribute, exchange, formalize, use, and network information at a speed that was not experienced before. Due to globalization, governments around the world had to cope up with the advancement of technologies, or else they will be lagging the modern development. The internet gave rise to a new public information model where there is hardly any government institution today that does not practice e-governance. In fact, the trend is the increasing focus on efficient, effective, responsive, and satisfying delivery of services in the process of re-engineering one's own government. Thus, in today's innovative world, e-governance is considered as an important tool in promoting good governance in public administration.

To strengthen the implementation of e-governance, local government units were mandated by the Philippine national government to install web portals to facilitate online policy forum that caters the engaging discussions between the citizens and public administrators for the furtherance of the so-called digital democracy. Policy issues confronting Philippine politics were either resolved or sensationalized through online policy fora on various government websites. These policy fora are often visited by public administrators themselves and the concerned citizens from different sectors, of different ages, and gender, who wished to express their opposing views and opinions regarding a specific topic. In addition to, local government units invested on ICT to capacitate themselves and make an impact on the scope and breadth of the government's e-governance policy. Considering the Internet culture of the Filipinos, engaging in online policy forum has also been a good platform among public administrators to relay to the public the plans of actions of the government with the intentions to better enforce policies. Since most Filipinos find the internet more accessible than any mass medium available, this has resulted to social media addiction. Hence, digital democracy or e-governance in public administration adds vibrancy in Philippine politics.

At present, only few researches have been conducted to local government units, particularly in Northern Mindanao, which is a good subject of inquiry because of the multi diversity of its culture, people, resources, and geographical settings. Also, it is in this region where the two highly urbanized cities, Cagayan de Oro and Iligan are located. These two cities were recognized as two of the top income earning cities in Mindanao. Moreover, e-governance is a new research area and its service quality aspect is even more in need for research. Its importance in the public sector with due regard to the customer's perceptions and expectations from a service delivery point of view should be regarded as a good subject of inquiry [1].

Hence, there is a need to corroborate through a research the e-governance practices amongst highly urbanized cities particularly in Northern Mindanao in order to validate if the e-governance implementation of the two highly urbanized cities belonging to the region had enhanced the quality and speed of service delivery, promote transparency, facilitate public participation in decision making and brought the citizens, government, business sector, and other stakeholders together for the furtherance of e-governance in the said region. Whether or not e-governance in the region is considered a success or a failure, this paper endeavours only to find out and describe how e-governance implementation contributed in the delivery of public services. Specifically, this paper endeavoured to answer the following questions: Q1. What are the delivery models of e-governance applications did LGU Iligan and LGU Cagayan de Oro provide to their constituents in terms of; G2C (Government-to-Citizens), G2B (Government-to-Business), G2E (Government-to-Employees), and G2G (Government-to-Government) Q2. How did the citizens, business sectors and city hall employees of the LGUs of Iligan and Cagayan de Oro evaluate the efficiency, effectiveness, responsiveness, and satisfaction of e-governance implementation with regards to the delivery of the following

services; administrative services, economic services, health services, and infrastructure services.

## **2. Literature Review**

This study aimed to identify the types of e-governance models that the two highly urbanized cities in Northern Mindanao, Philippines namely Iligan and Cagayan de Oro had adopted. Hence, the four delivery models of e-governance applications: Government to Citizen or Government to Consumer (G2C), Government to Business (G2B), Government to Government (G2G), and Government to Employees (G2E)) was reviewed [2].

The literature explores various e-government development models, indicating maturity and requirements for transitioning to different levels [3]. Thus, this study also examined the development stage of e-government which according to E-Government survey of the United Nations Department of Economic and Social Affairs, there are four stages of E-Government Development; the Emerging Presence, Enhanced Presence, Transactional, and Connected [4].

