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E-government Implementation in Calamba Water District and Public Trust: Basis for Enhancement Program

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Abstract. The research comprehensively analyzed the relationship between the e-government implementation of Calamba Water District (CWD) and the level of public trust among the concessionaires. It also delved into the challenges faced by concessionaires in utilizing CWD e-government services and the factors influencing their trust in its implementation. The study employed a descriptive-correlational design and surveyed 397 CWD concessionaires in Calamba, Laguna, who had internet access and were actively engaged with CWD e-government services. Data collection was facilitated using a carefully selected research instrument and was analyzed using statistical treatments including simple mean, Four-point Likert Scale, standard deviation, and Pearson r. The research revealed a significant correlation between CWD's e-government implementation and the level of public trust among concessionaires. Specifically, the study revealed a substantial link between the level of e-government implementation in terms of ICT infrastructure, online services communication, human capital, privacy and security risks, ease of use, and usefulness of e-government services and public trust level among the concessionaires in terms of information, service, system quality, technology, and the government institution. It indicated that the higher the level of e-government implementation, the higher the public trust level among the concessionaires. Based on these findings, the study recommended an enhancement program to improve various aspects of the current e-government implementation of Calamba Water District. The proposed program focuses on addressing privacy and security risks, enhancing the user-friendliness of CWD e-government services, improving service quality related to ICT infrastructure and online communication, and enhancing the competency of CWD personnel. These enhancements are expected to bolster the overall program and ultimately increase public trust among concessionaires.

Keywords: E-government; Calamba Water District; Public trust; Concessionaires; Implementation.

1.0 Introduction

Governance is a system that includes principles usually supported by laws and regulations when managing an organization. It encompasses how an organization legally operates, directs, and holds stakeholders accountable. In the current generation, governance is more important than ever. This is because people tend to trust and look for someone with the authority to deliver, listen, and meet their changing needs. In doing so, e-government that uses technology has come into the picture.

As it is, technology continues to be relevant in people's daily lives. Almost everything is done online nowadays, and the use of Information Communication Technologies (ICTs) has become convenient in the service industry. Most agencies and institutions in the public sector are also now leaning towards technology-based services to extend further and deliver quality public service to their stakeholders. Electronic government (e-government) is one of the technology-based services that has been adopted in diverse parts of the world. Its purpose is to provide

government information on the web that is clickable and accessible anytime and anywhere for the stakeholders' convenience. It also aims to positively influence the government's service delivery and increase efficiency, transparency, and citizen participation. In this view, E-government used ICTs as a transformational support tool in advancing good governance.

In the Philippines, the House of Representatives (HOR) passed the E-Governance Act on March 6, 2023, with the aim of expediting public service delivery (Press and Public Affairs Bureau, 2023). The House Bill (HB) No. 7327, authored by House Speaker Ferdinand Martin G. Romualdez, was titled "An Act Institutionalizing the Transition of the Government to E-Governance in the Digital Age, Creating for the Purpose the Philippine Infostructure Management Corporation and Appropriating Funds thereof". Among its key objectives, HB No. 7327 sought to "promote the use of the internet, ICTs, and emerging technologies within and across government agencies to provide citizen-centric government information and services and improve the public trust and citizen participation in the government".

In Calamba Water District (CWD), e-government initiatives are being processed. CWD launched electronic collections through online-based platforms such as Landbank LinkBiz Portal and GCash in August 2020 and July 2021, respectively. These were launched to provide a convenient means of paying water bills and other fees online to their 66,108 concessionaires. A communication system in the form of text blasting, which aims to inform the concessionaires of their water bill due balances, disconnection water service interruption, and other announcements, has also been available since 2020. Moreover, the CWD website or online portal is already available for the different concerns of concessionaires since its launch in 2015. With these existing e-government initiatives, however, there still needed to be a question of public trust or whether the public had a positive perception and confidence about the actions and initiatives of the government to be correct and fair to them.

As previously mentioned, HB No.7327 laid out policies that can establish citizen-centric government information and services, resulting in improved public trust. The concept of public trust in e-government was the citizen's participation in using ICTs to acquire services and conduct transactions with the government. E-government implementation was said to be one of the government's solutions to maintain a positive image and relationship with the citizens through ICT.

The Philippines needed to catch up in terms of e-government implementation. Based on the United Nations (UN) E-Government Development Index 2022, the Philippines dropped 12 and placed 89th out of 193 UN members in the E-Government Survey. The index measured the readiness and capacity of national institutions to use ICTs to deliver public services (Business World, 2022). It was a concerning problem, mainly because the funding support for e-government in the Philippines was institutionalized in the national budget and was stated to amount to an average of Php 1 billion a year (Bajar, 2020). With this vast amount of public funds appropriated to e-government implementation, public trust should be ensured. Thus, it was essential to identify the status of Philippine government agencies in e-government implementation. To do this, the aspects of e-government implementation should be looked at. The extent of e-government implementation and its effect on public trust will be identified from then.

The primary objective of this research was to examine the correlation between e-government implementation and public trust, specifically in the context of Calamba Water District (CWD). As the main provider of water and sanitation services in Calamba, CWD's e-government initiatives hold significant implications for public trust. The insights gained from this study could serve as a cornerstone for CWD in developing an enhancement program that promotes e-government services and initiatives, thereby fostering public trust. This research also paves the way for future studies on e-government implementation in other government organizations.

