Vol. 02, No. 03 (2024) 139-146, doi:10.61552/JEMIT.2024.03.005 - http://jemit.aspur.rs

INVESTIGATING THE ROLE OF SELF-EFFICACY ON ACCEPTANCE OF E-GOVERNMENT IN TANZANIA

Renatus Mushi [1]

Received 05.12.2023.
Revised 10.03.2024.
Accepted 14.04.2024.

Keywords:

E-Government, E-government practices, TAM, UTAUT, TRA, Smart PLS 4, Self-Efficacy.

Original research

A B S T R A C T

E-government is the process of delivering government services through electronic media or platforms. It provides alternative options for offering services with minimal need for physical contact. Through E-government, there has been improvement in all sectors on the way citizens access services and share important information. The acceptance of E-government practices and tools is influenced by factors as explained by prominent models such as TAM, UTAUT and TRA. This research involves empirical evidence from the Tanzanian context to e-government self-efficacy has a significant impact on the acceptance of E-government systems. The research employs a survey of 159 respondents followed by analysis using Smart PLS 4. The conceptual framework was developed by extending the Technology Acceptance Model with E-government Self-Efficacy before testing it in quantitative research. Results of the model show that all the relationships were found to be significant. Among others, this research provides theoretical underpinnings to the area of acceptance of technologies as well as providing areas for future research and policy implications.

1. INTRODUCTION

The advancement of technology has been witnessed in various cases of human lives. In numerous respects, it has changed the way both citizens and government entities function. To make sure that the delivery of government services to the public is also impacted, researchers discovered that the E-business revolution's changes required government agencies and information technology (IT) providers to work together (Abubakr & Kaya, 2021).

The term "e-government" refers to the application of information technology, particularly e-commerce, to provide organizations and individuals with easier access to government data and services. It also refers to the provision of public services to individuals, suppliers, business associates, and public sector employees (Owusu et al., 2022). The politicalsector, where electronic voting has replaced paper ballots, the health sector, where multiple automation is used to deliver services, and various improvements observed in agriculture, entertainment, transportation, and other government services are examples of e-government systems and practices (Owusu et al., 2022).

Policies, strategies, laws, and even accessibility concerns are some of the major variables that usually influence the deploymentof e-government services (Owusu et al, 2022; Abubakr & Kaya, 2021). Toensuretheeffective and proper use of the technology in that scenario, the countries need to be ready for electronic governance (Munyoka, 2020). The sophistication that comes with improved computer service delivery has also completely changed how technologies are integrated into user environments. It is essential to assess if the operating environment for e-government is ready to accept the technology.The recent advancements in e-government systems in Tanzania have enabled the utilization of the government Electronic Payment Gateway (GePG) and the interconnection of different public sectors, such as the Business Registration and Licensing Agency (BRELA),

[1]Corresponding author: Renatus Mushi
Email: Renatus.michael@gmail.com

National Identification Authority (NIDA), and Tanzania Revenue Authority (TRA).

While constant investments are made in e-government, fewer efforts are made to identify the barriers to adoption in the contexts where it is now used. Identifying the challenges will likely make it easier to make informed decisions about best practices for embracing and using e-government in Tanzania and similar contexts. The goals of e-government in any country can only be achieved if various factors are investigated to see if they influence citizen acceptance. There are a few obstacles to its adoption (Twizeyimana & Andersson, 2019).

Tanzania's National ICT Policy (2003), which was later revised in the National ICT Policy, 2016 (Ngeze, 2017), recognized the benefits of electronic government. The country's national e-government plan was subsequently created in 2009 to encourage citizens to invest in e-government by building their trust, willingness, and confidence. One of the additional initiatives was the establishment of an e-government body to oversee and regulate all e-government efforts in Tanzania (Twizeyimana & Andersson, 2019).

Following a situational analysis and survey of government operations, the agency created an e-government plan that was implemented from 2013 to 2018. The development of a citizen National Identity (ID) system, a government employment portal, and enhanced tax collection techniques are examples of e-government's achievements in Tanzania (Twizeyimana & Andersson, 2019). After a recent transformation, this agency is now an Authority (E-government Authority) with the responsibility of managing ICT compliance and administration in Tanzanian public sectors.