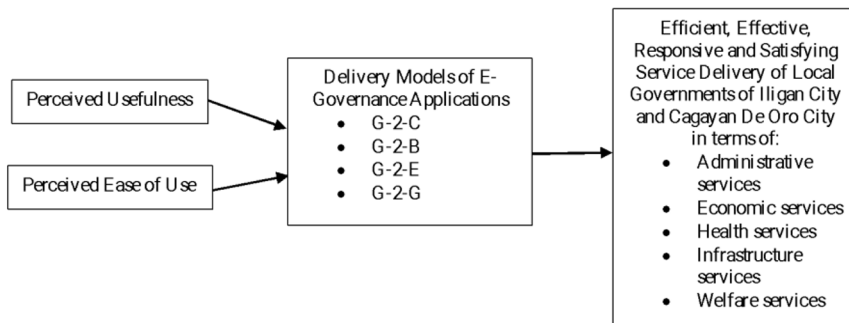
To draw implications and conclusions on how e-governance facilitated service delivery in study, literatures on the benefit and role of e-government were also studied and how the advances in IT can have a positive impact on governance. E-government can improve service delivery by providing citizens with ICT knowledge, facilitating access to digital equipment, and simplifying service delivery. Governments must work together with both public and private sectors to achieve goals like internet access [5]. Consequently, Ndou highlighted e-government strategy's benefits in efficient information and service delivery, aligning efforts, improving service quality, and reducing operating costs for government agencies [6]. Convergence of technology supports cost-effective public services, democratic governance, and grassroots participation in developing countries through interactive media, broadband transmission, and distributed intelligence [7]. Moreover, IT promotes good governance in three fundamental ways: (1) increase transparency, information, and accountability. (2) by promoting accurate decision-making and public participation; and (3) by improving the efficient delivery of public goods and services. Citizens' right to access public documents is protected by the country's constitution, and IT facilities enable public access to government achievements and programs. This information promotes transparency in governance and enables governments and civil society to inform people about their rights and privileges [8].

Reviewed also in this study is the Technology Acceptance Model (TAM) which predicts the acceptability of information systems by analysing perceived usefulness and ease of use. It is an adaptation of the Theory of Reasoned Action (TRA), aiming to identify necessary modifications for user acceptance [9]. TAM posits that the acceptability of an information system is determined by two main factors: perceived usefulness and perceived ease of use. This model suggests that the perceived usefulness and perceived ease of use determine an individual's intention to use a system with intention to use serving as a mediator of actual system use [10].

### **2.1 Research Model**

The analytical model shown below represents how the constructs of this study were analysed. Utilizing the TAM two main factors: perceived usefulness and perceived ease of use, the modalities of e-governance initiatives of the two (2) identified highly urbanized cities of Northern Mindanao, Philippines, Iligan City and Cagayan De Oro city were assessed by the respondents if these delivery models of e-governance facilitated the service delivery particularly on administrative services, economic services, health services, infrastructure services and welfare services. Using statement indicators, the respondents expressed the

perceived efficiency, effectiveness, responsiveness, and satisfaction of service deliveries of their city governments through e-governance.



**Fig. 1.** Analytical Model Used in the study.

### 3. Research Methods

#### 3.1 Sampling Procedure

This study employed a non-probability sampling procedure particularly purposive sampling method in the selection of the research sites, choosing only the recognized two (2) highly urbanized cities in Northern Mindanao, Philippines. These cities were selected because: (1) they had a relatively good set of ICT applications per virtual pre-assessment of the researcher in their existing official websites, and therefore already had some e-governance experiences that can be studied; (2) they were seen to have intentions to develop GIS applications since they already have web portals; and (3) there were no published e-governance assessments of the cities and this study uncovered new data. Furthermore, the selection of participants in the survey was made possible using the snowball sampling method or sampling by referrals. To determine the population included in the survey, a purposive sampling was utilized by the researcher using the criterion that the participant had accessed the official websites provided by the two Local Government Units concerned.

#### 3.2 Research Participants

A total of 234 survey respondents were included in this study, which were categorized as citizens, city hall employees, and business operators; 119 were from Iligan City, and 115 were from Cagayan de Oro City. The table below shows the distribution of the total number of survey respondents per category.

**Table 1.** Distribution of the Total Number of Respondents Taken Per Category

Names of LGU	Number of Respondents per Category			Total Number of Respondents per LGU
	Citizens	Business Sector	City Hall Employees	
Iligan City	45	39	35	119
Cagayan de Oro City	45	35	35	115
<b>OVER ALL TOTAL</b>				<b>234</b>

### 3.3 The Informants of the Study

To enable appropriate data collection, the researcher identified beforehand the key informants of the study which included the two (2) ICT heads of office of Iligan City and Cagayan de Oro City and two (2) Chief of staff of the *Sangguniang Panglungsod* or City Councilor for both cities whose offices were in charged on the committee on e-governance implementation. However, the researcher was not able to interview the prospected interviewees due to their personal reasons and refusal to grant their free prior informed consent. Instead, they referred the researcher to the other personnel whom they considered who had more knowledge on their e-governance implementation. Thus, the key informants of this study included the CDO ICT Head of Office (KI Number 1), and CDO Systems Analyst (KI Number 2); Iligan City Chief of Staff of the *Sangguniang Panglungsod* or City Councilor in charge of the Committee on Communications and Technology (KI Number 3), and a website staff (KI Number 4). Therefore, there were four (4) total key informants of this study.

### 3.4 Methods of Data Analysis

To analyse the data obtained from the survey questionnaire, descriptive statistics such as frequency counts, percentage distribution and the measure of central tendencies specifically, the mean for the measure of central tendency were applied. Below are the qualitative descriptions with the corresponding mean value used to analyze the data obtained from the survey questionnaire.