2.0 Methodology

2.1 Research Design

The quantitative research design, specifically the descriptive-correlational approach, was strategically chosen for this study. It was instrumental in determining the relationship between the implementation of e-government in Calamba Water District (the independent variable) and the public trust level (the dependent variable). The use of descriptive analysis to depict the level of e-government implementation and discuss the level of public trust, and

correlational analysis to measure the association between these variables, was crucial. These analyses not only ensured validity for the measurements, tested the hypotheses, and interpreted the results, but also provided a comprehensive understanding of the data gathered from the respondents. The method chosen, the descriptive-correlational method, was selected with the intent to describe and discover the relationship between the variables of the study. It's important to note that this method, as Canonizado (2020) explains, does not manipulate the variables or seek a direct cause-effect relationship. Instead, it aims to understand, describe, and assess the statistical relationship between the independent and dependent variables of a study, which aligns perfectly with the objectives of this research. Furthermore, the research aimed to establish a link or relationship between variables. To achieve this, data relevant to the study, based on the behavior and feedback of the participants, were collected. This was done through the administration of survey questionnaires, ensuring that the data collected was directly from the participants, thereby enhancing the reliability of the study's findings.

2.2 Research Participants

The research was conducted in Calamba City, particularly in the Calamba Water District (CWD). A total sample size of 397 concessionaires was selected to be the respondents of this study. This study employed quota sampling to select the corresponding number of respondents. Quota sampling was a non-random technique for selecting representatives from the population subgroup that the researcher defines (Frost, 2022).

2.3 Research Instrument

This study adopted the survey instrument (Alkhateeb & Abdalla, 2021), which represented the level of e-government implementation of Calamba Water District from the concessionaires' perspective. Moreover, Capistrano's (2020) survey instrument was adopted to represent the level of public trust among concessionaires. These were adopted based on the review of related literature regarding e-government implementation and public trust. Permission to adopt the survey instruments of the authors above was asked for and given through email communication with these authors. The survey instrument consisted of two parts. The first part regarded the constructs of e-government implementation by Calamba Water District from the concessionaries' perspective, and the second part determined the level of the concessionaires' or public trust.

The results of the reliability and validity tests of the adopted research instrument items were tested using Cronbach's Alpha Coefficient and Confirmatory Factor Analysis, respectively. The reliability and validity of the research instrument items were tested using Cronbach's Alpha Coefficient. All of the coefficient values were above the cutoff value of 0.7, as determined by Nunnally (1978, as cited in Amirrudin et al., 2020), which is the acceptance measure for reliability.

Moreover, the adopted research instrument items were tested using Multigroup Confirmatory Factor Analysis. Following the standard rules of thumb on validity and reliability by Hair et al. (2020), acceptable average variance extracted (AVE>0.50) and composite reliability (CR>0.70) were achieved. All the coefficient results for each survey item were proven to be significant and acceptable.

2.4 Data Gathering Procedure

The survey questionnaires were administered to the respondents to retrieve ratings on the e-government implementation of CWD and public trust. These were distributed in two ways. Some were administered on the premises of CWD for those concessionaires who were approached and agreed to answer the questionnaire during office hours. In addition, most concessionaires were contacted through email to answer the questionnaire online via Google Forms. After the responses to the questionnaires were gathered, data was scored, tallied, and tabulated for presentation and analysis. With the expertise and guidance of the statistician, the necessary statistical treatments were done to the data to further analyze, interpret, and incorporate it to answer the study's problem statement and hypothesis.

2.5 Ethical Considerations

Ethical considerations were followed in the study. Furthermore, the study was executed following the five principles for research ethics as mentioned in the American Psychological Association's Ethics Code, which included beneficence and non-maleficence, fidelity and responsibility, integrity, justice, and respect for people's rights and dignity (Cherry, 2023). The survey questionnaire was made sure to be voluntarily answered by the

concessionaires. Respondents were also assured that their opinions and other personal information would be protected in compliance with the Data Privacy Act of 2012. The primary and secondary data gathered were treated with the utmost confidentiality, and the related studies of other researchers and authors were cited correctly.

2.6 Data Analysis

The Statistical Package for Social Sciences (SPSS) analyzed the data. The simple mean, four-point Likert scale, and standard deviation were used to measure the perception of Calamba Water District concessionaires on the level of e-government implementation and level of public trust. The Pearson Product-Moment Correlation was used to measure the strength and direction of the relationship between the level of e-government implementation in Calamba Water District and the level of public trust from the perspective of concessionaires.

3.0 Results and Discussion

3.1 E-Government Implementation Level In Calamba Water District as Assessed by the Concessionaire

ICT Infrastructure

Table 1. Descriptive statistics of e-government implementation level in terms of ICT infrastructure

	INDICATORS	MEAN	INTERPRETATION
1.	Through the available ICT infrastructure used in the e-government services of Calamba Water District, I get the government information I need anywhere and anytime.	3.00	Implemented
2.	The available ICT infrastructure supporting the e-government services of Calamba Water District is always reliable.	2.93	Implemented
3.	The available ICT infrastructure supporting the e-government services of Calamba Water District is always secure.	3.02	Implemented
4.	Digital information provided by e-government services of Calamba Water District is up-to-date.	2.88	Implemented
5.	Overall, the available ICT infrastructures used by Calamba Water District to operate their e-government services are satisfactory.	2.98	Implemented
General Assessment		**2.96**	**Implemented**

Legend: 3.25-4.00 Strongly Agree - Fully Implemented (FI) 2.50-3.24 Agree - Implemented (I) 1.75-2.49 Disagree - Partially Implemented (LI) 1.00-1.74 Strongly Disagree - Not Implemented (NI)

As shown in Table 1, the indicator "The available ICT infrastructure supporting the e-government services of Calamba Water District is secure all the time" yielded the highest mean of 3.02, interpreted as Implemented. This underscores the robust security measures in place, providing a sense of reassurance. On the other hand, the indicator "Digital information provided by e-government services of Calamba Water District is up-to-date" received the lowest mean score of 2.88, interpreted as Implemented. The finding suggests that the e-government services of Calamba Water District are equipped with cyber security and protection software, which ensures that there are no harmful contents on any of their platforms, be it their website, emails, or online payment portals. Likewise, it ensures that the end-users are protected from the threats of hackers, data loss, phishing, malware, and ransomware, to name some. Calamba Water District is constantly improving its online services and offers its customers secure access to e-government information, enabling a reliable, transparent and efficient government through their ICT infrastructures.

