

The Adoption Dilemma of Open Government Data in Tanzania: An Extended UTAUT Model with Perceived Risk

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Abstract

Open Government Data (OGD) is a means for the government to enhance transparency, accountability, citizen participation, and innovation. Despite these advantages of OGD, its adoption and application remain relatively low in many developing countries, including Tanzania. This study aims to assess the factors influencing the adoption of Open Government Data in Tanzania using an extended Unified Theory of Acceptance and Use of Technology (UTAUT) model incorporating perceived risk. The study used a quantitative research approach, using a structured questionnaire completed by potential and existing users of OGD. The proposed research model was analyzed using Partial Least Squares Structural Equation Modeling (PLS-SEM). The study found that performance expectancy, facilitating conditions, and attitude significantly influenced behavioral intention to adopt OGD. Also, perceived risk emerged as the strongest predictor of attitude toward OGD adoption, underscoring the importance of considering users' perceptions of privacy, security, and data reliability. However, effort expectancy and social influence did not significantly affect attitude. The findings extend the UTAUT's applicability in the OGD context, and they provide practical insights for policymakers seeking to increase open data utilization. Efforts to improve ICT infrastructure, enhance data quality and accessibility, and address privacy and security concerns are essential for promoting the successful adoption of OGD in Tanzania.

Keywords: Open Government Data, UTAUT, Technology Adoption, Perceived risks, Attitude, Behavioural intention, Tanzania, PLS-SEM.

1. Introduction

The use of digital technologies has changed the way public information is created, managed, and distributed. The development of Open Government Data (OGD) reflects advances in digital governance, which refers to government-generated data that is free, accessible, and reused by the public with minimal restrictions (Shao & Saxena, 2018; Temba & Di, 2025). The adoption of OGD enhances transparency, accountability, innovation, citizen participation, and evidence-based decision-making.

The availability of government data creates opportunities for citizens, businesses, researchers, and public society organizations to access information and improve their services (de Souza et al., 2022; Shao, 2024).

OGD is a resource that promotes economic growth, improves public service delivery, encourages community engagement, and establishes democratic governance (Shao & Saxena, 2018; Wang & Lo, 2019). Therefore, governments from different countries have invested in establishing open data platforms and supporting policies (Albinali et al., 2023; Huang, 2024; Muñoz et al., 2022).

Despite governments' efforts to publish data, its adoption and use by intended users remain relatively low, particularly in developing countries (Alexopoulos et al., 2024; Bankuoru Egala & Afful-Dadzie, 2022; Shao, 2024). This shows that publishing data alone does not guarantee its adoption or use. This situation presents an adoption dilemma whereby the potential benefits of OGD are not fully realized because users may be unwilling to engage with available datasets. Existing studies suggest that factors such as perceived usefulness, facilitating conditions, trust, privacy concerns, and organizational readiness influence digital technology adoption (Talukder, 2019; Wirtz et al., 2022). However, there is limited empirical evidence regarding how these factors specifically affect the OGD adoption in Tanzania (Shao & Saxena, 2018; Shao, 2024; Temba & Di, 2025). Consequently, understanding the determinants of OGD adoption is critical to developing effective strategies to increase usage and unlock the developmental potential of open government data.

This study used the extended Unified Theory of Acceptance and Use of Technology (UTAUT) with perceived risk to assess the factors influencing the adoption of Open Government Data in Tanzania (Venkatesh et al., 2003). The UTAUT model was used because it is the most widely used model due to its strong predictive capability and detailed validation across different technologies and contexts (Shao & Saxena, 2018; Tamilmani, 2021). The UTAUT model suggests that technology adoption is largely influenced by user perceptions regarding performance expectancy, effort expectancy, social influence, and facilitating conditions.