**Table 2.** Qualitative Description and Corresponding Mean Value of the Respondents' Evaluation of Efficiency, Effectiveness, and Responsiveness of E-governance Implementation

Qualitative Description	Mean Value	Qualitative Description	Mean Value	Qualitative Description	Mean Value
Very Efficient	4.20-5.00	Very Effective	4.20-5.00	Very Responsive	4.20-5.00
Efficient	3.40-4.19	Effective	3.40-4.19	Responsive	3.40-4.19
Average	2.60-3.39	Average	2.60-3.39	Average	2.60-3.39
Inefficient	1.80-2.59	Ineffective	1.80-2.59	Unresponsive	1.80-2.59
Very Inefficient	1.00-1.79	Very Ineffective	1.00-1.79	Very Unresponsive	1.00-1.79

## 4. Results and Discussions

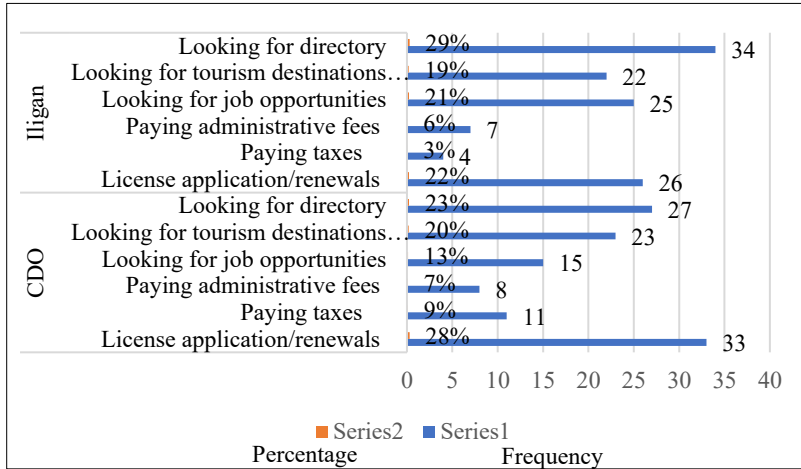
### 4.1 LGUs' Delivery Models of E-governance

E-government offers services to those within its authority to transact electronically with the government. These services differ according to users' needs, and this diversity has given rise to the development of different type of e-government. According to the World Bank, (2002)[11]; Seifert (2003) the e-Governance delivery models can be briefly summed up as follows; G-2-C (Government to Citizens), G-2-B (Government to Businesses), G-2-E (Government to Employees) and G-2-G (Government to Governments) [12].

The identification of the various delivery models of e-governance provided is an important aspect in categorizing as to what phase of e-governance transformation did they achieve. Hence, this part of the paper presents an inventory of the various e-governance services provided by the two highly urbanized cities in Northern Mindanao, Philippines. The listing was based on the respondents' actual experiences and transactions to their respective cities that which facilitated the service delivery through e-governance.

**4.1.1 (G-2-C) Government to Citizens Services**

As reflected in Figure 2, looking for directory is the most accessed service among Iligan citizen respondents with 29% responses out of the 45-total number of respondents. On the other hand, for CDO citizen respondents, findings revealed that license application and renewals is the most availed service out of the 45-total number of respondents which garnered 28% responses.

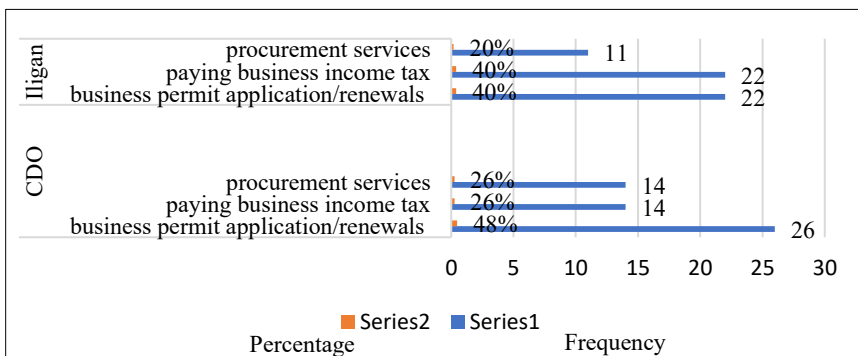


*Note: This is a multiple responses item.*

**Fig. 2.** Bar graph on the Citizen Respondents’ E Governance Services Availed/Accessed From their Respective City Governments

**4.1.2 (G-2-B) Government to Business Services**

Figure 3 unveils the data that paying income tax and business permit/renewals are the most availed services by Iligan business sector respondents with 40% responses respectively out of the 39-total number of respondents.