In support of this, the studies of Kuldosheva (2021) and Glyptis et al. (2020) cited that ICT infrastructures were considered a critical factor in e-government implementation and its success. ICT infrastructures were the input and the main driver of e-government services. Its implementation would not be possible without it. In this regard, Sikaonga and Tembo's (2020) findings in the study can be applied, "without the availability of infrastructure, the implementation of e-government will be considered as an unrealistic program". It allowed government service delivery using information technology that included but was not limited to software, hardware, firmware, online payment networks, websites, computers, mobile phones, and the internet. This underscores the crucial role of ICT infrastructures in enabling efficient government services, highlighting their importance.

Similarly, the findings of Hazineh et al. (2022) support this as they stated that these infrastructures were considered vital for the sustainability of e-government services. Therefore, these should be present and available throughout its implementation. It should also be secure and reliable. To do that, a considerable budget should be dedicated and invested by the government to establish available strong ICT infrastructures that could encourage citizens to adopt and trust its services. As Maksimova et al. (2022) cited, investing in the hardware and software infrastructure that supported e-government platforms ensured secure end-user access and was thus considered a

key factor in "enabling reliable, transparent, and efficient government." This emphasizes the necessity of government investment in strong ICT infrastructures, underlining its urgency and importance.

Online Services Communication

Table 2. Descriptive statistics of e-government implementation level in terms of online services communication

INDICATORS		MEAN	INTERPRETATION
1.	E-government services of Calamba Water District offer prompt online communication to citizens.	2.90	Implemented
2.	E-government services of Calamba Water District are responsive to citizens' requests.	2.92	Implemented
3.	My online communication with the e-government services of Calamba Water District has always been good.	2.97	Implemented
4.	I have no negative experiences in transacting online with the e-government services of Calamba Water District.	2.97	Implemented
5.	In general, my transactions with the e-government services of Calamba Water District are satisfactory.	2.99	Implemented
General Assessment		**2.95**	**Implemented**

As shown in Table 2, online services communication under e-government was found to be Implemented ($\bar{X}$=2.95; σ =0.59) in Calamba Water District. The indicator "In general, my transactions with the e-government services of Calamba Water District are satisfactory" yielded the highest mean of 2.99, interpreted as Implemented. Meanwhile, the indicator "E-government services of Calamba Water District offer prompt online communication to citizens" had the lowest mean of 2.90, interpreted as Implemented.

This implies that the concessionaires generally agreed that their communication and transactions with Calamba Water District's e-government services are satisfactory. The standard deviation observed also indicates that the gathered data are consistent around the mean, and there is less data variability in the responses of the concessionaires. Survey results show that, in general, the online communication of the respondents with Calamba Water District has always been good and that they have no negative experiences reaching out to them online. It means that the Calamba Water District and its services are visible and accessible online to cater to the needs of their customers. The findings further infer that Calamba Water District's e-government services offered a communication that is responsive and interactive, making it easier for the concessionaires to engage with them online and get the services and information they need through their email, official website, and online payment portals.

In support, the OECD (2022) stated that the Internet was one of the many components of online services communication. Access to it was vital to get the full benefit of e-government services, and the concept of the digital divide was one of the many challenges of its implementation The results of a previous study by Tejedo-Romero et al. (2022) specified that the quality of online service communication was important in e-government implementation because it made the government institution more visible and accessible to the citizens. This was also in line with the findings of Camilleri (2019), who noted the importance of online service communication in publicizing e-government services and sharing awareness with the citizens that they can transact and engage with them online. In this way, the customers would ultimately and positively view the government's public service delivery and strengthen their relationship and trust with the institution.

Human Capital

Table 3. Descriptive statistics of e-government implementation level in terms of human capital

INDICATORS		MEAN	INTERPRETATION
1.	The Calamba Water District personnel have a reputation for considering citizens' interests when providing e-government services.	3.05	Implemented
2.	Calamba Water District personnel have a reputation for being honest and truthful in carrying out and processing citizens' online transactions.	2.99	Implemented
3.	The Calamba Water District personnel have the reputation of being competent and skillful in carrying out and processing citizens' online transactions.	3.01	Implemented
4.	The Calamba Water District personnel have the reputation of being dependable in their services.	3.01	Implemented
5.	Generally, the level of the provided e-government services through Calamba Water District personnel is satisfactory.	3.03	Implemented
General Assessment		**3.02**	**Implemented**

As shown in Table 3, the human capital under e-government in Calamba Water District was Implemented ($\bar{X}$ =3.02; σ =0.56). As observed, the indicator "The Calamba Water District personnel have the reputation of taking the interests of the citizens into consideration with their e-government services" had the highest mean of 3.05, interpreted as Implemented. Meanwhile, the lowest mean value of 2.99 was observed for the indicator "The Calamba Water District personnel have the reputation of being honest and truthful in carrying out and processing online transactions of citizens," also interpreted as Implemented.

The foregoing findings indicate that their interests include tasks and information they needed to accomplish and access anytime and anywhere concerning Calamba Water District services. For example, refund requests from concessionaires due to incorrect information they provided through the online payment portals require customer support to rectify it. These concerns were considered by the Calamba Water District personnel, who had the necessary knowledge, skills, and capability to assist and accommodate the concessionaires. The findings imply that the e-government services through CWD personnel were being executed in the concessionaires' best interest.