The main objective of this research is to investigate the relationship between key factors influencing the acceptance of e-government through a survey with a specific focus on investigating if e-government self-efficacy has a significant impact on the acceptance of e-government in Tanzania. Self-efficacyis an important factor in technology acceptance, especially in the context of developing countries like Tanzania which has a significant population with less exposure to technological gadgets and systems (Mushi, 2020). It is therefore essential to investigate its influence on the acceptance of e-government to the citizens. The next sections of this article are organised as follows: Section two discusses the e-government followed by section three which discusses the formulation of study hypotheses and conceptual framework. Section four discusses the methodology while section five presents the results and discussions. Section six provides a critical discussion before conclusions and future works in the seventh section.

2. LITERATURE REVIEW

The advancement of services through the Internet, e-commerce, and e-business in the private sector has increased pressure to rethink how to provide effective services to citizens, leading to the creation of e-government (Twizeyimana & Andersson, 2019). Government organizations and individuals find it difficult to keep up with the rate of constant advancements to guarantee that ICT tools and applications are successfully used to support seamless transactions. Therefore, from an e-government perspective, citizens are referred to as customers of governments; governments must empower people rather than just serve them. (Ndou, 2004; Owusu et al., 2022).

The provision of e-government services involves three types of actions: Government-to-government, government-to-business, government-to-citizens, and government-to-employee (Nkwe, 2012). Interactions between residents and their governments include paying taxes, paying water and energy bills, renewing permits, and applying for specific benefits. The government-to-citizen (G2C) sector facilitates citizen contact with the government, whereas the government-to-government (G2G) sector functions as an e-government hub through which different government sectors communicate (Chan et al., 2010; Owusu et al., 2022).

The theories on technology acceptance focus on how citizens' perceptions of e-government services are shaped on a personal or individual level. Examples of popular theories and models are the Technology Acceptance Model (TAM) and the Theory of Reasoned Actions (TRA) (Davis, 1989). Governments may face many challenges in providing citizens with reliable services. Some of the significant barriers or challenges mentioned in the literature include cultural differences, a lack of leadership and management support, a lack of knowledge about the e-government program, inadequate IT infrastructure, a lack of qualified personnel and training programs, a lack of policy and regulations for e-use, resistance to change to e-systems, a lack of strategic plans, and a shortage of financial resources (Al-Shboul et al., 2014; Munyoka, 2020; Nkwe, 2012).

3. HYPOTHESES FORMULATION AND CONCEPTUAL FRAMEWORK

This study expands on the Technology Acceptance Model (TAM), which suggests that when people are exposed to technology, a variety of factors influence their decisions about when and how to use it (Davis, 1989; Yueh et al., 2015). The two primary metrics of perceived usefulness (PU) and perceived ease of use (PEU) form the foundation of TAM. According to Davis (1989), PEU denotes the degree to which the system will relieve users of effort, while PU pertains to whether the technology would augment or improve the user's job performance. Many technology acceptance models have found success with the TAM as an extension since it has shown to be one of the most dependable and consistent models in the literature (Lindsay et al., 2011; Venkatesh, 2000).

PEU largely influences PU since it has an indirect impact on intentions to adopt technology and,

eventually, on technology usage. A person's willingness to carry out a specific behaviour is known as their behavioural intention (Davis, 1989). Most of the time, a variety of factors influence users' intentions to utilize a specific technology in the near future (Mushi, 2020).

Since this study adopts to expand TAM, the correlations that were examined using TAM in previous research that is comparable to this one are also adopted. Within the realm of e-government services, perceived ease of use refers to an internal belief that the systems facilitate seamless and barrier-free provision of feedback and complaints. Users would believe e-government is helpful and time-saving if they know how to access and utilize vital information through various websites and platforms. As a result, it is anticipated that perceived usefulness and perceived ease of use will positively correlate (Chawla & Joshi, 2019).

Furthermore, an easily understood system may increase user confidence since it implies that the service provider is competent in the system's construction (Khan et al., 2019; Nguyen et al., 2023). Conversely, when individuals can utilize e-government systems and obtain valuable e-government services, their doubts about the quality of the services will decrease and their willingness to use them will increase.