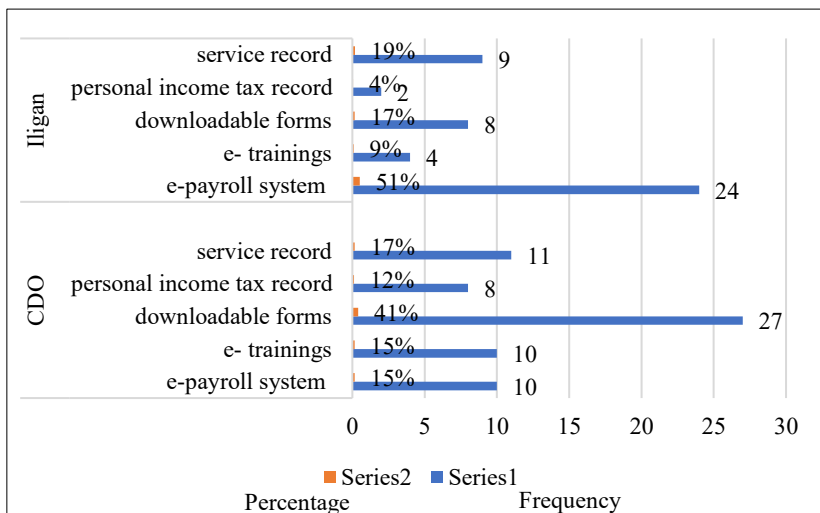
*Note: This is a multiple responses item.*

**Fig. 3.** Bar graph on the Business Sector Respondents’ E-Governance Services Availed/Accessed From their Respective City Governments

Likewise, CDO business sector respondents’ highest availed e-governance service is business permit application/renewals with 48% out of 35-total number of respondents. Both cities have established automated processes for business transactions, as indicated by their official websites. Nonetheless, aside from the downloadable forms available at the websites, the two LGUs already had established automated processes pertaining to business related transactions.

**4.1.3 (G-2-E) Government to Employees Service**

Figure 4 presents the responses of the city hall employee respondents on the e-governance services that they availed/accessed from their own city governments. Majority of the respondents from Iligan availed the e-payroll system with 51% responses out of the 35-total number of respondents. In contrast to the responses from CDO wherein downloadable forms is the most availed/accessed service with 41% responses out of the 35-total number of respondents.



*Note: This is a multiple responses item.*

**Fig. 4.** Bar graph on the City Hall Employee Respondents’ E-Governance Services Availed/Accessed From their Respective City Governments

**4.1.4 (G-2-G) Government to Government Services**

G-2-G refers to the online communications between government organizations, departments and agencies based on a super-government database [13]. Moreover, it refers to the relationship between governments. Based on the interview with the CDO key informants, the local government of CDO’s G-2-G Services include the online building permit management system accessed by DOLE in Region X and the Bureau of Fire, and the e-payroll system software shared to LGU-Iligan through a Memorandum of Agreement (MOA) (KI Number 1, personal interview, October 17, 2021).

On the other hand, according to the key informants' interview, LGU-Iligan's G-2-G efforts include the regular posting of Memoranda, announcements, and the likes at the city's official website where other government agencies can access and benefitted like the DILG, DPWH and among others (KI Number 3, personal interview, October 10, 2021). Consequently, LGU-Iligan through the ICT Council organized and facilitated the MINVIZ (Mindanao and Vizayas) Business Conference in 2019, and established MOAs with other LGUs in promoting MINVIZ business initiatives through automated linkages which foster fast and easy business transactions. Also, LGU-Iligan established an ICT Hub in collaboration with the Department of Trade and Industry (DTI) (KI Number 4, personal interview, October 21, 2021).

In summary, the findings on the two cities' delivery models of e-governance can be classified to Stage 3: Transactional services where their existing websites engage in two-way communication with their citizens, including requesting and receiving inputs on government policies, programs, regulations, and processing of non-financial transactions likes filing taxes online or applying for certificates, licenses and permits [14].

#### 4.2 Respondents' Perceived Efficiency, Effectiveness, Responsiveness, and Satisfaction of Service Delivery Through E-governance

As shown in Table 3, CDO citizen respondents perceived their LGU's e-governance implementation as Efficient with an overall mean score of 3.52, Effective with an overall mean score of 3.55, and Responsive with an overall mean score of 3.43. As for the satisfaction rating, the respondents generally Agreed on the statement indicators with a corresponding over all mean score of 3.47.