In support, Kumajas (2021) stated that human capital, in terms of competency and capability to manage and process online transactions, was a governmental factor that held a crucial role in e-government implementation. According to them, the reason behind it was its relation to the level of trust and confidence of the citizens towards the government institutions and the belief that its workforce had the knowledge and capability to provide effective services in the best interest of the citizens. Relatively, Alshaher (2020) also mentioned that the perceived support quality, which translated to the overall customer support given by the service provider, was a human capital dimension that was important and critical in measuring e-government implementation.

Customer support quality of human capital, as Suardi (2021) and Alateyah et al. (2021) found in their respective studies, refers to the literacy and knowledge of the people involved in the e-government process on how to utilize its services to make the success of its implementation possible. The findings of Jacob et al. (2021) also suggested that the low levels of technology knowledge or computer literacy within the public service provider were one of the challenges of e-government reforms in developing countries.

Privacy Risks

Table 4. Descriptive statistics of e-government implementation level in terms of privacy risks

INDICATORS	MEAN	INTERPRETATION
1. My personal information given to Calamba Water District's e-government services may be shared with other government agents to whom I do not want to provide the information.	2.17	Partially Implemented
2. Calamba Water District's e-government services may allow another party to access my personal information without my consent.	2.15	Partially Implemented
3. My personal information may be used in an unintended way by Calamba Water District through its e-government services.	2.14	Partially Implemented
General Assessment	**2.15**	**Partially Implemented**

As shown in Table 4, Privacy risks under e-government were Partially Implemented ($\bar{X}$=2.15; σ =0.65) in Calamba Water District. The indicator "My personal information given to Calamba Water District's e-government services may be shared with other government agents to whom I do not want to provide the information" had the highest mean of 2.17, interpreted as Partially Implemented, while "My personal information may be used in an unintended way by Calamba Water District through their e-government services" acquired the lowest mean of 2.14, interpreted as Partially Implemented.

The findings imply that the concessionaires do not worry about losing control over their personal information when transacting online with Calamba Water District's e-government services. Moreover, it means that Calamba Water District takes measures to ensure that the private information of its concessionaires is controlled and preserved so that sharing personal data with others is avoided. If personal data is to be shared with other government institutions, the concessionaires would need informed permission and consent to protect personal information's confidentiality and availability.

As Pribadi et al. (2021) mentioned, privacy risks were important to consider in e-government implementation as they were critical characteristics that stakeholders looked at before using a technological system. This was because it specifically translated to preserving their personal information, not sharing it with others by anonymity, and including informed permission that was all in line with their right to control private property. Khan et al. (2020) also stated the importance of minimal privacy risks in e-services as it translated to stakeholders who were at ease and did not worry about losing control over their personal information.

Security Risks

Table 5. Descriptive statistics of e-government implementation level in terms of security risks

INDICATORS	MEAN	INTERPRETATION
1. Hackers may be able to intrude into Calamba Water District's e-government services and steal my personal information stored on the web.	2.34	Partially Implemented
2. It is not secure to send sensitive information to the e-government services of Calamba Water District.	2.26	Partially Implemented
3. Overall, it is not safe to send information to the e-government services of Calamba Water District.	2.30	Partially Implemented
General Assessment	**2.30**	**Partially Implemented**

As shown in Table 5, security risks under e-government services of Calamba Water District were Partially Implemented ($\bar{X}$ =2.30; σ =0.67). The indicator "Hackers may be able to intrude into e-government services of Calamba Water District and steal my personal information stored on the web" had the highest mean of 2.34, interpreted as Partially Implemented, while "It is not secure to send sensitive information to the e-government services of Calamba Water District" had the lowest mean of 2.26 verbally interpreted as Partially Implemented.

This means that the concessionaires discerned secure online services and connection with Calamba Water District and feel assured that these are safe enough to use. It suggests that security risks with Calamba Water District's e-government services are low. Moreover, it infers that Calamba Water District implemented technical procedures and measures to secure the concessionaires' online public service experience. It means that they consider the risks associated with the security of online connections and give importance to mitigating them by including the encryption mechanisms of their official website and online communication to protect their customers.

In support of the foregoing findings, Munyoka and Maharaj (2019) stated that risks relating to privacy and security were both major issues in implementing e-government. In the study of security in the context of e-government, the safety of the information and administrative data of both users and service providers was related to privacy and security. Privacy and security were both important to consider in online public service delivery because they assured users that they could confidently patronize the government and its services.

According to the book of Shah et al. (2022), risks regarding these two aspects were found to be the threats to e-government implementation. As stated in the research findings in the book, this was one of the reasons why organizations needed to ensure an efficient level of data privacy and integrity along with user authorization to have a level of security for all online transactions. It was suggested that providing e-government services with the necessary privacy and security measures and mechanisms was not optional; it was critical for its existence and success.

Ease of Use of E-government Services

As shown in Table 6, the Ease of use of e-government services of Calamba Water District was Implemented ($\bar{X}$ =2.92; σ =0.59). The indicator "It is easy to learn how to use e-government services of Calamba Water District" yielded the highest mean of 2.97, interpreted as Implemented. On the other hand, the indicator "The use of e-government services of Calamba Water District is flexible" received the lowest mean of 2.80, interpreted as Implemented.

This implies that the e-government services of Calamba Water District are easy to use, particularly in the aspect that these are easy to learn. It further infers that the e-government services of Calamba Water District have a user-friendly interface that creates a positive online experience for the concessionaires. Easy to learn online services of

Calamba Water District conserve the time it will take for customers to accomplish the tasks they need to do and create an opportunity to do more with these services.