There are limited empirical studies in developing countries, including Tanzania, investigating the adoption of OGD using the UTAUT model. Furthermore, concerns regarding privacy, security, trust, and data quality suggest that perceived risk may play a significant role in shaping users' attitudes toward OGD adoption (Saxena & Janssen, 2017; Wang & Lo, 2019). These factors may affect users' perceptions regarding the usefulness, ease of use, and accessibility of OGD platforms. Therefore, understanding how user-related factors influence OGD adoption through the UTAUT model can provide valuable insights for policymakers and practitioners seeking to enhance the effectiveness of open data initiatives.

The main objective of this study is to assess the factors influencing the adoption of Open Government Data in Tanzania using an extended Unified Theory of Acceptance and Use of Technology (UTAUT) model with perceived risk. Specific objectives of this study include examining the influence of Performance and Effort Expectancy on users' attitudes toward OGD adoption; determining the influence of Social Influence and Facilitating Conditions on users' attitudes toward OGD adoption; examining the effect of Perceived Risk on users' attitudes toward OGD adoption; and determining the influence of Attitude on Behavioral Intention to adopt OGD.

2. Literature Review

2.1 Open Government Data

Large amounts of data are produced and collected by Government authorities through Public sector entities (Park et al., 2022; Wirtz et al., 2022). The collected data covers various aspects of an individual's life, including traffic, weather, tourism, business, education, health, and other areas.

Various governments worldwide have adopted OGD to ensure that their data is freely available and usable for different purposes (Alexopoulos & Saxena, 2023; Khurshid, Zakaria, Khurshid, et al., 2022; Shao, 2024). OGD is a crucial aspect that allows stakeholders to access relevant datasets. Stakeholders can quickly access, download, and utilize them for various purposes. These datasets can be accessed through different data channels, such as the web or mobile apps (Huang & Huang, 2022; Matheus et al., 2024a).

Most developed countries have developed OGD repositories in the current digital age to allow the public to access and use government data without restriction (Huang, 2024; Khurshid et al., 2020). These initiatives are designed to expand access to free government data for various stakeholders and to improve government accountability. The availability of the repositories to the public enhances the relationship between government authorities and citizens (Shao & Saxena, 2019; Park et al., 2022; Wirtz et al., 2022). Also, the availability and accessibility of datasets enable public institutions to become transparent and accountable to citizens, promoting business creation and innovation as well as providing services based on the needs of citizens by encouraging free use, recycling, and distribution of datasets (Alexopoulos et al., 2023; Lnenicka & Saxena, 2021). As a result, individuals and businesses can use the data to generate social and economic value and to hold public institutions accountable (Khurshid et al., 2020; Shao & Saxena, 2018; Diamantini et al., 2017).

Developing countries such as Tanzania need more research on Open Government Data (OGD) given their unique technological, institutional, and socio-economic contexts. OGD initiatives are still in their early stages of development, and adoption challenges differ from those in more technologically advanced countries. In developing countries, there are also concerns about government trust in the digital era and data privacy that may hinder users' perceptions of adopting OGD. Most Tanzanian studies have been focusing on e-government services, technical implementation, and policy issues, with limited attention to user acceptance and the actual use of OGD. Consequently, there is insufficient empirical evidence on the factors influencing OGD adoption in Tanzania and on the applicability of established technology adoption theories, such as UTAUT, within the country's specific context.

2.2 Research Gap

Despite the efforts of the Tanzanian government to publish datasets to the public sector, their accessibility remains relatively low (Shayo, 2024; Shao & Saxena, 2019). The existing literature refers to this practice as data over the wall, where one must go through several complex processes to access the data (Albinali et al., 2023; Alexopoulos et al., 2023; Lnenicka & Saxena, 2021). Also, most of the existing research has been conducted in developed countries (Albinali et al., 2023; Huang, 2024; Muñoz et al., 2022). Few studies have investigated contextual dimensions of OGD in developing countries, especially in African contexts such as Tanzania (Bankuoru Egala & Afful-Dadzie, 2022; Shao, 2024). The unavailability of adequate studies on OGD in developing countries restricts information on its adoption. That being said, OGD adoption and its correct use in developing countries require further work.