**Table 3.** Responses of CDO Citizens on the Efficiency, Effectiveness, Responsiveness and Satisfaction of Service Delivery Through E-Governance

Statement Indicators	Weighted Mean	Qualitative Description
E- governance implementation in my city promotes <i>efficiency</i> because it reduces cost and resources in the delivery of the following services:		
a. administrative services	3.64	Efficient
b. economic services	3.58	Efficient
c. health services	3.40	Efficient
d. infrastructure services	3.47	Efficient
e. welfare services	3.51	Efficient
<b>Over all Mean</b>	<b>3.52</b>	<b>EFFICIENT</b>
E- governance implementation in my city promotes <i>effectiveness</i> because administrators are legitimate experts of their fields, hence, they have the capacity and authority in delivering the following services:		
a. administrative services	3.58	Effective
b. economic services	3.53	Effective
c. health services	3.60	Effective
d. infrastructure services	3.53	Effective
e. welfare services	3.49	Effective
<b>Over all Mean</b>	<b>3.55</b>	<b>EFFECTIVE</b>
E-governance in my city facilitates <i>responsiveness</i> because the delivery of the following services is prompt:		
a. administrative services	3.47	Responsive
b. economic services	3.44	Responsive
c. health services	3.40	Responsive
d. infrastructure services	3.42	Responsive
e. welfare services	3.42	Responsive
<b>Over all Mean</b>	<b>3.43</b>	<b>RESPONSIVE</b>
<b>On Satisfaction</b>		
E-governance implementation has empowered me as a citizen residing in this city.	3.53	Agree
E-governance implementation in my city is considered a success.	3.42	Agree
I am satisfied of the e-governance services offered/delivered by my city government.	3.44	Agree
<b>Over all Mean</b>	<b>3.47</b>	<b>AGREE</b>



Based on the findings, the respondents had undeviating agreements in all statement indicators which can be implied that they were all satisfied with the efficiency, effectiveness, and responsiveness of the e-governance services offered by their city government. As demonstrated in the theory of reasoned Action, the Technology Acceptance Model postulates that the use of an information system is determined by the behavioural intention, but on the other hand, that the behavioral intention is determined by the person's attitude towards the use of the system and also by his perception of its utility [15] (Dillon and Morris, 1996). The results of the findings can be implied also that it had fostered e-governance in their respective areas.

**Table 4.** Responses of Iligan City Citizens on the Efficiency, Effectiveness, Responsiveness and Satisfaction of Service Delivery Through E-Governance

Statement Indicators	Weighted Mean	Qualitative Description
E- governance implementation in my city promotes <b>efficiency</b> because it reduces cost and resources in the delivery of the following services:		
a. administrative services	3.56	Efficient
b. economic services	3.71	Efficient
c. health services	3.51	Efficient
d. infrastructure services	3.51	Efficient
e. welfare services	3.67	Efficient
<b>Over all Mean</b>	<b>3.59</b>	<b>EFFICIENT</b>
E- governance implementation in my city promotes <b>effectiveness</b> because administrators are legitimate experts of their fields, hence, they have the capacity and authority in delivering the following services:		
a. administrative services	3.62	Effective
b. economic services	3.60	Effective
c. health services	3.53	Effective
d. infrastructure services	3.44	Effective
e. welfare services	3.58	Effective
<b>Over all Mean</b>	<b>3.56</b>	<b>EFFECTIVE</b>
E-governance in my city facilitates <b>responsiveness</b> because the delivery of the following services is prompt:		
a. administrative services	3.29	Average
b. economic services	3.36	Average
c. health services	3.38	Average
d. infrastructure services	3.13	Average
e. welfare services	3.36	Average
<b>Over all Mean</b>	<b>3.30</b>	<b>AVERAGE</b>
<b>On Satisfaction</b>		
E-governance implementation has empowered me as a citizen residing in this city.	3.42	Agree
E-governance implementation in my city is considered a success.	3.29	Neutral
I am satisfied of the e-governance services offered/delivered by my city government.	3.22	Neutral
<b>Over all Mean</b>	<b>3.31</b>	<b>NEUTRAL</b>

As presented in the Table 4, the respondents evaluated e-governance service delivery as Efficient and Effective with an overall mean score of 3.59 for efficiency and 3.56 for effectiveness. However, it can be noticed that for the statement indicators evaluating responsiveness, the respondents rated Average with an overall mean score of only 3.30. Consequently, for the satisfaction rating, the respondents had a general rating of Neutrality with an overall mean score of 3.31. Hence, it can be implied that the respondents' neutral rating on satisfaction can be attributed to the average rating on responsiveness. It can also be since they have difficulty of accessing the website because it is not user friendly and not updated as well. Referring to the TAM, ease of use refers to an individual's belief that new technology requires minimal time and effort [16]. perceived ease of use as "the degree to

which an individual believes that using a particular system would be free of physical and mental effort.” Davis again state that an application perceived to be easier to use is more likely to be accepted by the users [17].