Table 6. Descriptive statistics of e-government implementation level in terms of ease of use

INDICATORS	MEAN	INTERPRETATION
1. It is easy to learn how to use the e-government services of Calamba Water District.	2.97	Implemented
2. The use of e-government services of Calamba Water District is clear and understandable.	2.96	Implemented
3. The use of e-government services of Calamba Water District is flexible.	2.80	Implemented
4. Overall, the e-government services of Calamba Water District are easy to use.	2.95	Implemented
General Assessment	**2.92**	**Implemented**

The result was consistent with the findings of Balaskas et al. (2023), who stated that information provided by e-government that was flexible and user-friendly without any restrictions was referred to as perceived ease of use. According to Afable (2020), the success and significant benefit of e-government services were from the perspective of online customers in that they were easy to use and could conserve their time. E-government services that featured and offered ease to online users increased the public's trust in these services, as the findings of Li (2021) also suggested.

The Usefulness of E-government Services

Table 7. Descriptive statistics of e-government implementation level in terms of the usefulness of e-government services

INDICATORS	MEAN	INTERPRETATION
1. I can quickly access information online through the e-government services of Calamba Water District.	2.84	Implemented
2. E-government services of Calamba Water District facilitate transparency and accountability.	2.92	Implemented
3. E-government services of Calamba Water District are more effective and convenient than traditional services.	3.06	Implemented
4. E-government services of Calamba Water District are useful in meeting my purposes.	2.95	Implemented
General Assessment	**2.94**	**Implemented**

As shown in Table 7, the usefulness of e-government services of Calamba Water District was Implemented ($\bar{X}$ =2.94; σ =0.60). The indicator "E-government services of Calamba Water District are more effective and convenient than traditional services" gained the highest mean of 3.06, interpreted as Implemented. Meanwhile, the indicator "I can quickly access information online through e-government services of Calamba Water District" had the lowest mean of 2.92, interpreted as Implemented.

The foregoing results infer that the e-government services of Calamba Water District are deemed useful in accomplishing the services and tasks that concessionaires need to do at their most convenience. Particularly, concessionaires view online services as the most effective in meeting their needs and more convenient than traditional face-to-face or over-the-counter transactions. It also implies that the e-government services of Calamba Water District offer a public service delivery that contributes positive value and benefits the performance of tasks required by the concessionaires by providing the advances of interactive online services that can be accessed anywhere and anytime.

The importance of the usefulness of e-government services in its implementation was also supported by Elkheshin and Saleeb (2020), who stated that usefulness perceived by online users referred to e-government services that promoted effectiveness, performance, and community benefit. Customers patronized government services that added value to their tasks and interests. More so if it were to allow them access to online services and information wherever they wanted and order a product whenever it was suitable for them.

3.2 Public Trust to E-Government Implementation as Assessed by the Concessionaires

Information Quality

As shown in Table 8, the concessionaires had High Trust ($\bar{X}$=2.96; σ =0.60) in information quality relative to the e-government implementation of Calamba Water District. The indicator "I believe that the information provided by the online system of Calamba Water is relevant" had the highest mean of 3.07, verbally interpreted as High Trust. Meanwhile, the indicator "I believe that the information provided by the online system of Calamba Water District is up-to-date" had the lowest mean of 2.89, verbally interpreted as High Trust.

Table 8. Descriptive statistics of public trust level relative to e-government implementation in terms of information quality

INDICATORS	MEAN	INTERPRETATION
1. I believe that the information provided by the online system of Calamba Water District is up-to-date.	2.89	High Trust
2. I believe that the information provided by the online system of Calamba Water is relevant.	3.07	High Trust
3. I believe that the information provided by the online system of Calamba Water District meet my needs.	2.94	High Trust
4. I believe that the information provided by the online system of Calamba Water District is easy to read and understand.	2.97	High Trust
5. The information provided by Calamba Water District's online system is sufficient for the task at hand.	2.94	High Trust
General Assessment	2.96	High Trust

Legend: 3.25-4.00 Strongly Agree - Very High Trust (VHT) 2.50-3.24 Agree – High Trust (HT) 1.75-2.49 Disagree – Low Trust (LT) 1.00-1.74 Strongly Disagree – Very Low Trust (VLT)

It implies that the concessionaires perceived the quality of information being provided based on its appropriateness to their needs and interests. In this regard, the measure of their confidence level and trust was based on their expectation of information that was relevant, appropriate, and updated. As previously mentioned, concessionaires needed information daily, especially when it concerned them (e.g., water bill due dates).

In support of this, the study by Abu Shanab (2019) found the significance of information quality as a measure of public trust in the context of e-government implementation. The reason for its significance was that information was one of the products being provided by the e-government services. In line with this, Khan et al. (2021) found that the citizens' confidence and trust level in information quality was dictated by their perceptions of the fullness and correctness of e-government information.

Moreover, Janssen et al. (2021) stated in their study that information quality was important in measuring public trust in e-government implementation because there was an expectation that the information delivered was accurate, relevant, updated, sufficient, readable, and understandable. It was one of the important factors that affected and motivated the customers' use of e-government services.

Service Quality

Table 9. Descriptive statistics of public trust level relative to e-government implementation in terms of service quality

INDICATORS	MEAN	INTERPRETATION
1. I believe that the service provided by the online system of Calamba Water District responds quickly to my needs.	2.89	High Trust
2. I believe that the service provided by the online system of Calamba Water District is dependable.	2.94	High Trust
3. I believe that the service provided by the online system of Calamba Water District understands my needs.	2.91	High Trust
General Assessment	2.91	High Trust

As shown in Table 9, the concessionaires had High Trust ($\bar{X}$=2.91; σ =0.57) in service quality relative to the e-government implementation of Calamba Water District. The indicator "I believe that the service provided by the online system of Calamba Water District is dependable" incurred the highest mean of 2.94, verbally interpreted as High Trust. In contrast, "I believe that the service provided by the online system of Calamba Water District responds quickly to my needs" acquired the lowest mean of 2.89, verbally interpreted as High Trust.