2.3 Research Model

This study used the extended Unified Theory of Acceptance and Use of Technology (UTAUT) model, along with perceived risk, to assess the factors influencing the adoption of Open Government Data in Tanzania. The UTAUT model is widely used because it includes eight theoretical models of technology adoption (Dwivedi et al., 2019b; Venkatesh et al., 2003).

Therefore, a unified model is a choice that integrates constructs from other dominant models used in prior research to control for the adoption of the technology (Matheus et al., 2024; Talukder et al., 2019).

The original UTAUT model outlines four constructs that explain how individuals accept and use technology. Two of these constructs, performance expectancy and effort expectancy, focus on the technology's attributes. At the same time, the other two, social influence and facilitating conditions, assess the contextual or organizational factors that affect the user behavior. A notable limitation of the original UTAUT model is its failure to incorporate certain user behaviors such as attitude, risk, trust, security, and privacy (Shao, 2024; Talukder et al., 2019; Tamilmani et al., 2021). Dwivedi et al. (2019) expanded the original UTAUT model by adding attitude as a personal construct to address issues related to personal concern. Attitude alone is not enough for OGD adoption, as users may hold positive attitudes toward Open Government Data but may not adopt it unless the perceived risks associated with data use are adequately addressed. Given the improved performance of the models with the addition of attitude and the absence of individual constructs in the UTAUT framework, this research suggests incorporating perceived risk as a variable in the proposed model. The significance of perceived risk in understanding technology acceptance is well documented in existing literature (Shao & Saxena, 2019b; Dwivedi et al., 2019b; Saxena, 2018b).

Therefore, this research updates the extended UTAUT model proposed by Dwivedi et al. (2019) by adding perceived risk as one of the constructs of adopting OGD as shown in Figure 1. This is because the adoption and use of OGD may also be attributed to individual perceived risks, such as the risk of losing privacy, fraud risk, violation of privacy policy, misinterpretation of data, and inaccurate data (Amalia & Susanto, 2019; Keong et al., 2020a).