Citizens won't use e-government systems if they find them complicated or difficult to use (Abubakr & Kaya, 2021). The amount of effort users invest into the platform will probably determine how likely they are to engage as well (Karunia et al., 2023). Therefore, a key factor in deciding whether or not to use e-government services is perceived ease of use. By interacting and leaving comments on official websites, citizens can eventually engage in e-government services without having to visit government offices, saving money and time (Munyoka, 2020). Therefore, individuals' involvement in e-government systems may be significantly impacted by perceived usefulness (Nguyen et al., 2023). The following theories are put out in light of the justifications that have been discussed:

H1a: Perceived Ease of Use (PEU) of e-government systems will positively influence the citizens' Behaviour Intention (BI)

H1b: Perceived Ease of Use (PEU) of e-government systems will positively influence the citizens' Perceived Usefulness (PU)

H1c: Perceived Usefulness (PU) of e-government systems will positively influence the citizens' Behaviour Intention (BI)

The degree to which a person thinks they can use a computer to accomplish a certain task or job is known as computer self-efficacy (Compeau & Higgins, 1995). The concept of Computer Self-Efficacy was designed to express attitudes around desktop computers (Venkatesh, 2000). Taking into consideration that E-government encompasses various technical products, using them needs people with technical backgrounds or those who are technological-savvy. The same scenario has been witnessed in a study of Mushi (2020) where he asserts that mobile phone self-efficacy has a significant impact on the acceptance of mobile phone technology amongst employees of SMEs in Tanzania. Based on such arguments, the following hypothesis can be posited:

H2a: The Perceived E-government Self-Efficacy (ESE) positively influences the employee Perceived Ease of Use (PEU) of E-government.

The illustration of the formulated hypotheses is seen in the Conceptual Framework in Figure 1.

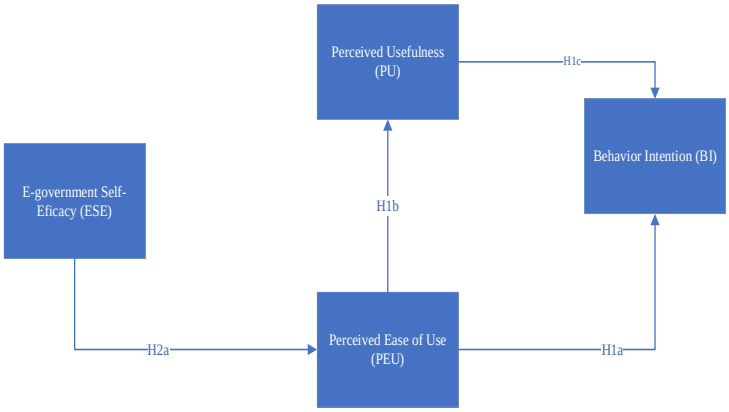

Figure 1. The conceptual framework of the research

4. RESEARCH METHODOLOGY AND DATA COLLECTION

This research involved a sample of 159 respondents in Tanzania who have experience in using or accessing e-government sites. Since all survey respondents were Swahili speakers, survey forms had to be accurately translated from the English into Swahili dialect. Back translations were therefore performed, an approach that is broadly applied in various cross-cultural surveys (Brislin, 1970). The data collection around 20 days. The total number of questionnaires which were distributed were 170 in which only 159 of them were filled up indicating a response rate of 93.5%. The sample consisted of 80 males and 79 females.

The sampling method used was random because the majority of Tanzanians are already using e-government systems in various contexts leaving the majority of the respondents being eligible for producing reliable results. Some of the questionnaires were sent to the respondents online and the rest were administered manually. In some circumstances, extra efforts were employed to convince respondents to allocate time to fill out the questionnaires.

The Smart PLS 4 was opted in this research over AMOS because the main target was primarily to predict the indicators utilizing the components (Burgess, 2001). Among the instruments developed for this effort was a survey form with 17 measurement items. Following the information systems research methods, a multiple-item Likert scale was utilized for assessments(Lee, Yoon, & Lee, 2009). Constructs were subjected to measurements with the use of the Likert scale, as suggested from related prior research (Isaac et al., 2017), where 1 denotes 'Strongly Disagree' and 5 denotes 'Strongly Agree'.

