Scientific Research Publishing

Journal of Computer and Communications, 2024, 12, 77-109
https://www.scirp.org/journal/jcc
ISSN Online: 2327-5227
ISSN Print: 2327-5219

Reinforcing of Citizen's Trust in E-Government: The Cameroon's Case

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How to cite this paper: Bavoua Kenfack, P.D. and Njei, C. (2024) Reinforcing of Citizen's Trust in E-Government: The Cameroon's Case. *Journal of Computer and Communications*, **12**, 77-109.
https://doi.org/10.4236/jcc.2024.121006

Received: December 18, 2023
Accepted: January 19, 2024
Published: January 22, 2024

Abstract

The embracing of ICTs and related technologies has enhanced different approaches for governments worldwide to deliver services to their citizens in a smart way. However, the usage of e-government services by common citizens is recognized as one of the major setbacks of e-government development in both developed and developing countries. Moreover, government agencies in these countries are facing great challenges in keeping the citizens motivated enough to continue to use e-government services. This research aims to investigate the factors that influence citizens' trust towards continue use of e-government services in Cameroon. The proposed research model consisted of three main constructs including technological, governmental, risk factors as well as six demographic characteristics (age, gender, educational level, income, internet experience and cultural perception). A five-point Likert scale questionnaire was designed to collect data physically and electronically, 352 valid questionnaires were retrieved. Simple and Multiple regression analysis methods were applied to build an adequate model based on the verification of hypotheses proposed. Based on results obtained, four demographic characteristics (age, education, occupation and income) have influence on citizens' trust in e-government meanwhile gender and cultural affiliation have no influence. Furthermore, technological factors and governmental factors positively influence trust level in e-government, whereas risk factors have a negative influence on trust level. Deducing from the results, a list of recommendations is proposed to the government of Cameroon in order to reinforce citizens' trust in e-government services.

Keywords

E-Government, Risk Factors, Technological Factors, Governmental Factors, Trust, Linear Regression

1. Introduction

Cameroonian government like many other governments in the Sub-Saharan Africa has engaged in developing its public services in an attempt to interact more efficiently and effectively with the citizens through electronic channels. During the past two decades, the role of information and communication technologies (ICT) has grown in an accelerating rate worldwide and the use of electronic services has become the standard for the public sector in judging the performance of governments in transactions processes [1]. In other terms, governments intend to provide their citizens with easily accessible, accurate, real-time, high-quality services and information with the use of smart devices, including high-speed wireless Internet connections.

E-Government vision is achieved by implementing digital solutions that simplify procedures, are more accessible to citizens, and that are accompanied by policies that promote greater transparency.

Indeed, e-services provided by e-government have a crucial influence on citizens' lives and their relationship with governments [2]. On one hand, adoption of e-government yields many advantages to governments such as reducing service delivery cost, improving operations efficiency, and improving services quality [1]. On the other hand, e-government provides opportunities for citizen participation to achieve social, cultural, economic and political development. The success of the informatisation efforts depends, to a great extent; on how well the targeted users for such services, citizens in general, make use of them [2].

However, citizens face significant barriers to public services which can increase marginalization of the poor and vulnerable [3]. A key concern in e-government initiatives is to ensure that the transformation is inclusive and does not exacerbate existing divides in terms of access, equity, and quality of service delivery. Transition from face-to-face to electronic services for the public sector is more than a technical or organisational change, but involves ethical dimensions of state-citizen interaction in which, trust and consent are at least as important as legal authority [2].

Some research has been conducted to examine the relationship between citizens' adoption of e-government and citizens' trust in e-government [4] [5] [6] and which concluded that trust is the main issue that contributes to the diffusion of e-government. The existing research has not filled the gap in explaining the factors that enhance citizens' trust and engagement in e-government particularly in developing countries. Moreover, the gap in the developing countries is wider [7].

The importance of this research comes from the fact the success of e-government concept is mainly depending on the citizens' trust in using e-government services. It is expected that the essential factors that may influence citizens' trust in e-government adoption in the Sub-Saharan Africa including Cameroon could be different from those associated with Western countries [7] [8].

Therefore, this research aims to explore those factors that may influence citi-

zens' trust in e-government in Cameroon as an attempt to fill the gap in the available literature regarding the research state in developing countries. The findings of the current research provide a basis for future developments of effective e-government procedures and strategies that in turn lead to a higher level of citizens' trust in the services provided by e-government in Cameroon as well as other developing countries with similar social, cultural and economic contexts.

2. E-Government Concepts in the Trust Context

2.1. E-Government

2.1.1. Definition

Several definitions of e-government are currently being applied worldwide. They differ depending on the purpose of the definition. Table 1 below highlights some of the definitions.

Furthermore, the World Bank [12] indicates that e-government is a mechanism for whole-of-government public sector modernization that places the citizen at the center of the reform.

2.1.2. Trust

Trust building is a cumulative process where the level of trust in the earlier stages affects the level of trust in the later stages and impacts the development of

Table 1. E-government definitions.

Definition of e-government	Source
Use of ICT and its application by government for the provision of information and public services to the people. The aim of e-government, therefore, is to provide efficient government management of information to the citizen, better service delivery to citizens, and empowerment of the people through access to information and participation in public policy decision-making	UNDESA [10]
Use by government agencies of information technologies (such as wide area networks, the Internet and mobile computing) that have the ability to transform relations with citizens, businesses and other arms of government. These technologies can serve a variety of different ends: better delivery of government services to citizens; improved interactions with business and industry; citizen empowerment through access to information; or more efficient government management. The resulting benefits can be less corruption, increased transparency, greater convenience, revenue growth, and/or cost reductions.	World Bank [9]
Use of new ICTs by governments as applied to the full range of government functions. In particular, the networking potential offered by the Internet and related technologies has the potential to transform the structures and operations of government.	OECD [10]
E-government is about using the tools and systems made possible by ICTs to provide better public services to citizens and businesses.	European Commission [11]

longer-term trust relationships [13]. Table 2 presents trust definitions.

In e-government development context, there are several overlapping and consistent factors that impact the building of trust. These factors could be classified in two major categories [2]:

Preinteractional factors:

- Individual behavioral attributes: individual demographics, culture, past experiences, propensity to trust, benevolence, credibility, competency, fairness, honesty, integrity, openness, general intention to use e-services.
- Institutional attributes: organizational reputation, accreditation, innovativeness, general perceived trustworthiness of the organization.
- Technology Attributes: interface design, public key encryption, integrity.

Interactional factors:

- Service attributes: reliability, availability, quality, and usability.
- Transactional delivery atributes: usability, security, accuracy, privacy,

Table 2. Definitions of trust.

Definition of Trust	Source
An individual may be said to have trust in the occurrence of an event if he expects its occurrence and his expectation leads to behaviour, which he perceives to have greater negative motivational consequences if the expectation is not confirmed than positive motivational consequences if it is confirmed.	Deutsch [14]
Expectancy held by an individual or a group that the word, promise, verbal or written statement of another individual or group can be relied upon.	Rotter [15]
Trust exists in a social system insofar as the members of that system act according to and are secure in the expected futures constituted by the presence of each other or their symbolic representations.	Lewis and Weigert [16]
Trust means the willingness of a person to rely on an exchange partner in whom the person has confidence.	Moormn, Deshpande and Zaltman [13]
The willingness of a party to be vulnerable to the actions of another party based on the expectation that the other will perform a particular action important to the trustor, irrespective of the ability to monitor or control that other party.	Mayer *et al.* [17]
Trust is a psychological state comprising the intention to accept vulnerability based upon positive expectations of the intentions or behavior of another.	Rousseau *et al.* [18]
Trust is the firm belief in the competence of an entity to act dependably, securely, and reliably within a specified context.	Grandison and Sloman [19]
Trust is a subjective expectation an agent has about another's future behavior based on the history of their encounters."	Mui *et al.* [20]
Trust of a party A to a party B for a service X is the measurable belief of A in that B behaves dependably for a specified period within a specified context (in relation to service X).	Olmedilla *et al.* [21]

interactivity, quality.

- Information content attributes: completeness, accuracy, currency, quality.

2.1.3. E-Government Architecture

Figure 1 depicts the architecture of e-government with the following layers:

Presentation layer identifies and describes the system users, who require access to government information at different capacities and channels through which information is accessible.

E-government layer: This layer focus on integration of different organization data and services into one stop called government portal.

Business layer provides a functional rather than organizational view of the government's lines of business processes with the aims of mapping existing and updating the processes as well as managing them. It is imperative that the business processes are simplified and understood by all stakeholders.

Information architecture layer is divided into two components:

• The service classification sub-layer: this layer includes the legacy systems that need to be integrated into online services delivery, new online systems, back-office systems, messaging and directory services.

• The data standardization sub-layer: the elements of this layer include standardization of data and information formats, metadata, and data dictionaries. This layer ensures the integration and interoperability of services.

Technology architecture layer: This layer consists of technical infrastructure such servers, storage backups, networks (LAN, MAN or WAN), extranets, internet, cybersecurity solutions.

2.1.4. E-Government Development in Cameroon

Based on data collected from UNDESA, the state of e-government in Cameroon

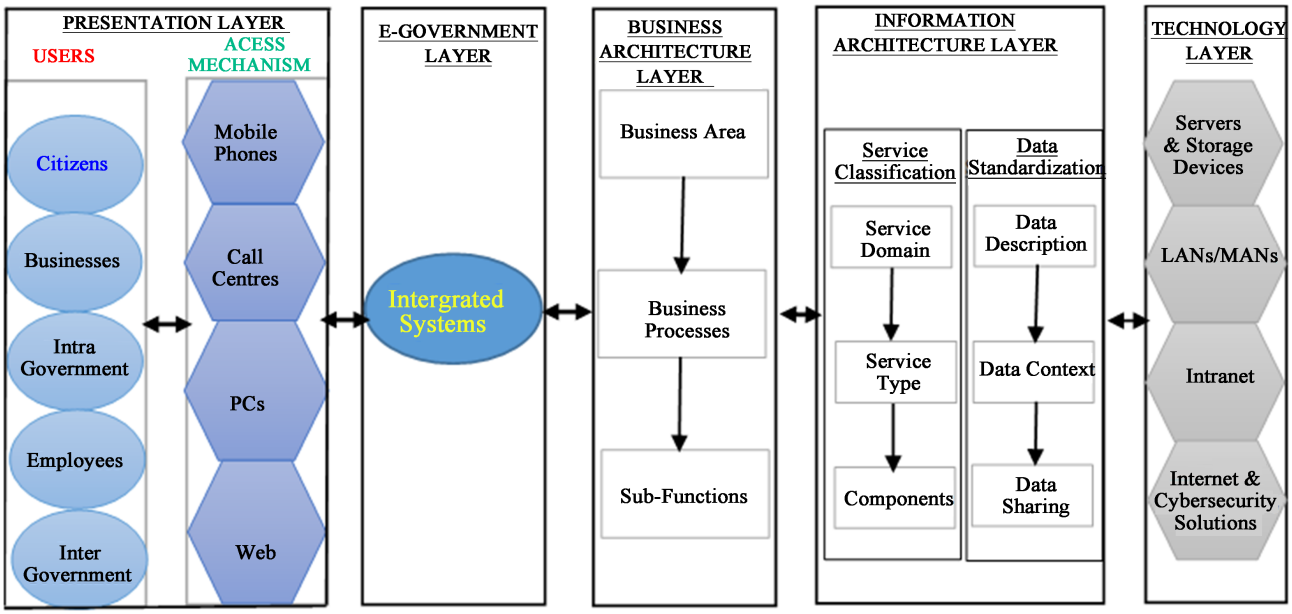


Figure 1. Architecture of e-government.

is presented from 2003 to 2022 as well as the state based on the e-Participation sub-index in the same period in order to illustrate of citizens' participations and usage in e-government services in the country.