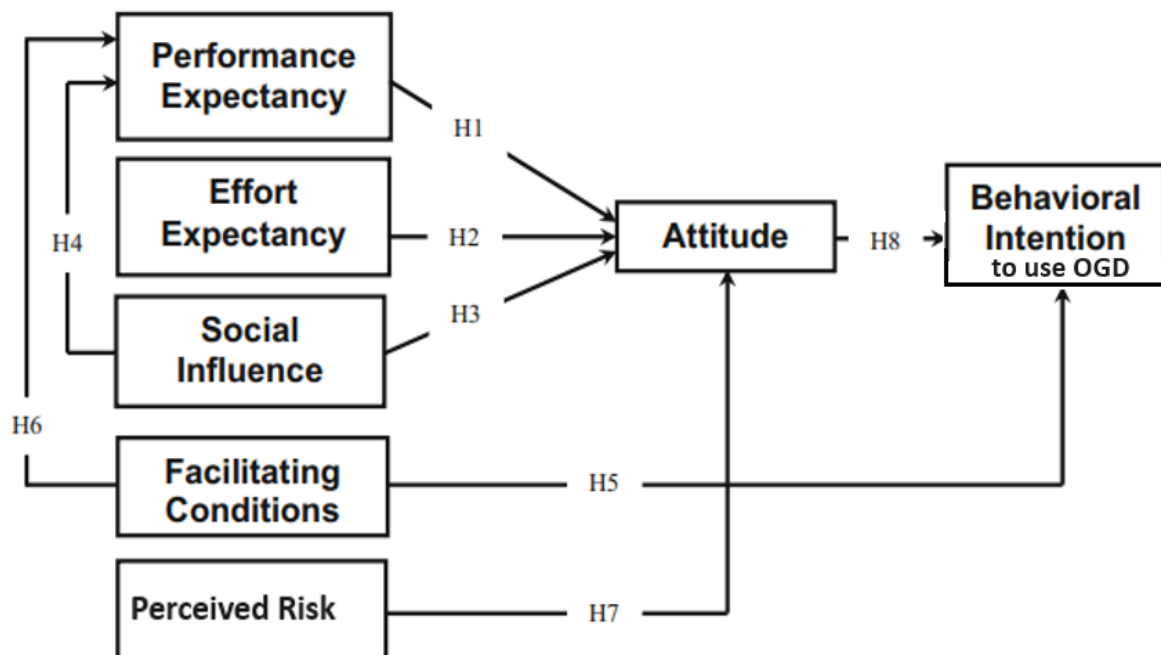


Figure 1: The Research Conceptual Model

2.4 Research Hypotheses

Based on the reviewed literature, the study proposes that performance expectancy, effort expectancy, social influence, and perceived risk influence the attitude toward adopting OGD.

In contrast, attitude and facilitating conditions influence behavioral intention to use OGD, as explained below.

Performance Expectancy

Factors related to performance are often a primary concern for users when using a system. Performance expectancy refers to an individual's belief that using the system will improve their job performance (Matheus et al., 2024b; Saxena, 2018b; Shao, 2024). In the OGD context, users are more inclined to interact with platforms when they perceive that they can gain significant value and benefits from them, which, in turn, increases their motivation to succeed (Khurshid et al., 2022; Saxena & Janssen, 2017a; Shao, 2024). Numerous studies have highlighted performance expectancy as a crucial factor influencing users' attitudes toward OGD. Therefore, this research suggests that performance expectancy positively impacts the intention to utilize OGD. Based on this argument, it can be hypothesized that:

Hypothesis 1: Performance expectancy will have a positive and significant relationship with the attitude toward using open government data.

Effort expectancy

Effort expectancy refers to how users perceive the system's ease of use (Lněnička et al., 2022a; Talukder et al., 2019b). Various elements highlighted in the literature have enhanced the comprehension of effort expectancy (Alexopoulos et al., 2023; Khurshid et al., 2022; Lněnička et al., 2022; Zuiderwijk et al., 2015). Among these elements, three key factors stand out: perceived ease of use, complexity, and user-friendliness. In the context of OGD, this study argues that individuals evaluate their expectations for OGD's usability, which subsequently influences their intention to engage with it. The user-friendliness of OGD involves aspects such as how easily datasets can be located and the skills required to access and utilize them. Most existing research highlights a significant connection between effort expectancy and users' attitudes, which ultimately affects their intention to participate in OGD (Khurshid et al., 2022; Zuiderwijk et al., 2015; Lněnička et al., 2022). Therefore, this study proposes the following hypothesis grounded in effort expectancy.

Hypothesis 2: Effort expectancy will have a positive, significant relationship with attitude toward using open government data.

Social Influence

Social influence pertains to how significant others perceive it to be for an individual user to adopt a new system (Lněnička et al., 2022; Saxena & Janssen, 2017). The available literature discusses various factors that represent social influence, including subjective norms, social elements, and perceptions of status (Alexopoulos et al., 2023b; Matheus et al., 2024b). This study proposes that the opinions of close associates, including friends, family, and colleagues can significantly influence an individual's utilization of OGD. Limited research exploring the influence of social factors on OGD indicates that social influence positively affects both individuals' attitudes and their performance expectations regarding the acceptance and use of open data technologies (Lněnička et al., 2022; Saxena & Janssen, 2017; Rana et al., 2017). Therefore, this study suggests hypotheses based on the concept of social influence.

Hypothesis 3: Social influence will have a positive and significant relationship with the attitude toward using open government data.

Hypothesis 4: Social influence will have a positive and significant relationship with the individuals' performance expectancy.