Regarding data analysis, the approach was based on the Structural Equation Modelling-Variance Based (SEM-CB) method using Partial Least Squares (PLS) to examine the research modelof this study (Ringle, Wende, & Becker, 2015). The analysis consisted of two phases of analysis which involve evaluations of current measurement models and evaluations of current structural models after carrying out descriptive analyses. This two-stage analytical approach comprising a measurement model and a structural model evaluation is better than a one-step evaluation (Hair et al., 2010; Schumacker & Lomax, 2004). The measurement models describe the measurements of constructs and structural models define the relationships among constructs in structural models (Hair et al., 2017).

The questionnaire was tested for reliability by using Cronbach alpha where the acceptable levels of alpha are 0.8, and higher is considered good, any value above 0.7 is satisfactory, and it is unacceptable if it is less than 0.5 (Burgess, 2001). Unidimensionality was assessed using criteria proposed by Awang (2015) which asserts that it is achieved when each of the items has a factor loading of value greater than 0.5. The Construct reliability was assessed using Cronbach's alpha (Tavakol & Dennick, 2011).

5. RESULTS AND DISCUSSIONS

The structural model was modelled in Smart PLS 4 as seen in Figure 2. It was then tested for reliability and validity before proceeding to further steps of analysis.

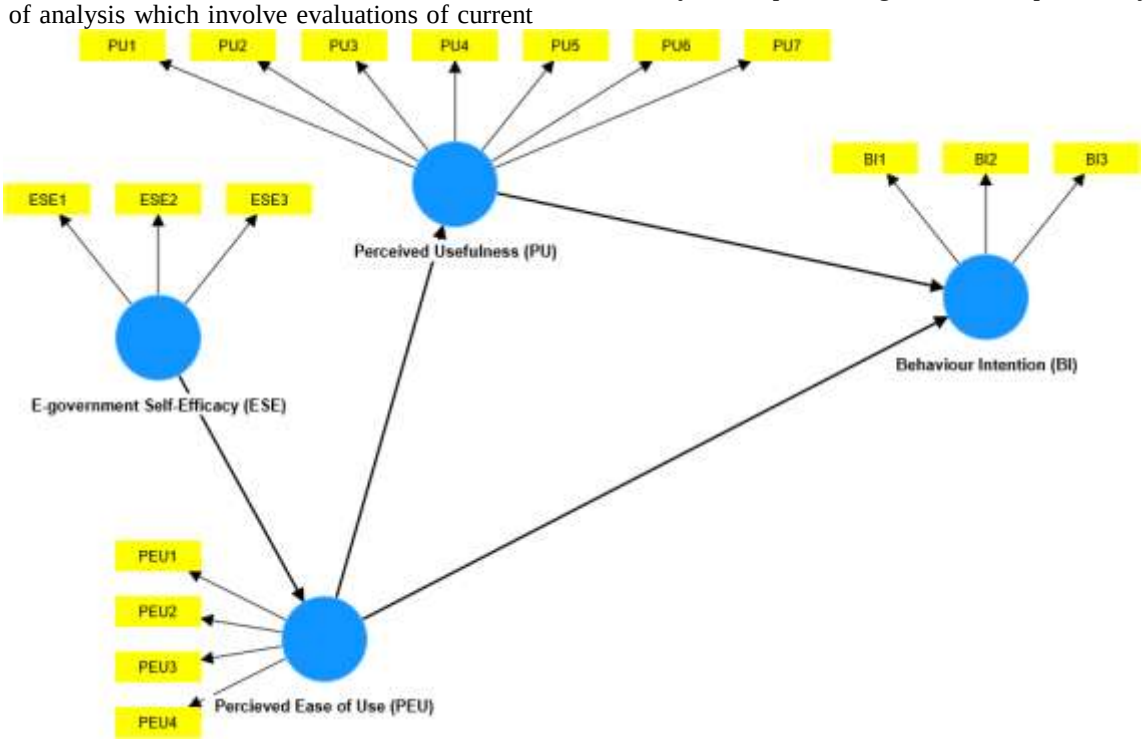

Figure 2. Structural Model of the study

The model's construct validity and reliability parameters are shown in Table 1. As can be observed, the model is legitimate and reliable to give results for path analysis because all Cronbach Alpha values are above 0.8 and the Composite reliability (rho_c) values are above 0.7. The results of the Heterotrait-Monotrait Ratio of Correlations (HTMT)-based Discriminant as seen in Table 2 and all the values are less than 0.9 which is a satisfactory level.