1) E-Government Development Index

The E-Government Development Index (EGDI) is a composite benchmark of e-government development consisting of the weighted average of three independent component indices: the Online Services Index (OSI), the Telecommunications Infrastructure Index (TII), and the Human capital Index (HCI).

Figure 2 depicts the evolution of EGDI in Cameroon, which is evaluated on one (1) as well as its ranking on 193 member states.

Figure 2 indicated that e-government in Cameroon is improving in slow rate and moreover the country's still remain low for the past two decades.

2) E-participation sub-index

Public participation is a key dimension of governance, and its importance is highlighted in a number of SDG indicators and targets, including target 16.7, which calls for ensuring "responsive, inclusive, participatory and representative decision-making at all levels".

The use of information and telecommunications technology to engage people in public decision-making and services delivery is an essential part of e-government, and since 2001 the Survey has regularly tracked developments in e-participation as reflected in the relevant features of national e-government portals and websites.

The E-Participation Index (EPI) assesses online participation utilizing a three-point scale that distinguishes between the provision of information (whereby the Government provides information to people), consultation (whereby the Government consults on policy or on services delivery at different stages of the process and possibly provides feedback), and decision-making (whereby the

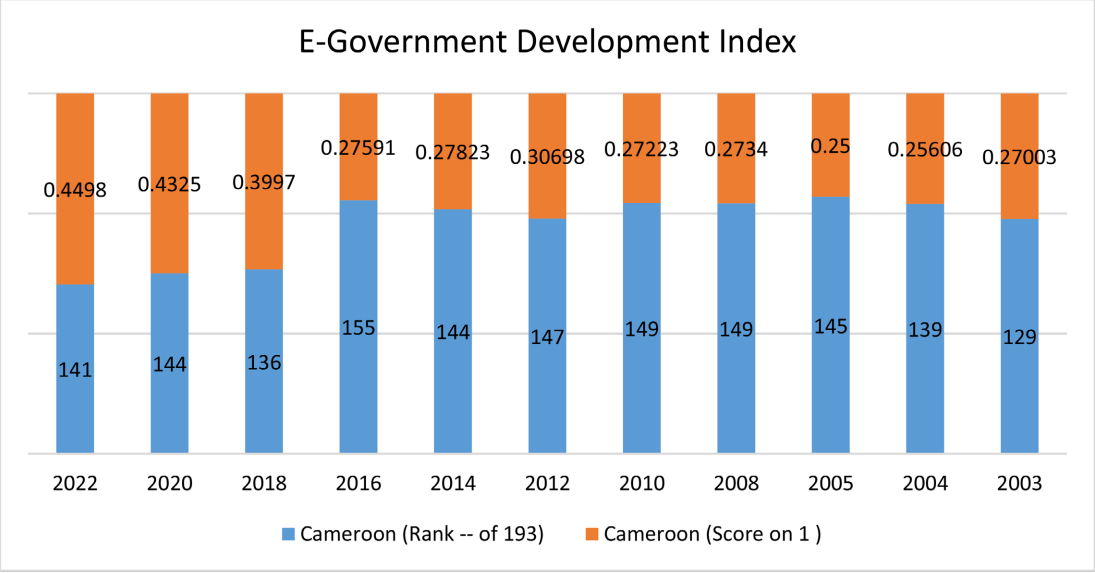


Figure 2. E-Government development Index in Cameroon for the past two decades [22].

Government involves people in decision-making).

Figure 3 indicates the scoring of e-participation in Cameroon, which is evaluated on one (1) as well as its ranking on 193 member states.

For the past two decade, Figure 3 shows low scores and ranking of e-participation in Cameroon.

3) Security Risk in Cameroon's Public Administration

As shown above, Cameroonian government is promoting the use of Information and Communication Technologies (ICT) particularly Internet-technology to enhance the government's service delivery as well as its internal operations. However, the potential for improvements in service delivery and internal operations come with many of the security risks faced by existing systems as well as with new risks.

In Cameroon, the problem of securing information and computer networks has become important as government agencies increase their dependence on networks or information systems. According to Cameroon's Government Agency in charge of ICT development and cyber security [23], the increase in the number of attempts to penetrate the integrity of government networks has been exponential in the past decade as illustrated in Figure 4. These incidents often have a profound impact on organizations, particularly for government agencies; it can be the loss or access to secret or sensitive information.

The electronic information systems today are as complex as the business relationships they need to serve. The words 'Information Security 'are now familiar at the highest levels of the Public Administration. Information security, when approached from a corporate perspective, is an enabler of traditional business goals in an electronic environment.

2.2. E-Government Trust Literature Review

The studies included in this review were conducted in a number of developed

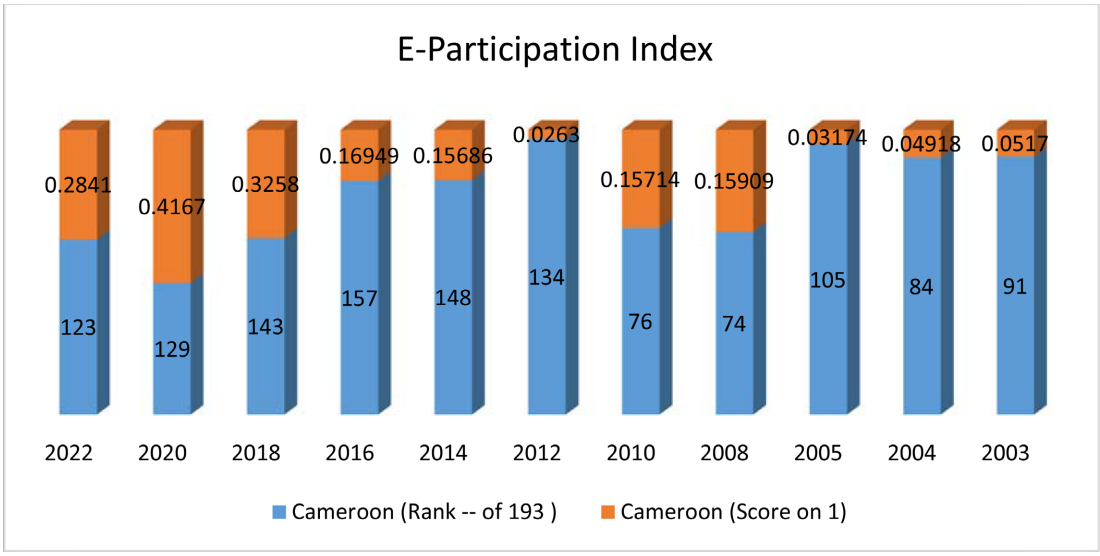


Figure 3. E-Participation Index in Cameroon for the past two decades [22].

and developing countries with little studies conducted in Africa.

The findings of this review demonstrate that most researchers focus on technical and government agencies factors [24]-[29]. This indicates a large gap in the research into the antecedents of trust leading to the successful adoption of e-government services.

Therefore, the antecedents of trust in the context of e-government should be analysed with reference to the four dimensions of technology, government agencies, citizens' aspects and risk as shown in **Figure 5**. According to [1] [24] [25] [30] [31], trust in e-government as the dependent variable where Technological factors, Risk factors, Citizens' aspects and Government agencies factors are independent variables.

From the research approach perspective, systematic review involved qualitative, quantitative and mixed methods approaches, with the major focus on quantitative approaches.

In our research, the four dimensions are integrated to investigate their influence

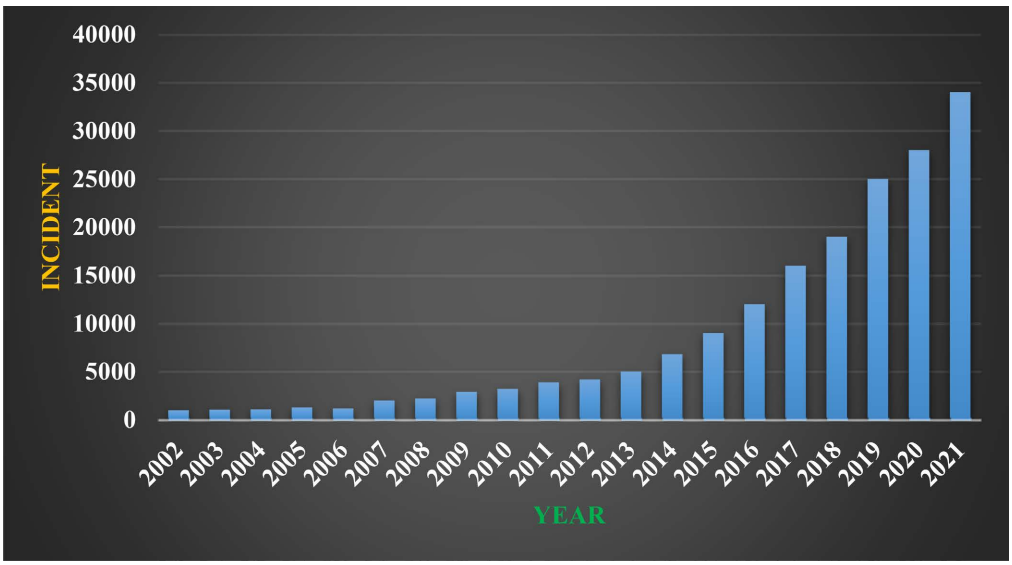


Figure 4. Cyber threats progress in cameroon for the past two decades [23].

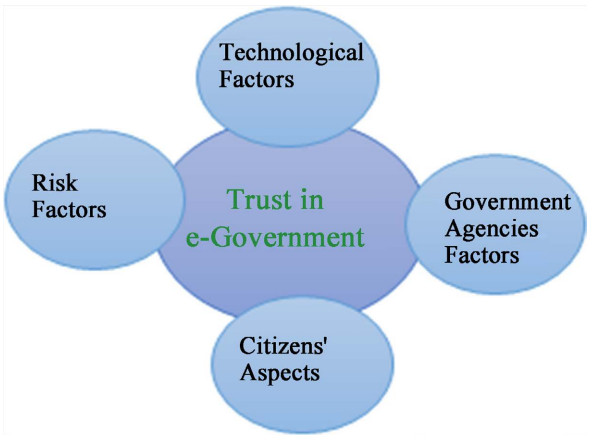


Figure 5. Research factors.

on trust in e-government with citizens' aspects reflecting the Cameroonian context in terms of social, cultural, economic and demographic characteristics.

3. Methods and Tools

3.1. Research Model and Hypotheses Development

The purpose of the present research was to identify the determinants of citizens' trusts in e-government in the Cameroonian context. Following the literature review, four constructs are identified as the antecedents of trust in e-government from the citizens' perspective as shown on Figure 5. These constructs are citizens' aspects, technological factors, governmental factors, and risk factors. The model is basically based on [1] [2] [32]. Figure 6 depicts the research model with the hypotheses denoted H_1 to H_9.

3.1.1. Citizens' Aspects

Colesca [3] found significant positive impact of some individual factors on trust in e-government such as gender, age, disposition to trust, internet experience, and education [33]. Indicates that Cameroon has wide diversity of culture and the country is considered as Africa in miniature.