The foregoing findings imply that they perceive the online services of Calamba Water District as trustworthy and reliable in meeting their needs. This means that they can perform the tasks that they need to accomplish through the help and convenience of these online services with the confidence that they can use them again for their subsequent transactions. In the study by Rasool et al. (2020), the service attributes such as reliability, availability, quality, and usability of the e-government service dictated the public trust in its implementation. In this regard, service quality was explicitly defined as the characteristic of e-government services in addressing customer needs and best interests. It was stated that the response of the online service provider needed not only to be prompt but also appropriate to their needs. According to Alneyadi et al. (2021), trust in service quality specifically measures citizens' confidence and trust in using e-government services. It was important for the service attributes of e-government implementation to be of high quality so that the citizens could support its services.

System Quality

Table 10. Descriptive statistics of public trust level relative to e-government implementation in terms of system quality

INDICATORS	MEAN	INTERPRETATION
4. I believe and trust the online system interface of Calamba Water District because it is easy to use.	2.96	High Trust
5. I believe and trust the online system of Calamba Water District because it is well-organized.	3.00	High Trust
6. I believe in and trust Calamba Water District's online system because it is easy to navigate and use to finish my tasks.	2.95	
7. I believe and trust that the online system of Calamba Water District can be accessed immediately.	2.85	High Trust
General Assessment	2.94	High Trust

As shown in Table 10, the concessionaires had High Trust ($\bar{X}$=2.94; σ =0.60) in system quality relative to the e-government implementation of Calamba Water District. The indicator "I believe and trust in the online system of Calamba Water District because it is well-organized" gained the highest mean of 3.00, which is interpreted as High Trust. Meanwhile, the indicator "I believe and trust in the online system of Calamba Water District can be accessed immediately" had the lowest mean of 2.85, interpreted as High Trust.

This indicates that the e-government system is working effectively and successfully because of the Calamba Water District's good organization. This includes the organization of online information and transactions and how they are presented to the concessionaires through the features and functions of the e-government system that are necessary for users to interact with.

This result aligns with Purwanto et al. (2020) findings that system quality was a transactional delivery attributed to public trust in e-government implementation. They noted that system quality was the completeness and convenience of features and functions necessary for users to interact with online services. Thus, it was considered an important factor that explained the building of trust in the context of e-government implementation. Moreover, Dmour (2021) noted the importance of how essential e-government technologies could make a system well-organized and provide better quality of public service delivery, which in turn enhanced public trust in the government. Therefore, it was vital for government institutions to consider the quality of the e-government system being implemented to gain the public trust and encourage them to engage with its services.

Technology

Table 11. Descriptive statistics of public trust level relative to e-government implementation in terms of technology

INDICATORS	MEAN	INTERPRETATION
1. I believe and trust that the internet has enough safeguards to make me feel comfortable using it to transact with Calamba Water District.	2.99	High Trust
2. I feel assured that Calamba Water District's legal and technological structures adequately protect me from problems on the internet.	3.01	High Trust
3. I feel confident that encryption and other technological advances on the internet make it safe for me to transact online with Calamba Water District.	3.01	
4. The internet is now a robust and safe environment to transact with government institutions like Calamba Water District.	3.08	High Trust
General Assessment	3.02	High Trust

As shown in Table 11, the concessionaires had High Trust ($\bar{X}$=3.02; σ =0.60) in technology relative to the e-government implementation of Calamba Water District. The indicator "I believe that the internet is now a robust and safe environment to make transactions with the government institution like Calamba Water District" gained the highest mean of 3.08, interpreted as High Trust, while the indicator "I believe and trust that the internet has enough safeguards to make me feel comfortable using it to transact with Calamba Water District" had the lowest mean of 2.99 interpreted as High Trust.

It implies that the concessionaires felt assured that they could safely transact and communicate with Calamba Water District e-government services that involve the use of the internet and other technology. They agreed that the internet is now a well-established, safe environment to make transactions with government institutions like Calamba Water District. It also suggests that the privacy and security measures of technology used in government

services of Calamba Water District are in place to assure the concessionaires that they are protected in using these services.

In support of this, the findings of Alawadhi (2021) highlighted that having trust in technology meant that the citizens believed that the technology used to facilitate e-government services was reliable and secure enough to ensure its integrity and maintain their confidence in it. They particularly stated that technology attributes that affected public trust included the e-government services' design, encryption, and the overall integrity of the used program. It was noted that trust in e-government implementation was specifically defined for government applications of technology and its safety measures, making it widely considered an enabler of the public's trust and adoption of e-government services.

Government Institution

Table 12. Descriptive statistics of public trust level relative to e-government implementation in terms of government institution

INDICATORS	MEAN	INTERPRETATION
5. I believe that Calamba Water District acts in the citizen's best interest.	2.93	High Trust
6. I believe that Calamba Water District is truthful, honest, and genuine in its dealings.	2.95	High Trust
7. I believe that Calamba Water District is competent and effective.	2.96	
8. Calamba Water District is reliable in meeting its obligations.	2.95	High Trust
General Assessment	2.95	High Trust

As shown in Table 12, the concessionaires had High Trust ($\bar{X}$ =2.95; σ =0.60) in technology relative to the e-government implementation of Calamba Water District. The indicator "I believe that Calamba Water District is competent and effective" received the highest mean of 2.96, interpreted as High Trust. On the other hand, the indicator "I believe that Calamba Water District acts in citizen's best interest" had the lowest mean of 2.93, interpreted as High Trust.