Phill Thompson emphasized in his article entitled, “What Makes an Award-Winning Government Website,” a good government website should feature data delivery which are intelligent and designed-focused; navigation that facilitates simple, purpose-driven, and intuitive; and media which are eye-catching and consistent with the content and most importantly, the information sharing is integrative and shareable. Moreover, a government website should consider its usability which address the citizen’s needs; a design that emphasize simplicity, while keeping it engaging, development that ensures accessibility, mobility, and quickness [18].

Table 5 reveals the responses of CDO business sector’s evaluation on the efficiency, effectiveness, responsiveness, and satisfaction of service delivery through e-governance implementation of their city government. As reflected in the table, the respondents rated the implementation as Efficient, Effective, and Responsive with corresponding mean scores of 3.80 for efficiency, 3.77 for effectiveness, and 3.66 for responsiveness. As for satisfaction, the respondents Agreed with the statement indicators with an overall mean score of 3.70.

Based on the findings, the CDO business sector respondents have the same evaluation with the citizen respondents wherein they generally rated the e-governance service delivery of their city government as efficient, effective, responsive and they were all satisfied of the services that it had offered and delivered. Based on the TAM, perceived usefulness refers to an individual's belief that a technology will enhance their job performance, helping them achieve work goals [19]. Hence, it can be implied that the service delivery through e-governance of the city government of CDO is perceived to be useful in enhancing and achieving the respondents’ work goals.

**Table 5.** Responses of CDO Business Sector on the Efficiency, Effectiveness, Responsiveness and Satisfaction of Service Delivery Through E-Governance

Statement Indicators	Weighted Mean	Qualitative Description
E- governance implementation in my city promotes <b>efficiency</b> because it reduces cost and resources in transacting my business’ license application and operations.	3.80	Efficient
E- governance implementation in my city promotes <b>effectiveness</b> because administrators are legitimate experts, hence, they are capacitated and authorized in facilitating/providing business license application and operations.	3.77	Effective
E-governance in my city facilitates <b>responsiveness</b> because transactions pertaining to business license application and operation are prompt.	3.66	Responsive
<b>On Satisfaction</b>		
E-governance implementation in my city has empowered me to adopt e-commerce.	3.77	Agree
E-governance implementation in my city is considered a success because it has helped a lot in improving my business operations.	3.77	Agree
I am satisfied of the e-governance services offered/delivered by my city government.	3.54	Agree
<b>Over all Mean</b>	<b>3.70</b>	<b>AGREE</b>

The data disclosed in Table 6 reflects the evaluation of Iligan city business sector respondents on the e-governance implementation of their city government. As reflected in the table, the respondents rated the service delivery as Efficient with a mean score of 3.59. However, the respondents evaluated effectiveness as Average with a mean score of 3.33, and

responsiveness also Average with a mean score of 3.18. Consequently, they had a Neutral agreement on satisfaction with a corresponding overall mean score of 3.24.

Based on the above data, it can be implied that CDO and Iligan business sector respondents had different evaluation of the e-governance implementation of their respective city governments. Moreover, the neutral satisfaction rating of Iligan business sector respondents can be attributed to the average evaluation on effectiveness and responsiveness. Hence, it can be implied that although the respondents rated the service delivery as efficient, they felt effectiveness and responsiveness as only average maybe because of the limited online services provided by the city government which could have facilitated actual and prompt service delivery.

Openness was interpreted to mean the probability of obtaining government's information and the simplicity with which citizens can find, process, and use such information. Really, ability to access information empowers the citizens as it ensures service delivery. It also gives citizens the right to hold governmental agencies and institutions accountable for service delivery [20]. Given the above findings, it can be further implied that the limited online services provided by the city government had affected the openness of information which could have facilitated the efficiency, effectiveness, and responsiveness of service delivery.

**Table 6.** Responses of Iligan Business Sector on the Efficiency, Effectiveness, Responsiveness and Satisfaction of Service Delivery Through E-Governance

Statement Indicators	Weighted Mean	Qualitative Description
E- governance implementation in my city promotes <b>efficiency</b> because it reduces cost and resources in transacting my business' license application and operations.	3.59	Efficient
E- governance implementation in my city promotes <b>effectiveness</b> because administrators are legitimate experts, hence, they are capacitated and authorized in facilitating/providing business license application and operations.	3.33	Average
E-governance in my city facilitates <b>responsiveness</b> because transactions pertaining to business license application and operation are prompt.	3.18	Average
On Satisfaction		
E-governance implementation in my city has empowered me to adopt e-commerce.	3.28	Neutral
E-governance implementation in my city is considered a success because it has helped a lot in improving my business operations.	3.36	Neutral
I am satisfied of the e-governance services offered/delivered by my city government	3.08	Neutral
<b>Over all Mean</b>	<b>3.24</b>	<b>NEUTRAL</b>