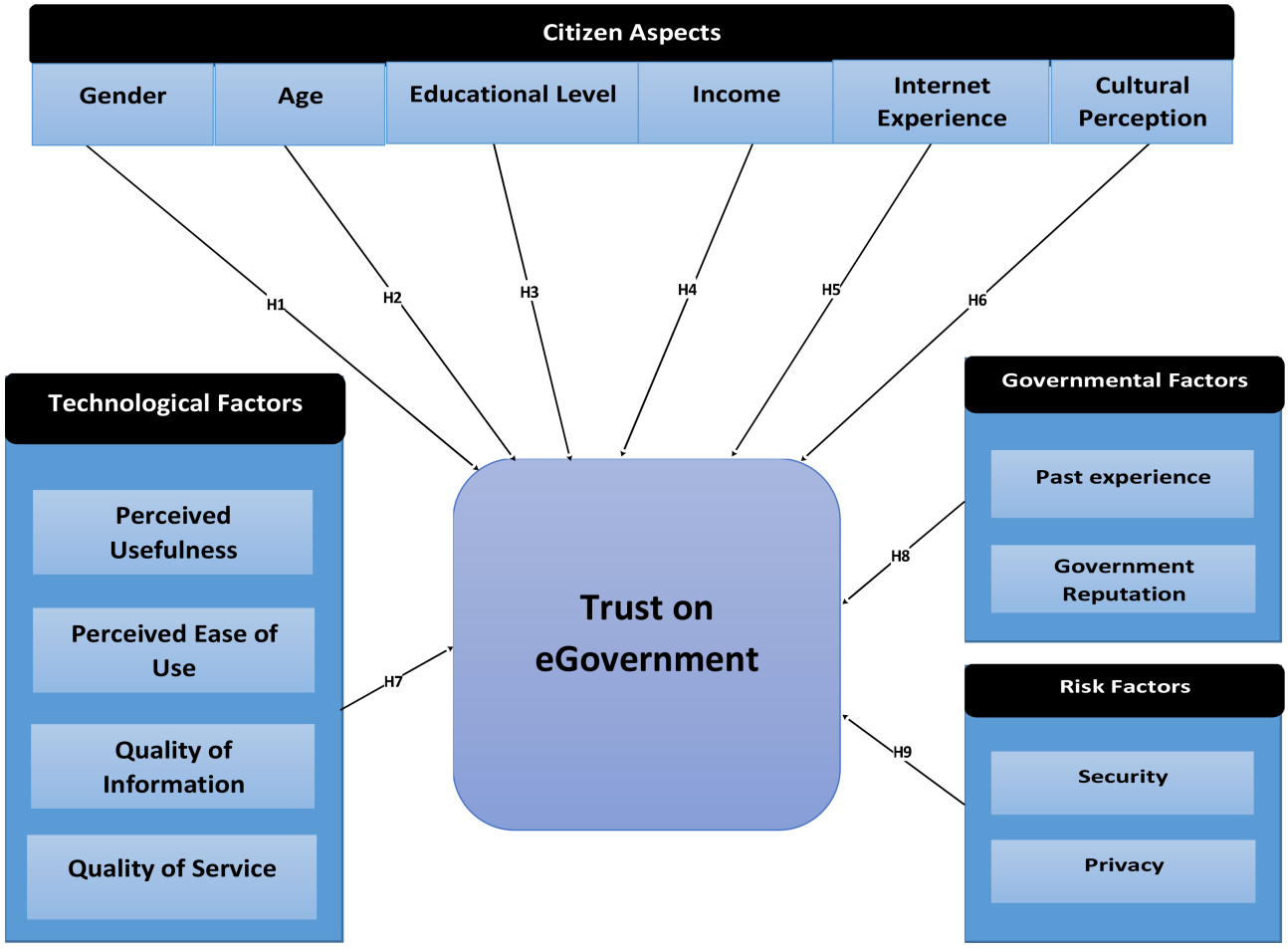


Figure 6. Research model.

In this context, individual cultural perception is also considered. Familiarity with internet is one of the most individual characteristics that influences trust in e-government [2] [32]; added to the previous factors social class as an antecedent to the confidence in e-government services.

Based on the cited literature review and the Cameroonian context, the following hypotheses are proposed:

H_1: Females have more trust in e-government services than males.

H_2: Younger citizens have more trust in e-government services e-government services than older ones.

H_3: Educational level positively influences citizen' trust in e-government services.

H_4: Income positively effects citizens' trust in e-government services.

H_5: Internet experience positively effects citizens' trust in e-government services.

H_6: Cultural perception negatively effects citizens' trust in e-government services.

3.1.2. Technological Aspects

Technology is a vital component for IT-based government service adoption since it affects individual beliefs that interactions with these systems are expected and can be trusted [32] [34].

Our literature review reveals that technological aspects are Perceived Usefulness, Perceived Ease of Use, Information Quality, and Service Quality.

1) ***Perceived Usefulness***

Perceived Usefulness of e-government is related to the degree to which the e-government services is useful, helpful, more productive and efficient to make citizen's life easier [35], while Gefen and Straub define Perceived usefulness as an extent a citizen believes that using e-government system would enhance performance and improves his/her efficiency [36].

Furthermore, citizens will find e-government services useful if it assists them to search for information they want and usual users evaluate system according to task-oriented outcomes. Perceived Usefulness was found to be significant constructs in several e-government adoption literature [24] [37].

2) ***Perceived Ease of Use***

Perceived ease of use is the degree that users believe that using the system would be easy and would be free of mental effort [38], in fact, the ease of use is another major determinant of attitude towards use an information system. In other words, users will have a stronger feeling about the trustworthy of the service provider if the provider delivers a service in an easy-to-use manner. Chiu study results on web-based learning environment show that perceived ease of use is associated certainly with the continuance intention to use [39].

For instance, if mobile users have increases in the market it might be a good opportunity for a government to offer easy to use mobile government services to enhance citizens' easy access to e-solutions. Mahadeo believed, during pre-im-

plementation and implementation stages of electronic government services it is likely that perceived ease of use will have a very strong positive effect on citizens' intention to adopt the new technology [40].

3) ***Information Quality***

The information system output includes accuracy, extent of completeness, extent of relevance, the substances, also whether the information in time, is measured in Information Quality. In addition, information quality also correlate with how the information is presented to the potential users as it needs to be displayed in a well-organized way, up-to-date, appropriate, accurate, and easy to understand [40].

When users receive inadequate, unrelated or unclear information regarding the smart government services, it will have a negative influence on their trust level of the services [34] [41]. This implies that clients of e-government essential need complete, realistic, clear and up to date information about the services offered on e-government platforms.

4) ***System Quality***

According to Chatterjee and Gupta, service quality is the customer perception on the quality of hardware and software, how reliable the service is, and how supportive the staff on handling the service. It is important that the smart government customer service is always available and responds quickly to citizens' concerns [42].

Furthermore, study carried out by Sepasgozar, *et al.* also noted how utilization of smart government services can avoid the bureaucratic procedures that sometimes appear when citizens directly visit public services [43]. Poor service quality will lead consumers to mistrust the services. Moreover, service users will be hesitant and unwilling to use such services if they found the service quality experience was beyond their expectation level [34] [42].

Based on the preceding reviews, the following hypotheses were proposed:

H_7: Technological factors positively influence citizens' trust in e-government.

H_7a: Perceived usefulness has a positive impact on citizens' trust in e-government.

H_7b: Perceived ease of use has a positive impact on citizens' trust in e-government.

H_7c: Information quality positively influences citizens' trust in e-government.

H_7d: Services Quality positively influences citizens' trust in e-government.

3.1.3. Governmental Aspects

Governmental factors are related to the level of trust and confidence of the citizens towards the government agencies and their beliefs that the government is capable to provide affective services to their citizens [34]. A Large body of research examined the relationship between government agencies and trust in e-government [35] [44] [45].

The majority of these studies found a significant and positive influence of trust in government on trust in egovernment. In this study the two dimensions

of government agencies suggested by Alzahrani and Maan-Alkhateeb are adopted: government reputation and past experience [1] [32]. Consequently, the following hypotheses are proposed:

H_8: Government agency factors positively influence citizens' trust in e-government.

H_8a: Government Agency Reputation positively influences citizens' trust in e-government.

H_8b: Government Agency Experience positively influences citizens' trust in e-government.

3.1.4. Risk Factors

Risk is mainly concerned with the issue of privacy and security [32]. A strong relationship was found between risk and trust in r-government in previous literature [32] [44].

Privacy in e-services context could be defined as the worry about losing control over personal information, whereas security is related to any unauthorized access to the personal data of the individuals [1].

1) ***Privacy***

Guaranteed privacy is providing formal assurance or promise to citizens that their online transaction and information stored online are confidential and privacy is maintained. McLeod defined privacy as the belief that personal information submitted into a system will remain private [40].

Citizens' trust in e-government websites can be affected by the existing privacy policy on e-government websites and those policies should guaranteed citizens' data protection and the transaction made online [35]. According to Romania context, privacy was found to have the greatest influence on trust in e-government [2].

2) ***Security***

Guaranteed security is the imaginary gate that brings confidence to the information system or website users in terms of information availability, integrity and confidentiality [35]. Security is a necessary key for the citizen to trust and continue use e-government websites or services. The infrastructure and platform used in these e-government websites or information systems are related to open technologies such as Internet [45].

Additionally, people will only embrace e-government services if users feel trustworthiness in government websites [24]. Therefore, a user who trusts the system security expects his/her information will not be compromised by hackers and security malware might not use him/her as a zombie to support malicious work such as email spammers or denial of service attacks.

Moreover, the e-government architecture is very complex and has complex integration mechanism where data are shared from a different institution, therefore it's a responsibility of government to restrict the utilization of private information and secure such information from unintended parties and protect citizen privacy. Based on the preceding reviews, the following hypotheses were

proposed:

H_9: Risk factors negatively influence citizens' trust in e-government.

H_9a: Privacy concerns negatively influence citizens' trust in e-government.

H_9b: Security concerns negatively influence citizens' trust in e-government.

3.2. Overall Research Methodology

Figure 7 showed the overall of our Research Methodology.

3.2.1. Data Collection

1) Data Collecting Tool

The questionnaire was designed as a tool used in collecting data with the aim of assessing the proposed model and to examine the relationships between the constructs. The questionnaire is documented based on the demographics of the respondents. All questions were designed to measure the create variables, which are applied to a five-point Likert scale, varying from 1 ("strongly disagree") to 5 ("strongly agree").

Furthermore, the questionnaires were translated from English to French as the two languages are official in Cameroon.

To ease data collection and limit resources available, the data collection tool was deployed electronically through Google online survey questionnaire. Questions' items were selected from the proposed model that is based on [38] [40].

2) Sampling and data collecting

A random sample was drawn from Cameroonian citizens living in Yaoundé since it is a metropolitan city; Citizens originating from all the ten regions of the country were included in the sample. The questionnaire was distributed physically and electronically through social media: Facebook, and WhatsApp Groups where the citizens could click on the link to have the online questionnaire.

However, with the low culture of online responding, few citizens responded to online questionnaire on their own. Therefore, the hybrid method was adopted and surveyors could assist the respondents physically or electronically through WhatsApp calls for them to respond to the online questionnaire.

The data collection process was completed in six weeks as from March 13, 2023. Figure 8 presents an example of data captured.

3.2.2. Data Analysis Model

Our data analysis is based on the implementation of the hypothesis-testing algorithm shown in Figure 9. The algorithm is based on Simple linear regression and multiple linear regression statistical concepts [46] [47] [48], which are applied to determine the explanatory factors (independent variables) of citizens' trust in online government services (dependent variable).

Multiple regression is an extension of simple linear regression. It is applied when one wants to predict the value of a variable based on the value of two or more other variables. The predicted variable is called the dependent variable (or sometimes, the outcome, target or criterion variable). The variables used to pre-

dict the value of the dependent variable are called the independent variables (or sometimes, the predictor, explanatory or regressor variables).