The foregoing findings indicate that the concessionaires believe that the Calamba Water District, through its implementation of e-government services, is a competent government organization that effectively delivers high-quality public service to them. These imply that they highly trusted the government institution because it offered them a transformational and alternative service that could cater to their needs anywhere and anytime through online transactions and communications with the personnel's help.

This notion was supported by the findings of Bayaga et al. (2020), which stated that trust in the government was a measure of public trust in e-government implementation and the citizens' perceptions of the actual government institution implementing e-government. Relatively, Mahmood et al. (2020) found that citizens trust government based on its "performance, level of transparency, and real actions against officials who hinder the transformation of government services and associated initiatives." Trust in e-government, as stated by Pérez-Morote et al. (2020), was thus reflected in the government-to-citizen relationship, where citizens expected the government to act in a right and fair manner to them. It was, therefore, a reciprocal relationship between government agencies that provided public services and the citizens who expected the government institution and its workforce to be trusted.

3.3 Relationship between the Level of E-Government Implementation and Public Trust

There was a significant relationship between the level of e-government implementation in Calamba Water District and the public trust level among the concessionaires (Table 13). This was shown in the probability values of .000, which was less than the significance level of .05. Thus, the decision was made to reject the null hypothesis. The negative r values of -.506, -.489, -.500, -.441, -.451, -.433, -.404, -.465, and -.444 for variables privacy and security risks indicated a negative relationship. The positive R values are between 0.80 to 1.00, indicating a very strong positive correlation, while the negative R values are between -0.59 and -0.40, which indicate a moderately negative correlation.

Moreover, it indicates that there is a substantial link between the level of e-government implementation in terms of ICT infrastructure, online services communication, human capital, privacy and security risks, ease of use, and usefulness of e-government services and public trust level among the concessionaires in terms of information, service, system quality, technology, and the government institution. This also specifically indicates that the higher the level of e-government implementation, the higher the public trust level among the concessionaires.

Meanwhile, the negative r values of privacy and security risks suggest that when the risk associated with e-government implementation decreases, the public trust level increases and vice versa.

Table 13. Correlation analysis of the relationship between the level of e-government implementation and public trust

E-GOVERNMENT IMPLEMENTATION	PUBLIC TRUST	R-VALUE	P VALUE	REMARKS	DECISION
ICT Infrastructure	Information Quality	.899**	.000	Significant	Reject Ho
	Service Quality	.892**	.000	Significant	Reject Ho
	System Quality	.909**	.000	Significant	Reject Ho
	Technology	.818**	.000	Significant	Reject Ho
	Government Institution	.878**	.000	Significant	Reject Ho
Online Services Communication	Information Quality	.922**	.000	Significant	Reject Ho
	Service Quality	.932**	.000	Significant	Reject Ho
	System Quality	.916**	.000	Significant	Reject Ho
	Technology	.810**	.000	Significant	Reject Ho
	Government Institution	.895**	.000	Significant	Reject Ho
Human Capital	Information Quality	.880**	.000	Significant	Reject Ho
	Service Quality	.884**	.000	Significant	Reject Ho
	System Quality	.879**	.000	Significant	Reject Ho
	Technology	.890**	.000	Significant	Reject Ho
	Government Institution	.849**	.000	Significant	Reject Ho
Privacy Risks	Information Quality	- .506**	.000	Significant	Reject Ho
	Service Quality	- .489**	.000	Significant	Reject Ho
	System Quality	- .500**	.000	Significant	Reject Ho
	Technology	- .441**	.000	Significant	Reject Ho
	Government Institution	- .450**	.000	Significant	Reject Ho
Security Risks	Information Quality	- .433**	.000	Significant	Reject Ho
	Service Quality	- .404**	.000	Significant	Reject Ho
	System Quality	- .465**	.000	Significant	Reject Ho
	Technology	- .481**	.000	Significant	Reject Ho
	Government Institution	- .444**	.000	Significant	Reject Ho
Ease of Use of e-government services	Information Quality	.876**	.000	Significant	Reject Ho
	Service Quality	.922**	.000	Significant	Reject Ho
	System Quality	.922**	.000	Significant	Reject Ho
	Technology	.825**	.000	Significant	Reject Ho
	Government Institution	.846**	.000	Significant	Reject Ho
Usefulness of e-government services	Information Quality	.902**	.000	Significant	Reject Ho
	Service Quality	.939**	.000	Significant	Reject Ho
	System Quality	.886**	.000	Significant	Reject Ho
	Technology	.823**	.000	Significant	Reject Ho
	Government Institution	.808**	.000	Significant	Reject Ho

**. Correlation is significant at the 0.01 level *. Correlation is significant at the 0.05 level (2-tailed).

The foregoing findings are supported by various studies, including that of Defitri et al. (2020), who found that the higher the level of implementation of ICT infrastructure and human capital the government had, the higher the public trust level and confidence of the citizens in them. It also proved that the availability of the necessary infrastructure and highly competent and IT-qualified government employees was vital in the effectiveness of e-government implementation in gaining the trust of the public

Meanwhile, Ejdys et al. (2019) found that perceived security and privacy risks associated with government implementation negatively affected public trust. It was reiterated that as the users of the system perceived that there was a low implementation of privacy and security risk and that their information was secured enough and could not be used in any actions that violated specific laws, their trust in the e-government was enhanced. Habib et al. (2020) also found that a secure e-government implementation that ensured there were enough technological and legal structures in place safeguarded the information provided by the citizens for their privacy, and protected all e-government users would gain higher trust among the citizens.