Table 7 reveals the findings that CDO city hall employee respondents evaluate their own service delivery with respect to e-governance implementation as Efficient with an overall mean score of 3.85, Effective with an overall mean score of 3.81, and Responsive with an overall mean score of 3.75. Also, for satisfaction, they Agreed with an overall mean score of 3.84. The findings coincide with the evaluation of the citizen and business sector respondents. The harmony of satisfaction between the citizens, business, and the employees themselves

clearly showed a receptive culture of acceptance to e-governance which can be cultivated to increase the success of IT for good governance, both inside and outside government [21]. Governments are expected to adopt information and communication technology to improve organization and services. ICT not only brought organizational change, but also aimed to change and modernize public administration and governmental services [22].

**Table 7.** Responses CDO City Hall Employees on the Efficiency, Effectiveness, Responsiveness and Satisfaction of Service Delivery Through E-Governance

Statement Indicators	Weighted Mean	Qualitative Description
E- governance implementation in my city promotes <b>efficiency</b> because it reduces cost and resources in the following services that we deliver:		
a. administrative services	3.89	Efficient
b. economic services	3.86	Efficient
c. health services	3.80	Efficient
d. infrastructure services	3.74	Efficient
e. welfare services	3.94	Efficient
<b>Over all Mean</b>	<b>3.85</b>	<b>EFFICIENT</b>
E- governance implementation in my city promotes <b>effectiveness</b> because our administrators are legitimate experts, hence, they have the capacity and authority to deliver the following services:		
a. administrative services	3.94	Effective
b. economic services	3.77	Effective
c. health services	3.74	Effective
d. infrastructure services	3.77	Effective
e. welfare services	3.83	Effective
<b>Over all Mean</b>	<b>3.81</b>	<b>EFFECTIVE</b>
E-governance in my city facilitates <b>responsiveness</b> because we deliver the following services promptly:		
a. administrative services	3.77	Responsive
b. economic services	3.80	Responsive
c. health services	3.71	Responsive
d. infrastructure services	3.66	Responsive
e. welfare services	3.80	Responsive
<b>Over all Mean</b>	<b>3.75</b>	<b>RESPONSIVE</b>
<b>On Satisfaction</b>		
E-governance implementation in my city has empowered me because it has helped me a lot in the discharge of my duties and responsibilities as a government employee.	3.91	Agree
E-governance implementation in my city is considered a success.	3.83	Agree
I am satisfied of the e-governance services offered/delivered by my city government.	3.77	Agree
<b>Over all Mean</b>	<b>3.84</b>	<b>AGREE</b>

Table 8 reveals a pattern of results of the responses from Iligan citizens and business sector respondents. As revealed, Iligan city hall employee respondents, also evaluated their own service delivery through e-governance as Efficient with an overall mean score of 3.55, Effective with an overall mean score of 3.50, and Average responsiveness with an overall mean score of 3.38. Nevertheless, unlike the Neutral rating of satisfaction by the citizen and business sector respondents, the city hall employee respondents themselves had Agreed that they were satisfied with e-governance implementation with corresponding overall mean score of 3.49. Consequently, it can be noted from the findings that the respondents were consistent with their evaluation particularly on infrastructure services of which they rated it as Average with respect to efficiency, effectiveness, and responsiveness of service delivery.

This evaluation coincided with the limited e-governance infrastructure services that they provide as evidently seen at the Iligan City official website.

Moreover, this finding also matched with the citizen respondents' evaluation on the responsiveness of infrastructure service delivery as average although the scope of the data did not deal with correlation. Hence, it can be implied that infrastructure service delivery with respect to e-governance implementation has the least approval of the respondents among other delivery services provided.

In summary, efficient, effective, responsive, and satisfying governance requires efficient institutions. These, in turn, depends on their delivery mechanism and supportive framework of rules and procedures, each of which must work in harmony with the other to discharge the functions for which the institutions have been created. One of enablers of efficient governance is use of information and communication technology for bringing efficiency in institutions [23].

Based on the findings, data revealed that the neutral responses of the respondents on few statement indicators can be attributed to the limitations of the two cities on resources and technologies to cater all services. Hence, the findings corroborate the study of Iglesias where he revealed that the volume of work related to services provided by local governments which could be made more efficient, effective, transparent, accountable and equitable using relevant technologies [24].