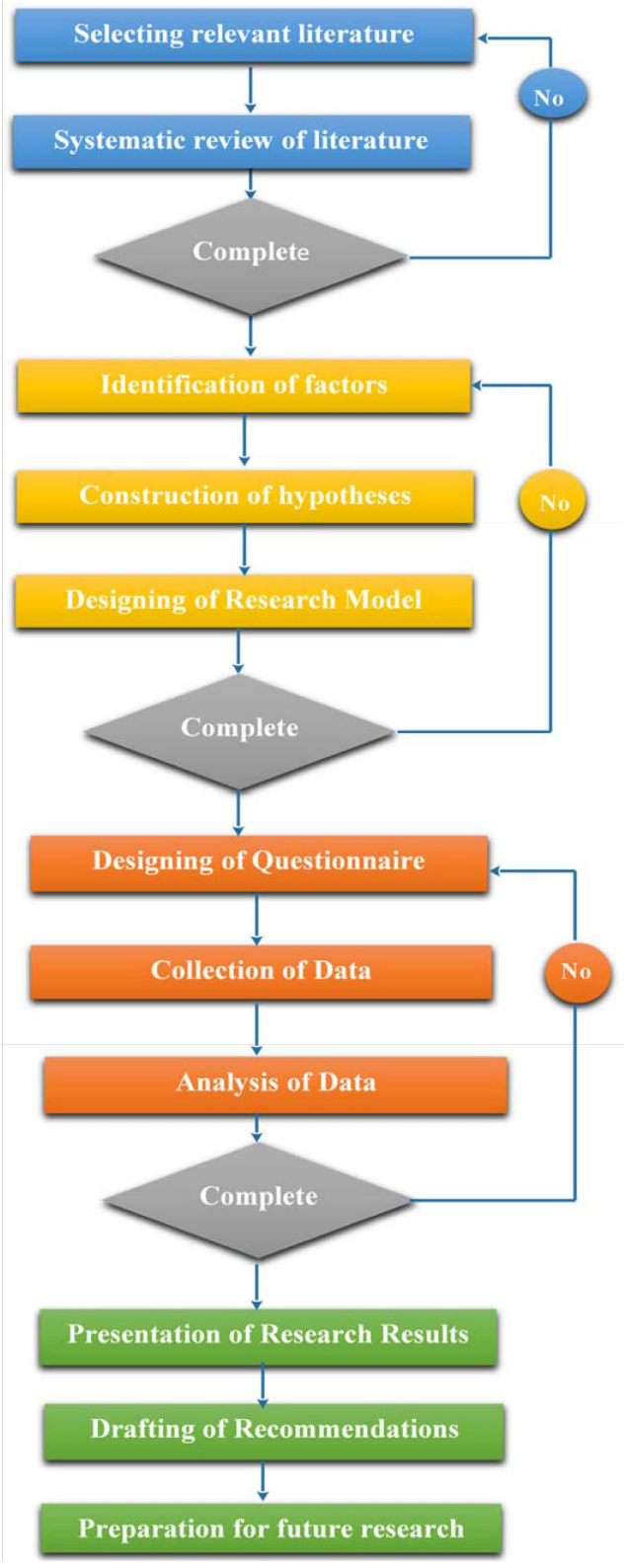
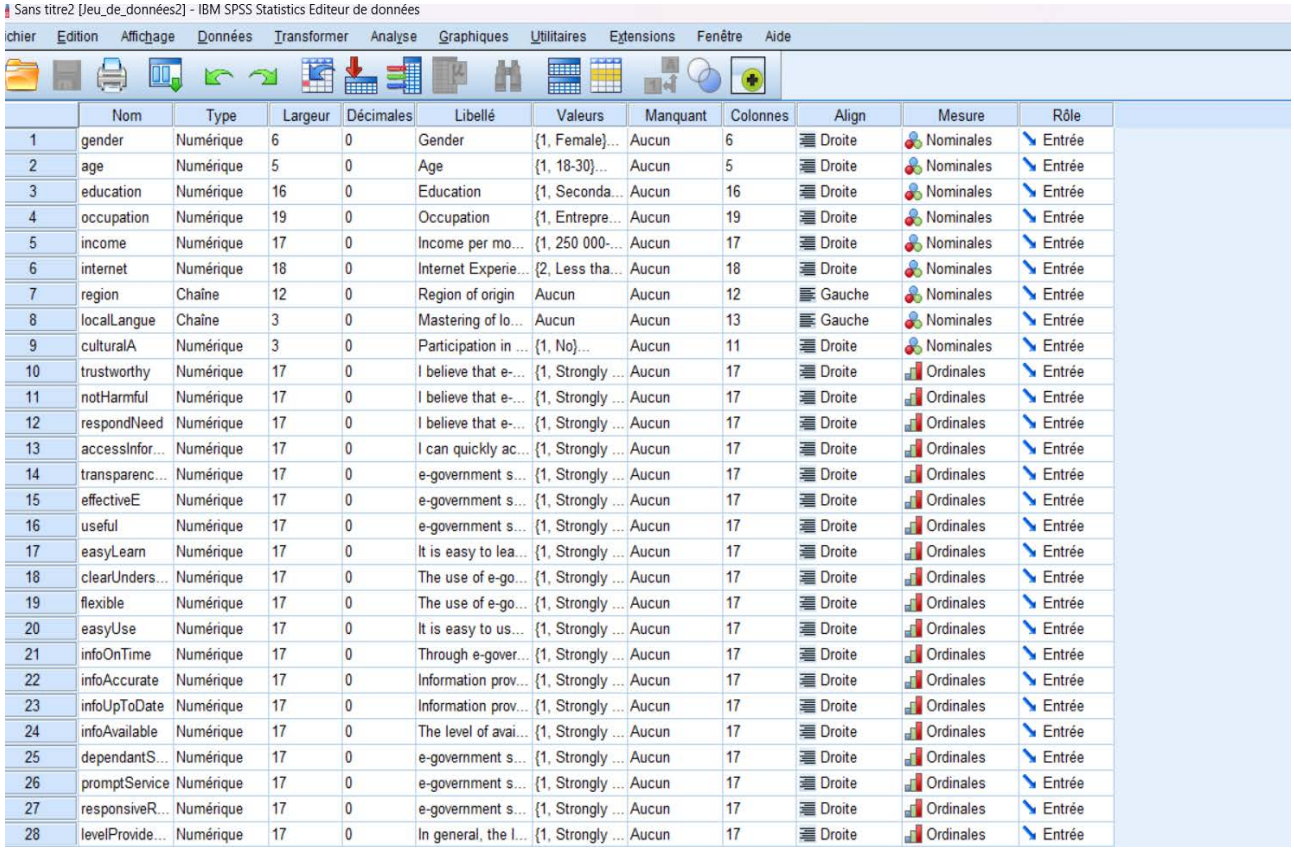


Figure 7. Overall research methodology.



	Nom	Type	Largeur	Décimales	Libellé	Valeurs	Manquant	Colonnes	Align	Mesure	Rôle
1	gender	Numérique	6	0	Gender	{1, Female}...	Aucun	6	Droite	Nominales	Entrée
2	age	Numérique	5	0	Age	{1, 18-30}...	Aucun	5	Droite	Nominales	Entrée
3	education	Numérique	16	0	Education	{1, Seconda...	Aucun	16	Droite	Nominales	Entrée
4	occupation	Numérique	19	0	Occupation	{1, Entrepre...	Aucun	19	Droite	Nominales	Entrée
5	income	Numérique	17	0	Income per mo...	{1, 250 000-...	Aucun	17	Droite	Nominales	Entrée
6	internet	Numérique	18	0	Internet Experie...	{2, Less tha...	Aucun	18	Droite	Nominales	Entrée
7	region	Chaîne	12	0	Region of origin	Aucun	Aucun	12	Gauche	Nominales	Entrée
8	localLangue	Chaîne	3	0	Mastering of lo...	Aucun	Aucun	13	Gauche	Nominales	Entrée
9	culturalA	Numérique	3	0	Participation in ...	{1, No}...	Aucun	11	Droite	Nominales	Entrée
10	trustworthy	Numérique	17	0	I believe that e-...	{1, Strongly ...	Aucun	17	Droite	Ordinales	Entrée
11	notHarmful	Numérique	17	0	I believe that e-...	{1, Strongly ...	Aucun	17	Droite	Ordinales	Entrée
12	respondNeed	Numérique	17	0	I believe that e-...	{1, Strongly ...	Aucun	17	Droite	Ordinales	Entrée
13	accessInfor...	Numérique	17	0	I can quickly ac...	{1, Strongly ...	Aucun	17	Droite	Ordinales	Entrée
14	transparenc...	Numérique	17	0	e-government s...	{1, Strongly ...	Aucun	17	Droite	Ordinales	Entrée
15	effectiveE	Numérique	17	0	e-government s...	{1, Strongly ...	Aucun	17	Droite	Ordinales	Entrée
16	useful	Numérique	17	0	e-government s...	{1, Strongly ...	Aucun	17	Droite	Ordinales	Entrée
17	easyLearn	Numérique	17	0	It is easy to lea...	{1, Strongly ...	Aucun	17	Droite	Ordinales	Entrée
18	clearUnders...	Numérique	17	0	The use of e-go...	{1, Strongly ...	Aucun	17	Droite	Ordinales	Entrée
19	flexible	Numérique	17	0	The use of e-go...	{1, Strongly ...	Aucun	17	Droite	Ordinales	Entrée
20	easyUse	Numérique	17	0	It is easy to us...	{1, Strongly ...	Aucun	17	Droite	Ordinales	Entrée
21	infoOnTime	Numérique	17	0	Through e-gover...	{1, Strongly ...	Aucun	17	Droite	Ordinales	Entrée
22	infoAccurate	Numérique	17	0	Information prov...	{1, Strongly ...	Aucun	17	Droite	Ordinales	Entrée
23	infoUpToDate	Numérique	17	0	Information prov...	{1, Strongly ...	Aucun	17	Droite	Ordinales	Entrée
24	infoAvailable	Numérique	17	0	The level of avai...	{1, Strongly ...	Aucun	17	Droite	Ordinales	Entrée
25	dependantS...	Numérique	17	0	e-government s...	{1, Strongly ...	Aucun	17	Droite	Ordinales	Entrée
26	promptService	Numérique	17	0	e-government s...	{1, Strongly ...	Aucun	17	Droite	Ordinales	Entrée
27	responsiveR...	Numérique	17	0	e-government s...	{1, Strongly ...	Aucun	17	Droite	Ordinales	Entrée
28	levelProvide...	Numérique	17	0	In general, the l...	{1, Strongly ...	Aucun	17	Droite	Ordinales	Entrée

Figure 8. Example of captured data.

In general terms, Linear regression is a modelling technique for analysing data to make predictions. In simple linear regression, a bivariate model is built to predict a response variable (Y) from an explanatory variable (X). In multiple linear regression the model is extended to include more than one explanatory variable ($X_1, X_2, \cdots, X_p$) producing a multivariate model as our research model proposed in **Figure 6**. **Figure 9** showed the Hypothesis-testing algorithm applied.

1) Statistical Significance (Sig.)

a) Simple Linear Regression (SLR)

The simple linear regression model is given by the following equation:

$$Y_i = \beta_0 + \beta_1 X_i + e_i \tag{1}$$

where β_0 is the intercept, β_1 is the slope of the regression line, and e_i is the residual error. Y_i and X_i are respectively dependent and independent variables.

The parameters (β_0 and β_1) are estimates drawn from a distribution of possible values of Y_i and X_i input into SPSS Software for computing the model in **Figure 9**.

The standard error of the estimate shows us the spread of this distribution, and the **Sig.** enable us to know whether these estimated paramaters (β_0 and β_1) are statistically different from zero. The mathematical model of statistical significance (Sig. or p-value) is presented in subsection.