In addition, Aljazzaf (2019) stated that the perceived ease of use of e-government services positively and significantly influenced public trust. The empirical evidence revealed that citizens' trust in using e-government services would increase if citizens perceived the implementation of the services as easy to use. Similarly, Nofal et al. (2021) found that the higher the level of e-government implementation in terms of the ease of use of e-government services, the higher the public trust in e-government and the more frequent the adoption of its services. Also, according to the study by Capistrano (2020), a significant portion of trust in e-government was

influenced by perceived ease of use. The finding suggested that citizens perceived the internet as easy to find information about e-government. Thus, when the internet was considered easy for citizens to find information about e-government, they tended to trust its services.

On the other hand, Chen and Aklikokou (2020) noted that the perceived usefulness of e-government services positively and significantly influenced public trust. They noted that the more the government implemented useful e-government services, the higher public trust can be gained for both the government institution and the technology. The findings of Hutahaean et al. (2023) also stated that the perceived usefulness of e-government services significantly influenced public trust. This finding confirmed that when citizens find e-government information online as valuable and insightful, it would lead them to have high trust in e-government. Furthermore, it reiterated that trust in e-government tended to increase when e-government information was considered beneficial to society.

3.4 Proposed Enhancement Program

Table 14. Proposed Enhancement Program

KEY AREAS	OBJECTIVES	STRATEGIES /ACTIVITIES	FREQUENCY/TIME FRAME	PERSONS INVOLVED	SOURCE OF FUND	SUCCESS INDICATORS
Additional Provisions to the Privacy and Security Risks Measures	To improve the provisions of privacy and security measures in place of e-government services of Calamba Water District	Inclusion and incorporation of Data Privacy Statement on top of privacy and security policies currently implemented	Annually	CWD Management Information Services (MIS) Section personnel	CWD-Information Systems Strategic Plan's (ISSP) Corporate Operating Budget	100% Data Privacy Statement incorporated and updated annually
Improve Knowledge and Awareness to Enhance Ease of Use of CWD e-government Services	To involve concessionaires and educate them on the use of the CWD e-government services	Conduct of concessionaire orientation or dry runs on the use of CWD e-government services	Annually	CWD MIS personnel and the concessionaires	Admin Department Budget for Seminars, Trainings, and Orientation	80 - 100% attendance of concessionaires per barangay orientation or dry run conducted
Enhance Service Quality through Improved ICT infrastructures and online services communication	To enhance e-government services offered through improved ICT infrastructure and online services communication	Update the outdated software and hardware used in the current program Improved online services communication through internet upgrade	Annually	ISSP Steering Committee	ISSP Corporate Operating Budget	80% - 90% ICT infrastructures and online services communication were improved and updated
Enhance Service Quality through Capable and Competent Human Capital	To enhance the service quality under e-government by developing capable and competent customer support that will be focused on monitoring e-government services	Seminars and trainings conducted Competency matrix Establishment of the CWD IT Division	Monthly Semi-annually By the end of 2025	CWD-MIS personnel and other office personnel ISSP Steering Committee	Admin Department Budget for Seminars, Trainings, and Orientation ISSP Corporate Operating Budget	90% - 100% personnel developed competency and work engagement 100% CWD IT Division established

An e-government enhancement program was proposed to include key areas that needed to be improved on the current e-government implementation of Calamba Water District (CWD) that may ultimately enhance and increase the public trust and confidence of the concessionaires to patronize the government and its e-government services. These key areas included the indicators of e-government implementation and public trust that garnered the lowest general assessment of the concessionaires who answered the research instrument. Specifically, these consisted of the privacy and security risks, the ease of use of the CWD e-government services, service quality, especially in terms of the ICT infrastructure and online services communication, and the competency of the CWD management and personnel to deliver public service in the citizen's best interest.

4.0 Conclusion

With the discussion of the study's findings, the following conclusions were drawn:

a) That the concessionaires have a positive perception concerning the e-government services of Calamba Water District. Though limited, Calamba Water District constantly improves their online services that concessionaires positively see as reliable, transparent, and efficient through the ICT infrastructure under e-government; responsive and interactive through online services communication that makes it easier for them to get the services and information they need; competent personnel who can assist and accommodate their interest and concerns; private and secured online services that make it comfortable for them to use it; user-friendly interface that creates a positive and easy online experience for them; and a system that contributes positive value and benefit to the performance of tasks required by them.

b) That the Public Trust Relative to E-government Implementation of Calamba Water District in terms of information quality, service quality, system quality, technology, and the government institution gain positive responses from the concessionaire. Thus, it is concluded that the concessionaires tend to have a high trust and confidence level in the implementation of e-government services if the quality of information provided by the e-government services of Calamba Water District is relevant and appropriate to their needs and interests, the quality of service was trustworthy and reliable in meeting their needs, the e-government system quality was working in an effective, successful and well-organized way, the privacy and security measures of technology used are in place to assure that they are protected, and the government institution competently and effectively delivers high-quality public service. These attributes are all found to be crucial in securing the public trust relative to e-government implementation.

c) That there is a substantial link between the level of e-government implementation in terms of ICT infrastructure, online services communication, human capital, privacy and security risks, ease of use, and usefulness of e-government services and public trust level among the concessionaires in terms of information, service, system quality, technology, and the government institution. This also specifically indicates that the higher the level of e-government implementation, the higher the public trust level among the concessionaires. It also suggests that when the risk associated with e-government implementation decreases, the public trust level increases and vice versa.

d) The e-governance enhancement program is necessary to enhance the key areas in the current e-government implementation of Calamba Water District and subsequently increase public trust.

e) The literature for e-government implementation under public administration review is locally scarce. Therefore, more research on e-government implementation specifically in relation to public trust in government institutions in the Philippines should be done. This way it would contribute and minimize the gap in the availability of related local research regarding this topic.

5.0 Contributions of Authors

The sole author conceptualized and implemented the study.

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7.0 Conflict of Interests

The author declares no conflicts of interest about the publication of this paper.

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