Validity assessments are shown in Table 3. Because each construct in the PLS path model has the strongest connections with its indicators, the results demonstrate that all values are less than 0.9, indicating that the model is reliable (Henseler et al., 2015).

Table 1. Construct Reliability and Validity Parameters (Author)

Factor	Cronbach's alpha	Composite reliability (rho_a)	Composite reliability (rho_c)	Average variance extracted (AVE)
Behaviour Intention (BI)	0.88	0.884	0.927	0.808
E-government Self-Efficacy (ESE)	0.904	0.974	0.937	0.833
Perceived Usefulness (PU)	0.838	0.843	0.878	0.508
Perceived Ease of Use (PEU)	0.864	0.873	0.907	0.71

Table 2. Discriminant Validity (Author)

Relationship	Heterotrait-monotrait ratio (HTMT)
E-government Self-Efficacy (ESE) ->Behaviour Intention (BI)	0.82
Perceived Usefulness (PU) ->Behaviour Intention (BI)	0.755
Perceived Usefulness (PU) -> E-government Self-Efficacy (ESE)	0.51
Perceived Ease of Use (PEU) ->Behaviour Intention (BI)	0.569
Perceived Ease of Use (PEU) -> E-government Self-Efficacy (ESE)	0.427
Perceived Ease of Use (PEU) -> Perceived Usefulness (PU)	0.876

Table 3. Data Validity Assessments

Factor	Behaviour Intention (BI)	E-government Self-Efficacy (ESE)	Perceived Usefulness (PU)	Perceived Ease of Use (PEU)
Behaviour Intention (BI)				
E-government Self-Efficacy (ESE)	0.82			
Perceived Usefulness (PU)	0.755	0.51		
Perceived Ease of Use (PEU)	0.569	0.427	0.876	

The analysis of the model's power in testing hypotheses was performed using Q^2, and the results are shown in Table 4. The results show that all values are greater than zero, indicating that the model's strength allows it to forecast how the constructs relate to one another.
Table 4 shows the path analysis results, which include all hypotheses and their associated p-values. Figure 3 also depicts a snapshot of the final modelwhere.

Table 4. Q2 predictive relevance

	Q^2predict	RMSE	MAE
Behaviour Intention (BI)	0.268	0.883	0.685
Perceived Usefulness (PU)	0.185	0.921	0.762
Perceived Ease of Use (PEU)	0.146	0.944	0.818

It can be seen that all the factor loadings are greater than 0.5 indicating that the model has attained a unidimensionality condition.