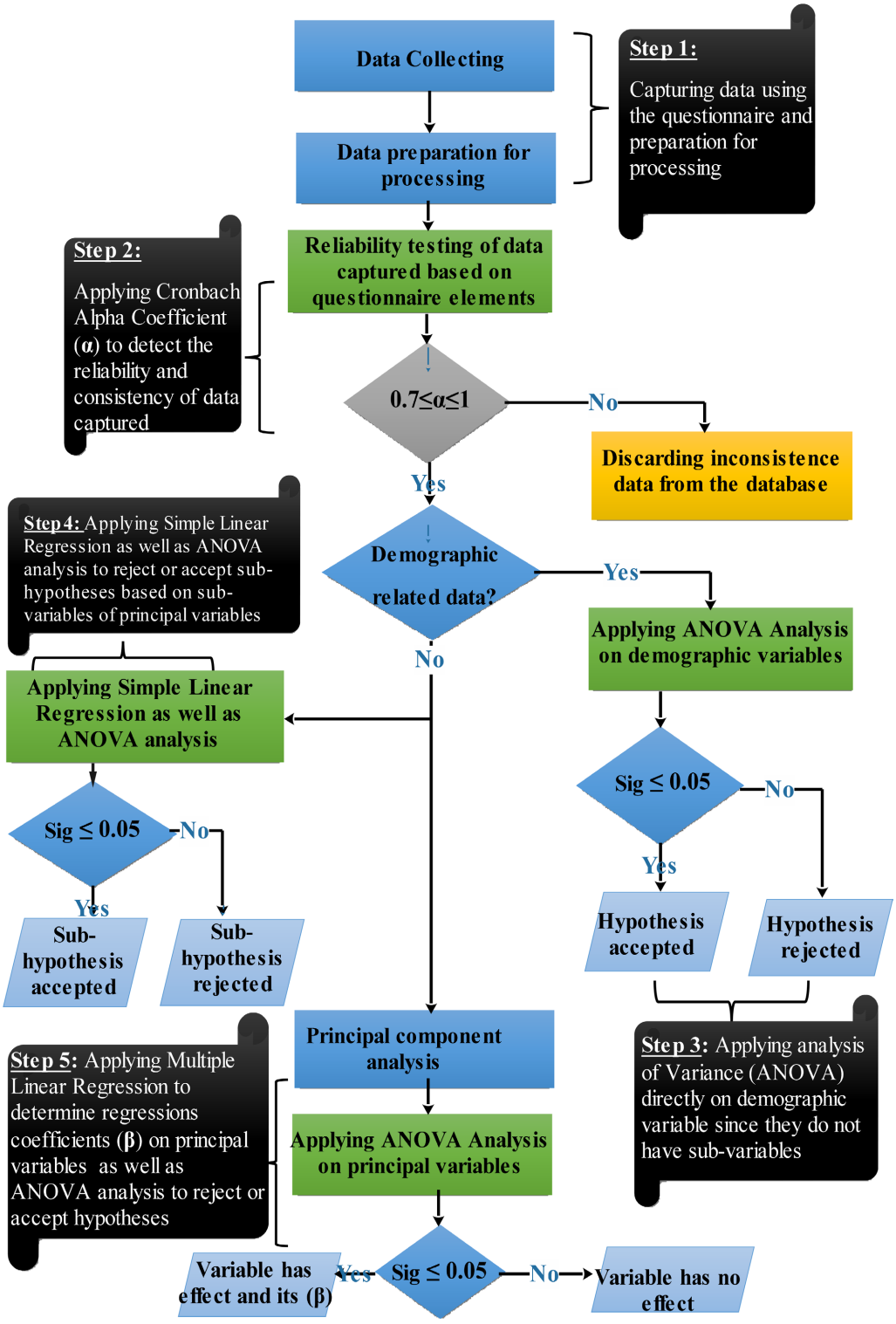


Figure 9. Hypothesis-testing algorithm.

If the estimate for the parameter (β_1) could be zero, then it could be that there is in fact no relationship or a zero coefficient and a flat line of best fit. A value which is not statistically significant is indicated by a p-value greater than 0.05 (reference). For this research model, if $p < 0.05$ then the estimates of the para-

meters are statistically significant and inferred that there is an association between the variables (Y_i and X_i).

b) Multi Linear Regression (MLR)

Multiple linear regression extends simple linear regression to include more than one explanatory variable. In both cases, the term 'linear' is used assuming that the response variable is directly related to a linear combination of the explanatory variables ($X_1, X_2, \cdots, X_p$).

The equation for multiple linear regression has the same form as that for simple linear regression but has more terms:

$$Y_i = \beta_0 + \beta_1 X_{1i} + \beta_2 X_{2i} + \cdots + \beta_p X_{pi} + e \tag{2}$$

In a model with p explanatory variables, each explanatory variable has its own β_coefficient.

Multicollinearity occurs when 2 or more predictors ($X_1, X_2, \cdots, X_p$) in one regression model are highly correlated. Typically, this means that one predictor is a function of the other. If multicollinearity is serious and it is ignored, the numerical estimation will be problematic, and the estimated parameters ($\beta_0, \beta_1, \cdots, \beta_p$) will not reflect the reality. In order to reduce Multicollinearity effect within the scope of this research, principal component analysis of explanatory variable ($X_1, X_2, \cdots, X_p$) is applied with the aim of discerning possible structural effects.

The process of MLR is identical to that of SLR within SPSS Software by including additional explanatory variable in the specification stages. The software compute the parameters ($\beta_0, \beta_1, \cdots, \beta_p$) and statistical significance (Sig. or p-value) for each explanatory variable (X_p).

3.2.3. Statistical Concepts

1) ***Cronbach's Alpha***

Before embarking on data analysis, the internal consistency of the data should be tested. The indicator used for this is Cronbach's alpha defined as follows:

$$\alpha = \frac{k}{k-1} \times \left(1 - \frac{\sum_i^n s_i^2}{s^2} \right) \tag{3}$$

where α represents Cronbach's alpha,

k is the number of items in the scale or test.

s_i^2 is the variance of each item i.

s^2 is the total variance of the scores of all the items.

The result of Cronbach's alpha will be a value between 0 and 1. A value closer to 1 indicates better internal reliability of the scale or test, which suggests high consistency between items.

2) ***Analysis of Variance (ANOVA)***

Analysis of variance (ANOVA) is a statistical method used to compare the means (averages) of several independent groups. In this research, ANOVA will be used to assess the effect of socio-demographic factors and other factors on citizens' trust in e-government services as presented on our research model. The

following represents the summary of the one-way ANOVA:

a) ANOVA Assumptions:

The one-way ANOVA tests the null hypothesis indicates that the group means are equal. The null hypothesis (H_0) is represented as follows:

H_0:

$$\mu_1 = \mu_2 = \cdots = \mu_k \tag{4}$$

where $\mu_1, \mu_2, \cdots, \mu_k$ represent the averages of the k groups.

b) Calculation of intergroup sum of squares (SCI):

Calculate the intergroup sum of squares, which measures the variability between group averages. The SCI formula is as follows:

$$\text{SCI} = \sum_i^n \left(n_i * \left(\overline{X}_i - \overline{X} \right)^2 \right) \tag{5}$$

where n_i is the size of group i, $\overline{X}_i$ the average of group i and $\overline{X}$ is the overall average.

c) Degree of freedom:

Calculate the degrees of freedom for the SCT, SCI and SCE. Degrees of freedom are used to calculate statistics of value test. The formulas for the degrees of freedom are:

$$\text{DDL}_{\text{tot}} = n - 1 \tag{6}$$

$$\text{DDL}_{\text{int}} = k - 1 \tag{7}$$

$$\text{DDL}_{\text{err}} = n - k \tag{8}$$

where n is the total number of observations, and k is the number of groups.

d) F statistic:

Calculate the F-statistic by dividing the intergroup variance by the intragroup variance, weighted by the corresponding degree of freedom. The formula for F statistic is:

$$\text{F} = \frac{\dfrac{\text{SCI}}{\text{DDL}_{\text{int}}}}{\dfrac{\text{SCE}}{\text{DDL}_{\text{err}}}} \tag{9}$$

Then, conduct a significance test by comparing the value of the **F** statistic to a critical F value with the appropriate degrees of freedom. The higher this value, the more meaningful the results. Significance indicates whether the result is obtained by chance or due to the independent variable.

e) Significance test:

The value of "Sig." or p-value is known as the significance, which indicates whether the difference between the groups is large enough to be taken into account due to the independent variable rather than being random. Generally, a p-value (probability of significance) of less than α (level of significance) is a predefined threshold set by the researcher and It is usually 0.05.

For the scope of the research, α is considered to be 5%; meaning that the risk

or probability that the difference is random is less than 5%. The lower the value of "Sig." or p-value, the higher the level of significance.

In broader terms, p-value is a statistical measure that helps researchers determine if their hypothesis is correct. This helps to determine the significance of the results. The null hypothesis is a default position that there is no relationship between two measured phenomena.

Application of p-value

P-value is a statistical measure that helps researchers determine if their hypothesis is correct. This helps to determine the significance of the results. The null hypothesis is a default position that there is no relationship between two measured phenomena. It is denoted H_0. An alternative hypothesis is the one you would believe if the null hypothesis is found to be false. Its symbol is H_1 or Ha.

The p-value is a number between 0 and 1. There are charts, spreadsheets, and statistical software to help calculate the p-value. The level of significance (α) is a predefined threshold set by the researcher. It is usually 0.05. A very small P-value, which is below the significance level, indicates that you reject the null hypothesis. The P-value, which is above the significance level, indicates that one fails to reject the null hypothesis.

4. Results and Discussions

4.1. Reliability

The reliability of the studied variables was tested using Cronbach's alpha coefficient, as shown in Table 3 below. The variables whose Cronbach's alpha is greater than the threshold value of 0.7 determined by [49] as an acceptance measure for reliability, were retained for the analyses.

All of the coefficient values were above the cutoff value of 0.7 for the identified variables as presented in the table below. Cronbach's Alpha being between 0.000, 1.000 and the consistency of data increases as Cronbach's Alpha approaches 1.000. Figure 10 illustrates consistency of the variables based on the data

Table 3. Cronbach's Alpha Coefficient of the suggested model variables.

Variable	Mean	Std. Deviation	Cronbach's Alpha
Trust in e-Government	3.0313	1.2548	0.8168
Perceived usefulness	3.0653	1.4632	0.7737
Perceived Ease of Use	3.0966	1.4008	0.8737
Information Quality	3.0483	1.3547	0.7165
Service Quality	2.8778	1.3585	0.7496
Past Experience	2.9205	1.3669	0.7466
Government Reputation	3.0625	1.3719	0.9565
Security	2.9205	1.432	0.8627
Privacy	2.9915	1.4091	0.9437

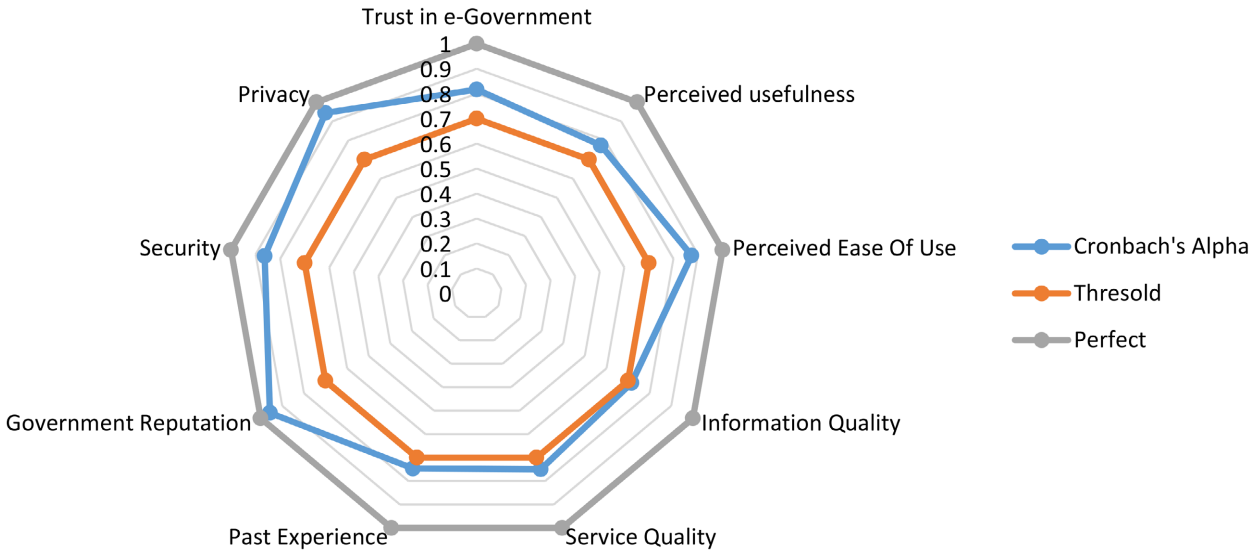


Figure 10. Consistency of data collected.

collected and "government reputation" has the highest level of consistency.