Facilitating Conditions

Facilitating conditions relate to the extent to which a person feels that the required organizational and technical infrastructure is in place to enable the effective use of a system (Alexopoulos et al., 2023; Khurshid et al., 2022; Lněnička et al., 2022). For OGD to be effectively utilized, certain facilitating conditions are crucial, such as initial training and providing resources that enable users to understand the system's usefulness and its potential to improve performance. The literature provides mixed results regarding the influence of these facilitating factors on individuals' attitudes and performance expectations regarding OGD use (Lněnička et al., 2022; Talukder et al., 2019; Zuiderwijk et al., 2015). These outcomes can vary based on the specific context of each study. Therefore, this research presents hypotheses concerning the effect of facilitating conditions on the intention to use OGD as follows:

Hypothesis 5: Facilitating conditions will have a positive and significant relationship with individuals' attitude and behavioral intention to use open government data.

Hypothesis 6: Facilitating conditions will have a positive and significant relationship with the performance expectancy.

Perceived Risks

Perceived risk is users' uncertainty about privacy, security, and the data quality of data gathered and published. Limited research has examined the perceived risk of adopting OGD across different areas, such as academia, healthcare, and business (Amalia & Susanto, 2019b; H. Huang et al., 2020; Keong et al., 2020b). In the context of OGD, this research assumed that adoption and use decisions for OGD might also be based on users' uncertainty about the quality of open government data being gathered and published (Keong et al., 2020; Wang & Lo, 2020). Therefore, in this research, the perceived risk will be used to measure the potential concerns and uncertainties users face when interacting with open government data initiatives. The hypothesis based on the perceived risk is stated as follows:

Hypothesis 7: Perceived risk has a negative and significant relationship with individuals' attitudes toward using open government data.

Attitude

Attitude toward behavioral intention refers to how individuals assess their intentions to behave positively or negatively (Dwivedi et al., 2019b; Rana et al., 2017). In the context of OGD, attitude is a crucial predictor of an individual's intent to use OGD. Most existing studies suggest that attitude plays an essential role in understanding and predicting users' behavioral intentions (Alexopoulos et al., 2023b; Matheus et al., 2024b; Wang & Lo, 2020). Therefore, this research proposes that attitude can have a significant influence on the intention to utilize open government data, leading to the development of the following hypothesis:

Hypothesis 8: Attitude will have a positive and significant relationship with the behavioral intention of using open government data.

3. Research Methodology

3.1 Research Instrument Development

This study uses a quantitative research methodology to assess the factors influencing OGD adoption in developing countries. A quantitative approach was used because the variables are measurable and can be tested statistically to provide objective evidence of their influence on OGD adoption. In terms of data collection, the study used questionnaire method. The study collected information from the respondents on behalf of the institutions. The questionnaire contains three main sections: the first section introduces the concept of OGD and the study's objective to respondents, as well as the anonymity issues regarding the responses. The second section collects demographic details of sampled government institutions involved in this study. The final section includes measurement items drawn from previous studies and lightly adapted to fit the present context.

Four (4) items for measuring performance expectancy were adopted from Talukder et al. (2019), and three (3) items for effort expectancy were adopted from Shao (2024). Three (3) items for social influence were adopted from Saxena and Janssen (2017), three (3) items for facilitating conditions were adopted from Lněnička et al. (2022), four (4) items for measuring perceived risk were adopted from Amalia and Susanto (2019), three (3) items for measuring organizational attitude were adopted from Dwivedi et al. (2019b), and three (3) items for measurement items were adopted from Matheus *et al.* (2024a). Additionally, all measurement items were assessed using a five-point Likert scale, with responses ranging from strongly disagree (1) to strongly agree (5).