**Table 8.** Responses of Iligan City Hall Employees on the Efficiency, Effectiveness, Responsiveness and Satisfaction of Service Delivery Through E-Governance

Statement Indicators	Weighted Mean	Qualitative Description
E- governance implementation in my city promotes <b>efficiency</b> because it reduces cost and resources in the following services that we deliver:		
a. administrative services	3.77	Efficient
b. economic services	3.57	Efficient
c. health services	3.49	Efficient
d. infrastructure services	3.34	Average
e. welfare services	3.57	Efficient
<b>Over all Mean</b>	<b>3.55</b>	<b>EFFICIENT</b>
E- governance implementation in my city promotes <b>effectiveness</b> because our administrators are legitimate experts, hence, they have the capacity and authority to deliver the following services:		
a. administrative services	3.57	Effective
b. economic services	3.51	Effective
c. health services	3.46	Effective
d. infrastructure services	3.37	Average
e. welfare services	3.57	Effective
<b>Over all Mean</b>	<b>3.50</b>	<b>EFFECTIVE</b>
E-governance in my city facilitates <b>responsiveness</b> because we deliver the following services promptly:		
a. administrative services	3.49	Responsive
b. economic services	3.31	Average
c. health services	3.34	Average
d. infrastructure services	3.23	Average
e. welfare services	3.54	Responsive
<b>Over all Mean</b>	<b>3.38</b>	<b>AVERAGE</b>
<b>On Satisfaction</b>		
E-governance implementation in my city has empowered me because it has helped me a lot in the discharge of my duties and responsibilities as a government employee.	3.63	Agree
E-governance implementation in my city is considered a success.	3.43	Agree
I am satisfied of the e-governance services offered/delivered by my city government.	3.40	Agree
<b>Over all Mean</b>	<b>3.49</b>	<b>AGREE</b>

## 5. Conclusions and Implications

The conclusions and implications drawn from the findings of the study is based on the assessment of the delivery models of e-governance that the two highly urbanized cities had provided to their constituents and the effects of e-government on their service delivery as perceived by the respondents.

Based on the above findings in can be concluded that looking for directory is the most accessed G-2-C service among Iligan citizen respondents with 29% responses out of the 45-total number of respondents. In contrast, CDO citizen respondents availed most on license application and renewals services with 28% responses out of the 45-total number of respondents. Paying income tax and business permit/renewals are the most availed G-2-B services by both LGUs' business sector respondents with 40% responses for Iligan out of the 39-total number of respondents, and 48% responses for CDO out of the 35-total number of respondents. Majority of the respondents from Iligan availed the e-payroll system with 51% responses in contrast to the responses from CDO wherein downloadable forms is the most availed/accessed G-2-E service with 41% responses out of the 35-total number of respondents.

The local government of CDO's G-2-G Services include the online building permit management system accessed by DOLE in Region X and the Bureau of Fire, and the e-payroll system software shared to LGU-Iligan through a Memorandum of Agreement (MOA). On the other hand, LGU-Iligan's G-2-G efforts include the regular posting of Memoranda, announcements, and the likes at the city's official website where other government agencies can access and benefitted like the DILG, DPWH and among others. LGU-Iligan through the ICT Council organized and facilitated the MINVIZ (Mindanao and Vizayas) Business Conference last year 2019, and established MOAs with other LGUs in promoting MINVIZ business initiatives through automated linkages which foster fast and easy business transactions. Also, LGU-Iligan established an ICT Hub in collaboration with the Department of Trade and Industry (DTI). It is therefore implicit in the findings that, both cities had almost similar provisions which facilitated the furtherance of e-governance service delivery in their respective areas of responsibilities.

As presented in the above findings, it can be inferred that LGU-CDO has more welfare e-governance services. In contrast, LGU-Iligan has more administrative e-governance services and few online services which can be accessed at the city's official website. Both LGUs are implementing e-governance and established delivery services particularly administrative, economic, health, infrastructure and welfare services though varied platforms like official website, internal system, mobile applications, and social media page. Aside from the online services provided, both LGUs also had existing internal systems that provide electronic transactions to their respective clientele. CDO city respondents had undeviating agreements in all statement indicators which can be implied that they were all satisfied with the efficiency, effectiveness, and responsiveness of the e-governance services offered by their city government had fostered e-governance in their respective areas.

On the other hand, in Iligan, it can be implied that the respondents' neutral rating on satisfaction can be attributed to the average rating on responsiveness. It can also be due to the fact that they have difficulty of accessing the website because it is not user friendly and not updated as well. It can be implied further that CDO and Iligan business sector respondents had different evaluations of the e-governance implementation of their respective city governments. Moreover, it can be implied that although the Iligan City respondents rated the service delivery as efficient, they felt effectiveness and responsiveness as only average maybe because of the limited online services provided by the city government which could have facilitated actual and prompt service delivery. It can be implied also that infrastructure

service delivery with respect to e-governance implementation has the least approval of the respondents among other delivery services provided.

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