4.2. Descriptive Statistics

Table 4 presents demography description:

4.3. Hypotheses Testing

The hypothesis-testing algorithm shown on **Figure 8** in section 3.2: ANOVA analysis is used to test hypotheses H_1 through H_6, since these hypotheses are to examine the existence of statistical differences in respondents' trust level in e-government based on their demographic characteristics.

In addition, simple linear regression is used to examine the influence of the other constructs on trust in e-government, and finally multiple linear regression is used to examine the overall influence of all of these constructs on trust in e-government.

4.3.1. Testing of Demography Hypotheses

To test each of the hypotheses (H_1…H_6) respectively associated to demographic characteristics (gender, age, educational level, income, Internet experience and cultural perception), a separate Analysis of variance (ANOVA) test is conducted where the testing value is statistical significance (Sig.) also known as p-value described in sub section 3.2.2 where "Sig." is between 0.000 and 1.000.

The variable has effect or the associated hypothesis is accepted when "Sig." ≤ 0.05. The variable effectiveness increases when "Sig." approaches 0.000. **Table 5** summarizes the results.

In our data collection process the variable occupation (H_0) is included which was not initially in our proposed model and based on the calculated F and p-value, H_0 has effect on trust in e-government services since its p-value is less than the threshold (0.05). Based on the results shown on **Table 5**, similar results

Table 4. Demography description.

		Frequency	Percentage %
Gender	Female	167	47.4%
	Male	185	52.6%
	Total	352	100.0%
Age	18 - 30	104	29.5%
	31 - 40	84	23.9%
	41 - 50	87	24.7%
	51 - 60	77	21.9%
	Total	352	100.0%
Education	Diploma/Bachelor	142	40.3%
	High school	72	20.5%
	Postgraduate	66	18.8%
	Secondary School	72	20.5%
	Total	352	100.0%
occupation	Entrepreneur	53	15.1%
	Government employee	81	23.0%
	Pensionary	36	10.2%
	Private employee	89	25.3%
	Self-employee	32	9.1%
	Student	61	17.3%
	Total	352	100.0%
Income per month (CFA)	250,000 - 500,000	107	30.4%
	500,000 - 800,000	82	23.3%
	Above 800,000	63	17.9%
	under 250,000	100	28.4%
	Total	352	100.0%
Internet Experience	>10 years	67	19.0%
	1 - 5 years	93	26.4%
	6 - 10 years	117	33.2%
	Less than one year	75	21.3%
	Total	352	100.0%
Region of origin	Adamaoua	30	8.5%
	Centre	41	11.6%
	Est	34	9.7%
	Extreme Nord	27	7.7%

Continued

	Litoral	45	12.8%
	Nord	39	11.1%
	Nord Ouest	35	9.9%
	Ouest	34	9.7%
	Sud	40	11.4%
	Sud Ouest	27	7.7%
	Total	352	100.0%
Mastering of local language	No	139	39.5%
	Yes	213	60.5%
	Total	352	100.0%
Participation in cultural activities	No	145	41.2%
	Yes	207	58.8%
	Total	352	100.0%

Table 5. ANOVA analysis results of the demographic characteristics.

Demographic Category	Classification	Mean	Std. Deviation	F	Sig.	Decision
Gender	Female	3.11	1.326	1.183	0.278	No effect
	Male	2.96	1.186			
	Total	3.03	1.255			
Age	18 - 30	2.96	1.238	2.014	0.012	Effect
	31 - 40	3.32	1.234			
	41 - 50	2.91	1.282			
	51 - 60	2.95	1.245			
	Total	3.03	1.255			
Education	Secondary School	2.88	1.034	2.926	0.025	Effect
	High school	3.03	1.267			
	Diploma/Bachelor	2.96	1.360			
	Postgraduate	3.35	1.196			
	Total	3.03	1.255			
Occupation	Entrepreneur	2.72	1.150	3.670	0.014	Effect
	Government employee	3.12	1.317			
	Pensionary moyen	2.89	1.214			
	Private employee	2.96	1.278			
	Self-employee	3.41	1.132			

Continued

	Student	3.18	1.272			
	Total	3.03	1.255			
Monthly Income	250,000 - 500,000	2.78	1.152	4.468	0.004	Effect
	500,000 - 800,000	3.34	1.363			
	Above 800,000	2.81	1.216			
	under 250,000	3.19	1.228			
	Total	3.03	1.255			
Internet Experience	Less than one	3.15	1.099	2.106	0.034	Effect
	1 - 5 years	3.04	1.188			
	6 - 10 years	3.09	1.368			
	>10 years	2.79	1.297			
	Total	3.03	1.255			
Participation in cultural activities	No	3.03	1.193	0.002	0.968	No effect
	Yes	3,03	1,299			
	Total	3,03	1,255			

recorded for H_2 through H_5 meanwhile the associated variables for H_1 and H_6 have no effect on trust in e-government services since their respective calculated p-values were not significant (Sig.).

4.3.2. Testing of Hypotheses (H_7...H_9)

Following our proposed hypothesis-testing algorithm, hypotheses H_7, H_8 and H_9 with respective associated variables: technological factors, governmental factors and risk factors are analyzed based on a two-step linear regression. Firstly as separate influence of each variable in the construct is examined to test the sub-hypotheses and secondly, multi linear regression for each hypothesis.

1) *Hypothesis H_7 (Technological Factor)*

The hypothesis (H_7) with construct as technological factor consists of four sub-hypotheses (H_7a through H_7d) with associated variables as perceived usefulness, perceived ease of use, quality of information and quality of service. The results of the simple linear regression of each of these sub-hypotheses are shown on Table 6.

Table 6 illustrates that H_7a, H_7b, H_7c and H_7d are supported and the variables associated with these sub-hypotheses are found to have a positive influence on citizens' trust in e-government since for each case, p-value (sig.) is less than 0.05. Information quality has the strongest influence (standardized $\beta = 0.137$), whereas service quality has the weakest influence (standardized $\beta = 0.079$). Detail illustration is shown on Figure 11 below.

2) *Hypothesis H_8 (Governmental Factor)*

The hypothesis (H_8) with construct as governmental factor consists of two

Table 6. Simple linear regression: Technological factors.

Variable	R Square	Adjusted R Square	Std. Error of the Estimate	Unstandardized Coefficients B		Standardized Coefficients Beta	t	Sig.	Decision
Perceived usefulness	0.013	0.01	1.248	(Constant)	3.366	0.114	19.822	0	Effect
				Perceived usefulness	0.109		2.143	0.033	
Perceived Ease Of Use	0.018	0.015	1.245	(Constant)	3.384	0.134	21.96	0	Effect
				Perceived Ease Of Use	0.117		2.539	0.0193	
Information quality	0	0.002	1.256	(Constant)	2.646	0.137	16.175	0.01	Effect
				Information quality	0.126		2.579		
Service quality	0.006	0.003	1.253	(Constant)	2.821	0.079	18.015	0	Effect
				Service quality	0.073		1.485	0.0138	

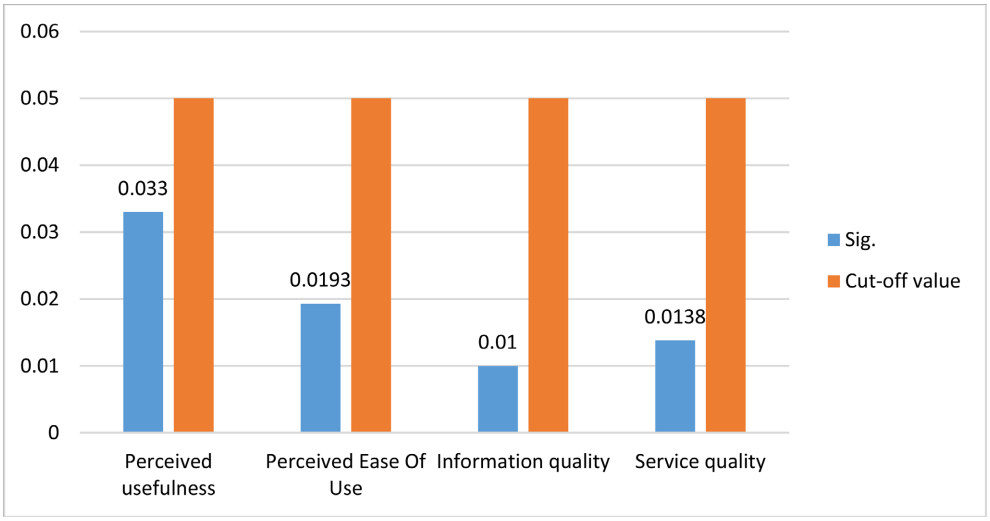


Figure 11. Technological factors.

sub-hypotheses (H_8a and H_8b) with associated variables as past experience and government reputation. The results of the simple linear regression of each of these sub-hypotheses are shown in Table 7 below.

Table 8 illustrates that the two sub-hypotheses (H_8a, H_8b) that composite H_8 are supported and the variables associated with these sub-hypotheses are found to have a positive influence on citizens' trust in e-government since p-value is less than 0.05 for both variables. Government reputation has a stronger influence (standardized $\beta = 0.203$) than Past experience (standardized $\beta = 0.061$). Figure 12 below illustrates the results.

2) *Hypothesis H_9 (Risk Factor)*

The hypothesis (H_9) with construct as risk factor consists of (H_9a and H_9b) with associated variables as security and privacy. The results of the simple linear

Table 7. Simple linear regression: government factors.