A focus group of five experts was used to enhance the questionnaire's validity (O'Donnell et al., 2007). Recommendations provided by the focus group were incorporated to improve the quality of the questions. Furthermore, content validity was conducted by selected experts who examined the relevance of the measurement items for the respective variables, using a four-point ordinal scale (*1=not relevant; 2=somewhat relevant; 3=quite relevant; 4=highly relevant*). The item is considered relevant if respondents rate it as 3 or 4 (Caruso et al., 2017a). Four experts, both academicians and practitioners, were used to determine content validity, as suggested by Soe et al. (2022).

Research suggests that any item with an item-content validity index (I-CVI) greater than 0.75 is considered relevant (Caruso et al., 2017b). As a result, two (2) measurement items were dropped due to low I-CVI. Moreover, pre-testing was conducted with 30 respondents to assess whether they clearly understood the questionnaire (Alhassan et al., 2020). Based on the constructive comments, further enhancements were made by improving the grammar and spelling of some of the sentences. Google Forms was used to create an online questionnaire to allow for easy distribution and fast data collection.

3.2 Sample Size and Sampling

The objective of this study is to confirm the hypothesized causal relationships. Therefore, the study applied the inverse square root method, which recommends a minimum sample size of 287 (Kock & Hadaya, 2018). Furthermore, convenience and snowball sampling techniques were used to identify public organizations that could respond to the questionnaire, given the difficulties and costs of accessing the full list of physical public offices (Ponchio et al., 2021). For each identified public organization, the head of ICT was further consulted and asked to complete the questionnaire as a representative of the organization. The head of ICT was considered appropriate given their managerial position.

Still, since this is all about publishing data using technology, the head of ICT is responsible for setting up all infrastructure for implementing OGD within the organization. Also, the head of ICT was requested to forward the questionnaire link to other heads of ICT at different public organizations.

3.3 Data Analysis

This study employed Partial Least Squares Structural Equation Modeling (PLS-SEM) with the SMART-PLS software. PLS-SEM is a second-generation data analysis approach that allows for the simultaneous modelling and testing of relationships among multiple independent and dependent constructs (Ramayah et al., 2018). A two-step data analysis technique, including a measurement model and a structural model, was employed to assess the model's validity and reliability and to conduct path analysis.

4. Results

A total of 391 responses were received, and the data were carefully examined to ensure clarity. Eighteen (18) responses were discarded due to high levels of missing values (more than 10%). Dong and Peng (2013) noted that statistical analysis is more likely to yield biased findings when more than 10% of the data is missing. The remaining responses had few missing values. The effect of missing values was tested to determine whether it was significant. The Expectation Maximization (EM) algorithm was employed to examine the effect of the missing data; the results show that the missing values are Missing Completely At Random (MCAR) and have no significant effect ($\chi^2 = 15.337$, $df = 25$, $p = 0.933$). Therefore, all missing values were replaced, and 373 values were used for subsequent data analysis. Table 1 shows the distribution of the public institutions involved in data collection.

Table 1: Demographic Data

Public Organizations	Count	Percentage (%)
Local Government	90	24.1
Central Government	54	14.5
Public Institution	186	49.9
Government Agency	43	11.5
Total	373	100

4.1 Measurement Model Assessment

The measurement model, or outer model, describes how the constructs are evaluated. It illustrates the relationship between indirectly measured constructs and their indicators (observable variables). This study used internal consistency, indicator reliability, convergent validity, and discriminant validity to evaluate the measurement model. Internal consistency was assessed using Cronbach's alpha (α) and Composite Reliability (CR), with acceptable values set at 0.7 or higher (Henseler et al., 2015; Rasoolimanesh, 2022). As indicated in Table 1, this study confirmed the internal consistency for all latent variables. These findings indicate that the measurement model is reliable.

Furthermore, a reliability test was conducted to determine how effectively indicators correspond with the measured constructs. A loading value greater than 0.7 is deemed acceptable for this test (Hamid et al., 2017; Yusoff et al., 2020). In this study, all indicators loaded with values exceeded 0.7, as summarised in Table 2. This result indicated that each construct was correctly measured by its respective items.