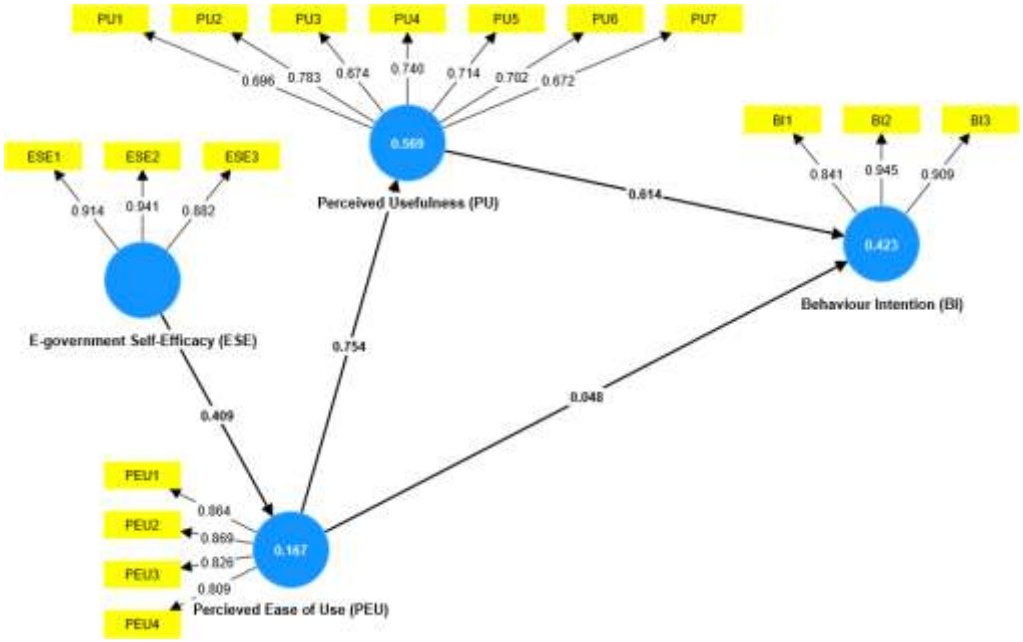

Figure 3. The final model of the study

Table 5. Path analysis results

Path Relationship	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T statistics (|O/STDEV|)	P values
E-government Self-Efficacy (ESE) -> Perceived Ease of Use (PEU)	0.444	n/a	n/a	0	0
Perceived Usefulness (PU) -> Behaviour Intention (BI)	1.066	1.16	5.116	0.208	0.835
Perceived Ease of Use (PEU) -> Behaviour Intention (BI)	-0.356	-0.447	5.119	0.07	0.945
Perceived Ease of Use (PEU) -> Perceived Usefulness (PU)	0.879	0.885	0.042	20.989	0

5.1 The direct influence of Perceived Ease of Use on Perceived Usefulness (H1b)

This study hypothesised that employees' perceptions of the perceived usefulness of mobile phone technology were directly influenced by their perceptions of its ease of use. Certain studies regarding the adoption of mobile phone technology also corroborated this (Cruz et al., 2010; Kwon & Chidambaram, 2000). Table 5 presents the study's findings, which indicate that the hypothesis was statistically significant. In such regard, employees' perceptions of the usefulness of e-government systems when obtaining government services are positively correlated with their perception of the system's ease of use.

5.2 The direct influence of Perceived Usefulness on Behaviour Intention (H1c)

It was hypothesised that the perceived usefulness of E-government systems would potentially influence the behavioural intention to use E-government systems in Tanzania. However, the results seen in Table 5 indicate that this hypothesis was rejected by the model ($p=0.853$). This implies that citizens' intentions to use e-government systems in the future are not necessarily influenced by their perception of their usefulness.

5.3 Direct Influence of Perceived Ease of Use on Behaviour Intention (H1a)

According to the study, citizens' intentions to use e-government systems in the near future will eventually be influenced by their perception of how user-friendly they are. The study's findings, which are shown in Table 5 show that this hypothesis was not supported showing that citizens' intentions to use e-government tools, software, and technologies in the near future are likely to increase with the ease of e-government systems.

5.4 Direct Influence of E-government Self-efficacy on Perceived Ease of Use (H2a)

It was hypothesised that users' perceptions of e-government's ease of use would be influenced by their confidence in their ability to use it and their certainty that it will enable them to achieve their goals. Using Table 5 as a reference, hypothesis H2a met statistical significance. Thus, this relationship is supported by the study. This result is consistent with research by Almaiah and Al Mulhem (2019), which demonstrated a positive influence of e-government Self-Efficacy on teachers' acceptance of mobile phones in early childhood education, and by Hsu et al. (2022), which found a direct correlation between E-government Self-Efficacy and Perceived Ease of Use in the logistics sector.

6. CRITICAL DISCUSSIONS

Since technology is becoming more widely used in the way governments provide services to their citizens, the adoption of e-government systems has become increasingly important in recent years. To enable important stakeholders to make the most of e-government's use, it is imperative to investigate the issues surrounding its application from a variety of angles. E-government Self-Efficacy is among the key aspects which need special attention whenever citizens are subjected to the use of e-government systems, platforms or tools to access services from the governments. This research provides a wide picture of how E-government Self-Efficacy relates to the factors of TAM through literature and empirical study. The findings of this study offer a strong foundation for the theoretical frameworks as well as the rules and guidelines governing how citizens in Tanzania and other nations with comparable contextual settings can use e-government.

7. CONCLUSIONS

This research provides insights into e-government technology acceptance by Tanzanian citizens. It employed a survey involving 159 respondents where TAM was extended by E-government Self-Efficacy before testing the hypotheses through a survey. The results of this research provide the basis for adjusting policy and regulations and a platform for researchers and scholars in the area of technology acceptance. Further research may focus on the assessment of other factors such as security and enjoyment on their impact on the way citizens access governmental services.

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Renatus Mushi
The Institute of Finance Management,
Tanzania.
renatus.michael@gmail.com
ORCID: 0000-0001-6996-5458