Variable	R Square	Adjusted R Square	Std. Error of the Estimate	Unstandardized Coefficients B		Standardized Coefficients Beta	t	Sig.	Decision
Past Experience	0.004	0.001	1.254	(Constant)	2.873		18.737	0.0253	Effect
				Past Experience	0.054	0.061	1.146		
Government Reputation	0.041	0.038	1.23	(Constant)	2.494		16.246	0.0112	Effect
				Government Reputation	0.181	0.203	3.874		

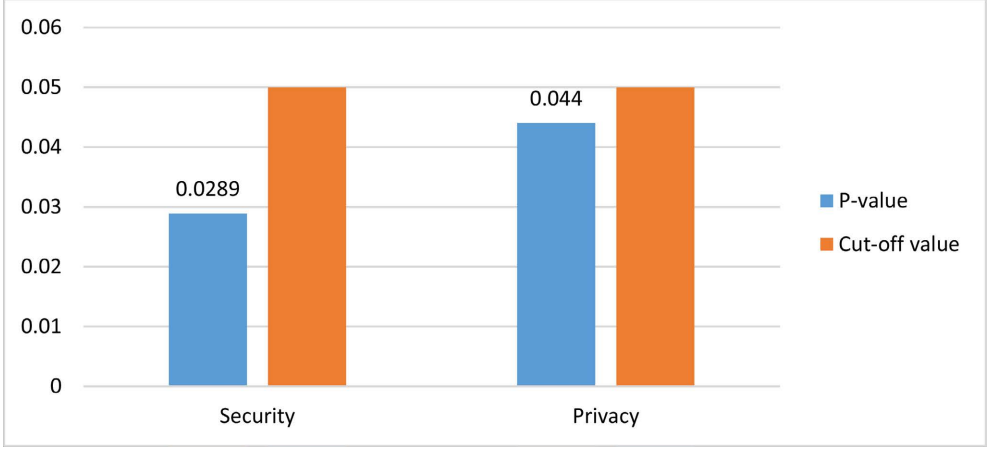


Figure 12. Governmental factor.

Table 8. Simple linear regression: risk factors.

Variable	R	Adjusted R Square	Std. Error of the Estimate	Unstandardized Coefficients B		Standardized Coefficients Beta	t	P-value	Decision
Security	0.003	0.000	1.255	(Constant)	3.179		20.596	0.0289	Effect
				Security	−0.051	−0.057	−1.063		
Privacy	0.001	−0.002	1.256	(Constant)	3.099		20.159	0.0440	Effect
				Privacy	−0.023	−0.026	−0.493		

regression of each of these sub-hypotheses are shown in Table 8.

Table 8 illustrates that the two sub-hypotheses (H_9a, H_9b) that composite H_8 are supported and the variables associated with these sub-hypotheses are found to have a negative influence on citizens' trust in e-government since p-value is less than 0.05 for both variables. Security has a stronger influence (standardized $\beta = -0.057$) than privacy (standardized $\beta = -0.026$). Details are illustrated on Figure 13 below.

4.3.3. Multiple Linear Regression

Multiple linear regression is applied to examine the combined influence of technological factors, governmental factors, risk factors and their interactions on

citizens' trust in e-government. Tables 9-11 summarize the results:

Table 9 shows that the determination factor R^2 is equal to 4.5%, which means that the examined constructs explain about 4.5%, of the change in citizens' trust in e-government.

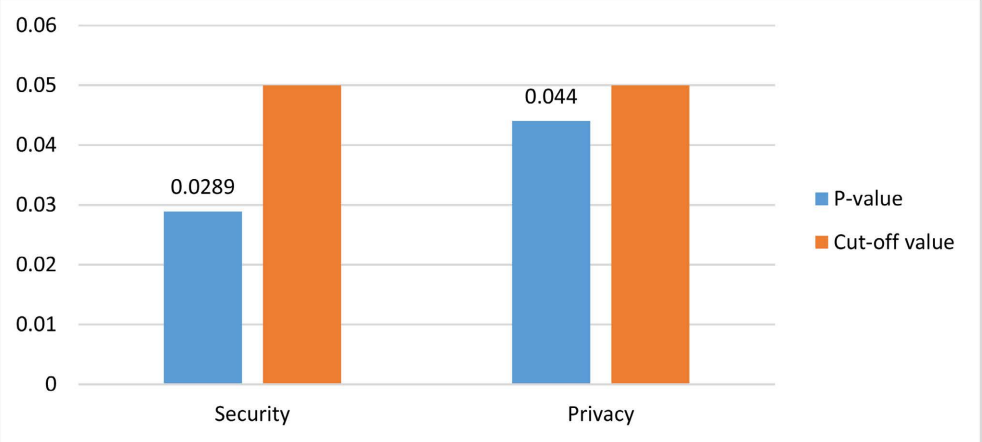


Figure 13. Risk factor.

Table 9. Model summary.

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.213[a]	0.045	0.037	1.231

a. Predictors: (Constant), Governmental Factors, Technological Factors, Risk_Factors

Table 10. ANOVA.

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	25.113	3.000	8.371	5.522	0.001[b]
	Residual	527.543	348.000	1.516		
	Total	552.656	351.000			

b. Predictors (Independent Variable): (Constant), Governmental Factors, Technological Factors, Risk Factors.

Table 11. Coefficients.

Model		Unstandardized Coefficients		Standardized Coefficients Beta	t	Sig.
		B	Std. Error			
1	(Constant)	2.804	0.154		18.155	
	Technological Factors	0.122	0.066	0.097	1.845	0.004
	Governmental Factors	0.216	0.066	0.172	3.281	0.001
	Risk_Factors	−0.076	0.047	−0.085	−1.624	0.002

As shown on Table 10, the model is globally significant (F = 5.522 and p-value = 0.001). Thus, the factors considered entirely indicate citizens' trust in government services. At 5% threshold of the p-value, the coefficients of the three factors all seem significant. Thus, technological, government and risk factors are the elements that affect citizens' trust in government services.

Table 11 illustrates the influence of each independent construct, the largest influence is for the governmental factors (standardized β = 0.172, p-value = 0.001), followed by technological factors (standardized β = 0.097, p-value = 0.004), then risk factors (standardized β = −0.085, p-value = 0.002). Figure 14 depicts the results.

4.4. Discussions

Based on the proposed research model, results were recorded on three constructs (technological factors, governmental factors and risk factors) as well as the demographic characteristics of the citizens captured in the study sample.

Regarding the demographic characteristics, the findings showed expected results as most of the characteristics are had statistically significant differences in the level of citizens' trust in e-government except gender and cultural affiliations. Concerning gender, the findings matches the findings of [2] [5] and [32] who indicated that the difference between males and females is not significant. One possible reason for this insignificance is that the use of internet and internet-supported systems is accessible for both males and females; therefore, gender is no more a determining factor [12]. As for cultural affiliations, the result confirms the rapid growth of ICT adoption in the society including the rural areas where ICTs is considered to improve on agriculture in Cameroon [50], which is the predominant activity. Therefore, cultural practices or believes do not influence citizens' trust in e-government services in Cameroon.

Regarding technological factors, the findings revealed that technological factors significantly influence trust level in e-government. This result seems logical, when the system that provides the intended service is useful, easy to use, availing accurate and timely information, reliable, and responsive to the users' enquiries, the users' trust level in the system is expected to rise. The current study examined

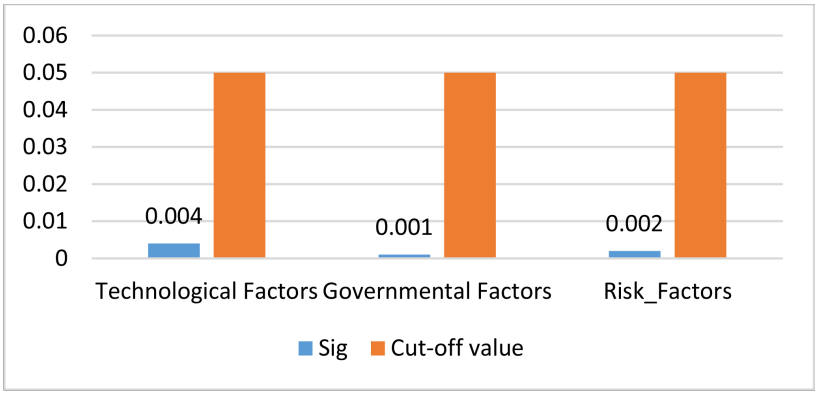


Figure 14. Main variables influence.

four technological factors (perceived usefulness, perceived ease of use, service quality and information quality), the findings relating to service quality and information quality are in line with the findings of [1]. The findings concerning the other two factors are supported by the findings of [2] who found that perceived usefulness positively influence trust in e-government, and [1] who found a significant influence of perceived ease of use on intention to use e-government system.

Regarding governmental factors, two variables are included in the research: past experience and reputation. Governmental factors in the research have the strongest influence of the citizens' trust in e-government. This result is consistent with [1] and [32]. Indeed, governments have a critical role in gaining users' trust in the e-government system and maintaining these users as regular ones. This could be achieved by providing high quality services to the users particularly those who are new to the system, as the users' past experience is a determining factor of trust. Furthermore, government reputation is also vital for encouraging users to use e-government services, if the government agencies are trustworthy in the traditional form of providing services through offices and departments, this may positively influence their e-services, particularly that [2] revealed that perceived governmental trustworthiness will positively influence the trust in e-government services.

Regarding risk factors, two variables are included in the research: privacy and security concerns and the results reveal that these factors influence negatively citizens' trust in e-government services where these results falls in line with the study carried out by [32]. These results seem logical in the Cameroonian context viewing the exponential growth rate of cyber threats and cybercrimes in the country as reported by [23]. Specifically, Citizens' concerns about their personal information or critical information and the possibility of misusing these information either intentionally or accidently by other parties undermine their trust level in e-government.

4.5. Recommendations

Table 12 presents our different recommendations to improve trust in E-government services.

5. Conclusions

The research is aimed at exploring those factors that may influence citizens' trust in e-government in Cameroon as an attempt to fill the gap in the available literature regarding the research state in developing countries. In addition, present to the government of Cameroon a list of recommendations deduced from the results obtained that will reinforce citizens' trust in e-government services. Based on an extensive literature review, a research model was proposed, which hypothesizes three relationships between three selected constructs as well as six demographic characteristics. The analysis of the gathered data applied simple and

Table 12. Recommendations.

	Recommendations	Principal affecting factors
a)	The government should put in place mechanisms to integrate citizen's views in all the phases of developing e-government projects.	Demographic
b)	When the government is designing and implementing e-government service related projects, emphasis should be put in place to ensure that the intended services are useful, easy to use, and responsive to the users' enquiries.	Demographic and Technological
c)	As in b), the information provided by the intended e-government services should be available, accurate, reliable and accessible in a timely manner.	Demographic and Technological
d)	Government should put in place mechanisms to regularly evaluate government agencies based on citizens' feedbacks.	Governmental
e)	To encourage local industry who understands better the country context, the government should support the start-ups business innovation platforms and small medium enterprises (SME) in grants, tax incentives, subsidized loans and procure their systems in line with government quality and standards criteria	Demographic and Technological
f)	The government should provide training programs and more seminars to citizen about benefits of e-government services and providing citizen with educational programs that will raise an awareness about online security and online protections.	Risk, Demographic and Governmental
g)	All stakeholders including policymakers, public officer, IT experts, private sectors, citizens should coordinate and work together to enact laws, policies, regulation, plans and guidelines that will set control to all e-services activities.	Demographic, Technological, Governmental and Risk
h)	The citizen's privacy and security when they transacting online are key foundation to trust in e-government and critical factors for any system uptakes. Therefore, the government should build a trust mechanisms by investing seriously in area of computer defence and security.	Risk and Governmental
i)	With the advent of Artificial Intelligence (AI) and Machine Learning (ML), the government could sponsor the fostering of this research in building intelligent advisory systems used as tools to reinforce citizens' trust in e-government services based on automatic running of the hypothesis-testing algorithm described in Figure 9	Demographic, Technological, Governmental and Risk

multiple regression models.

From the results obtained, four demographic characteristics (age, education, occupation and income) have influence on citizens' in e-government meanwhile gender and cultural affiliation have no influence. With regard to the influence of each independent construct (technological factors, governmental factors and

risk factors); all of the proposed constructs significantly influenced trust level in e-government. The research results conclude that technological factors and governmental factors positively influence trust level in e-government, whereas risk factors have a negative influence on trust level. As Cameroonian government engages in developing e-government services, the government is encouraged to implement the recommendations in order to reinforce citizens' trust in e-government services.

For future research, the scope could be extended to citizens living in all the ten regions including urban and rural areas.

In perspective, emerging technologies such as Artificial Intelligence (AI) and Machine Learning (ML) could be deployed with the aim of fostering this research in building intelligent advisory systems used as tools to reinforce citizens' trust in e-government services. The principal deliverable of the research project will be an intelligent system based on the implementation of the hypothesis-testing algorithm shown in **Figure 9**.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

References

[1] Ali Alkateeb, M. and Abdalla, R.A. (2021) The Antecedents of Trust in E-Government: Palestinian Citizens' Perspective. *Studies of Applied Economics*, **39**, 20 p. https://doi.org/10.25115/eea.v39i7.4871

[2] Colesca, S.E. (2009) Increasing E-Trust: A Solution to Minimize Risk in E-Government Adoption. *Journal of Applied Quantitative Methods*, **4**, 31-44.

[3] World Bank (2020) GovTech Report and Short-Term Action Plan. http://www.worldbank.org

[4] Akbar, H. (2015) Factors Influencing the Process of E-Government Diffusion a Conceptual Framework. *International Journal of Commerce and Management Research*, **2**, 62-67.

[5] AlAwadhi, S. (2019) A Proposed Model of Trust Factors for E-Government Adoption and Civic Engagement. *Proceedings of the* 52*nd Hawaii International Conference on System Sciences*. https://doi.org/10.24251/HICSS.2019.381

[6] Morgeson III, F.V., VanAmburg, D. and Mithas, S. (2010) Misplaced Trust? Exploring the Structure of the E-Government-Citizen Trust Relationship. *Journal of Public Administration Research and Theory*, **21**, 257-283. https://doi.org/10.1093/jopart/muq006

[7] Alomari, M.K., Sandhu, K. and Woods, P. (2014) Exploring Citizen Perceptions of Barriers to E-Government Adoption in a Developing Country. *Transforming Government*: *People*, *Process and Policy*, **8**, 131-150. https://doi.org/10.1108/TG-05-2013-0013

[8] Obaid, T., Abu Mdallalah, S., Jouda, H. and Abu Jarad, A. (2020) Factors for Successful E-Government Adoption in Palestine: A Conceptual Framework. *The* 1*st International Conference on Information Technology and Business ICITB*2020. https://doi.org/10.2139/ssrn.3660422

[9] World Bank (2014) GovTech Report and Short-Term Action Plan. http://www.worldbank.org

[10] OECD (2014). Development Co-Operation Report 2014. https://www.oecd-ilibrary.org/

[11] European Commission (2014) EU E-Government Report 2014. https://digital-strategy.ec.europa.eu

[12] Lavanya, R. and Karthikeyan, P. (2016) A Study on the Usage of Social Networking Sites among College Students with Reference to Erode District. *Asian Journal of Research in Social Sciences and Humanities*, **6**, 1230-1240. https://doi.org/10.5958/2249-7315.2016.00280.X

[13] Moorman, C., Deshpandé, R. and Zaltman, G. (1993) Factors Affecting Trust in Market Research Relationships. *Journal of Marketing*, **57**, 81-101. https://doi.org/10.1177/002224299305700106

[14] Deutsch, M. (1958) Trust and Suspicion. *Journal of Conflict Resolution*, **2**, 111-131. https://doi.org/10.1177/002200275800200401

[15] Rotter, J.B. (1967) A New Scale for the Measurement of Interpersonal Trust. *Journal of Personality*, **35**, 651-665. https://doi.org/10.1111/j.1467-6494.1967.tb01454.x

[16] Lewis, J.D. and Weigert, A. (1985) Trust as a Social Reality. *Social Forces*, **63**, 967-985. https://doi.org/10.2307/2578601

[17] Mayer, R.C., Davis, J.H. and Schoorman, D.F. (1995) An Integrative Model of Organizational Trust. *The Academy of Management Review*, **20**, 709-734. https://doi.org/10.2307/258792

[18] Rousseau, D., Sitkin, S., Burt, R. and Camerer, C. (1998) Not So Different after All: A Cross Discipline View of Trust. *Academy of Management Review*, **23**, 393-404. https://doi.org/10.5465/amr.1998.926617

[19] Grandison, T. and Sloman, M. (2000) A Survey of Trust in Internet Applications. *IEEE Communications Survey and Tutorials*, **3**, 2-16. https://doi.org/10.1109/COMST.2000.5340804

[20] Mui, L., Mohtashemi, M. and Halberstadt, A. (2002) A Computational Model of Trust and Reputation. *Proceedings of the* 35*th Hawaii International Conference on System Sciences*, Big Island, 10 January 2002, 2431-2439. https://doi.org/10.1109/HICSS.2002.994181

[21] Olmedilla, D., Rana, O., Matthews, B. and Nejdl, W. (2005) Security and Trust Issues in Semantic Grids. https://www.researchgate.net/publication/30814984_Security_and_Trust_Issues_in_Semantic_Grids

[22] United Nations (2022) UN Global E-Government Survey 2022. https://publicadministration.un.org/egovkb/en-us/Reports/UN-E-Government-Survey-2022

[23] ANTIC (2022) Cameroon's Cyber Security Report. http://www.antic.cm

[24] Carter, L. and Belanger, F. (2005) The Utilization of E-Government Services: Citizens Trust, Innovation and Acceptance Factors. *Information Systems Journal*, **15**, 5-25. https://doi.org/10.1111/j.1365-2575.2005.00183.x

[25] Welch, E.W., Hinnant, C.C. and Moon, M.J. (2005) Linking Citizen Satisfaction with E-Government and Trust in Government. *Journal of Public Administration Research and Theory*, **53**, 371-391. https://doi.org/10.1093/jopart/mui021

[26] Navarrete, C. (2010) Trust in E-Government Transactional Services: A Study of Citizens' Perceptions in Mexico and the US. 2010 43*rd Hawaii International Confe-*

rence on System Sciences, Honolulu, 5-8 January 2010, 1-10. https://doi.org/10.1109/HICSS.2010.487

[27] Khasawneh, R.T., Rabayah, W.A. and Abu-Shanab, E.A. (2013) E-Government Acceptance Factors: Trust and Risk. *The 6th International Conference on Information Technology*.

[28] Teo, T., Srivastava, S. and Jiang, L. (2008) Trust and Electronic Government Success: An Empirical Study. *Journal of Management Information Systems*, **9**, 99-132. https://doi.org/10.2753/MIS0742-1222250303

[29] Wang, T. and Lu, Y. (2010) Determinants of Trust in E-Government. 2010 *International Conference on Computational Intelligence and Software Engineering*, Wuhan, 10-12 December 2010, 1-4. https://doi.org/10.1109/CISE.2010.5676832

[30] Bélanger, F. and Carter, L. (2008) Trust and Risk in E-Government Adoption. *The Journal of Strategic Information Systems*, **17**, 165-176. https://doi.org/10.1016/j.jsis.2007.12.002

[31] Alsaghier, H., Ford, M., Nguyen, A. and Hexel, R. (2009) Conceptualizing Citizen's Trust in E-Government: Application of Q Methodology. *Electronic Journal of E-Government*, **7**, 295-310.

[32] Alzahrani, L., Al-Karaghouli, W. and Weerakkody, V. (2018) Investigating the Impact of Citizens' Trust toward the Successful Adoption of E-Government: A Multigroup Analysis of Gender, Age, and Internet Experience. *Information Systems Management*, **35**, 124-146. https://doi.org/10.1080/10580530.2018.1440730

[33] Abdouramane, N., Shi, Z. and Ngum, N.L. (2022) Cameroonian Culture. https://www.researchgate.net/publication/360589257_Cameroonian_Culture

[34] Hartanti, F.T., AbawaJy, J.H., Chowdhury, M. and Shalannanda, W. (2021) Citizens' Trust Measurement in Smart Government Services. *IEEE Access*, **9**, 150663-150676. https://doi.org/10.1109/ACCESS.2021.3124206

[35] Abu-Shanab, E. and Al-Azzam, A. (2012) Trust Dimensions and the Adoption of E-Government in Jordan. *International Journal of Information Communication Technologies and Human Development*, **4**, 39-51. https://doi.org/10.4018/jicthd.2012010103

[36] Gefen, D. and Straub, D. (2000) The Relative Importance of Perceived Ease-of-Use in Is Adoption: A Study of E-Commerce Adoption. *JAIS*, **1**, 1-20. https://doi.org/10.17705/1jais.00008

[37] Suki, N.M. and Ramayah, T. (2010) User Acceptance of the E-Government Services in Malaysia: Structural Equation Modelling Approach. *Interdisciplinary Journal of Information, Knowledge, and Management*, **5**, 395-413. https://doi.org/10.28945/1308

[38] Davis, F. (1989) Perceived Usefulness, Perceived Ease of Use, and User Acceptance of Information Technology. *MIS Quarterly*, **13**, 319-340. https://doi.org/10.2307/249008

[39] Ngowi, G.F. (2017) Critical Factors Affecting Usage of E-Government in Tanzania. Master's Thesis, Graduate School of Information Sciences, Soongsil University, Seoul.

[40] Mahadeo, J.D. (2009) Towards an Understanding of the Factors Influencing the Acceptance and Diffusion of E-Government Services. E*lectronic Journal of E-Government*, **7**, 391-402.

[41] Nulhusna, R., Sandhyaduhita, P.I., Hidayanto, A.N. and Phusavat, K. (2017) The Relation of E-Government Quality on Public Trust and Its Impact on Public Partic-

ipation. *Transforming Government*: *People*, *Process and Policy*, **11**, 393-418. https://doi.org/10.1108/TG-01-2017-0004

[42] Chatterjee, S., Kar, A.K. and Gupta, M.P. (2018) Success of IoT in Smart Cities of India: An Empirical Analysis. *Government Information Quarterly*, **35**, 349-361. https://doi.org/10.1016/j.giq.2018.05.002

[43] Sepasgozar, S.M.E., Hawken, S., Sargolzaei, S. and Foroozanfa, M. (2017) Implementing Citizen Centric Technology in Developing Smart Cities: A Model for Predicting the Acceptance of Urban Technologies. *Technological Forecasting and Social Change*, **142**, 105-116. https://doi.org/10.1016/j.techfore.2018.09.012

[44] Beldad, A., van der Geest, T., de Jong, M. and Steehouder, M. (2012) A Cue or Two and I'll Trust You: Determinants of Trust in Government Organizations in Terms of Their Processing and Usage of Citizens' Personal Information Disclosed Online. *Government Information Quarterly*, **29**, 41-49. https://doi.org/10.1016/j.giq.2011.05.003

[45] Ranaweera, H.M.B.P. (2016) Perspective of Trust towards E-Government Initiatives in Sri Lanka. *SpringerPlus*, **5**, Article No. 22. https://doi.org/10.1186/s40064-015-1650-y

[46] Tranmer, M. and Elliot, M. (2008) Multiple Linear Regression. Cathie Marsh Centre for Census and Survey Research.

[47] Huang, Y.B. (2019) Multiple Linear Regression (MLR) Handouts. University of Chicago, Chicago.

[48] Njei, C. (2023) Reinforcement of Cameroonian Citizens's Trust in E-Government. Master's Thesis, University Yaounde 1, Yaoundé.

[49] Nunnaly, J. (1978) Psychometric Theory. McGraw-Hill, New York.

[50] Balgah, R.A., Bwifon, D.N. and Shillie, P.N. (2022) COVID-19, Armed Conflict and ICTs Adoption Decisions. Insights from Cameroonian Farmers. *Advances in Social Sciences Research Journal*, **9**, 12-32. https://doi.org/10.14738/assrj.98.12763