Convergent validity, or "average variance extracted," was assessed to verify the construct's validity. For this test to be acceptable, the latent variable must account for at least 50% of each indicator's variance (Henseler et al., 2015; Rasoolimanesh, 2022). This means that the outer loading for each item within a construct should exceed 0.50. All constructs in this research demonstrated convergent validity, with AVEs exceeding 0.50, as indicated in Table 2. Since the data was collected from the same respondents using the same survey, the study used the Variance Inflation Factor (VIF) to assess Common Method Bias (CMB). The VIF values for all constructs ranged from 1.37 to 43, which are below the recommended threshold of 3.3 (Hair et al., 2019; Kock & Hadaya, 2018b; Rasoolimanesh, 2022). Thus, common method bias is unlikely to affect the findings of this study.

Table 2: Measurement Model Analysis

Construct	Items	Factor loadings	VIF	Cronbach's alpha	Composite Reliability (CR)	Average Variance Extracted (AVE)
ATT	ATT1	0.876	1.990	0.795	0.880	0.710
	ATT2	0.795	1.444			
	ATT3	0.854	1.953			
BI	BI1	0.810	1.577	0.783	0.873	0.697
	BI2	0.856	1.746			
	BI3	0.839	1.600			
EE	EE1	0.816	1.389	0.756	0.859	0.67
	EE2	0.847	1.671			
	EE3	0.791	1.613			
FC	FC1	0.839	1.630	0.749	0.856	0.665
	FC2	0.860	1.598			
	FC3	0.743	1.370			
PE	PE1	0.801	1.710	0.773	0.854	0.594
	PE2	0.781	1.578			
	PE3	0.726	1.399			
	PE4	0.774	1.417			
PR	PR1	0.842	2.246	0.850	0.898	0.665
	PR2	0.780	1.923			
	PR3	0.739	1.537			
	PR4	0.893	2.029			
SI	SI1	0.866	2.428	0.852	0.908	0.767
	SI2	0.868	2.066			
	SI3	0.894	1.961			

Key: Attitude: ATT; Behavior Intention: BI; Effort Expectancy: EE; Facilitating Condition: FC; Performance Expectancy: PE; Perceived Risk: PR; Social Influence: SI

The Heterotrait–Monotrait (HTMT) criteria were used to examine discriminant validity, which assesses differences between constructs. The literature indicates that HTMT values should be below 0.85 for the construct to be accepted (Rasoolimanesh, 2022; Yusoff et al., 2020). The findings from this study indicate that HTMT was achieved, as all values are below 0.85 (see Table 3). This concludes that the constructs measure different concepts.

Table 3: Discriminant validity – HTMT

Construct	ATT)	BI	EE	FC	PE	PR	SI
ATT							
BI	0.252						
EE	0.150	0.225					
FC	0.254	0.373	0.248				
PE	0.430	0.226	0.171	0.392			
PR	0.679	0.335	0.134	0.383	0.205		
SI	0.073	0.303	0.074	0.118	0.062	0.091	

4.2 Structural Model Assessment

The path coefficient estimates for the structural model were reviewed and summarised in Table 4. The perceived risk construct demonstrates a significant negative influence on attitude toward using OGD, with a coefficient of 0.54, followed by facilitating conditions at 0.309 and performance expectancy at 0.234. Conversely, the effects of social influence and expected effort are minimal, with coefficients of 0.02 and 0.037, respectively. The bootstrapping results indicate that the impacts of perceived risk and facilitating conditions are statistically significant. Meanwhile, social influence and expected effort do not significantly affect attitudes toward using OGD. The model explains 40% of the variance in attitude toward OGD use ($R^2 = 0.402$). Consequently, the results indicate that five hypotheses, H1, H5, H6, H7, and H8, have been accepted. In contrast to prior expectations, three hypotheses, which are H2, H3, and H4, were rejected.

Table 4: Structural Model Assessment

Hypotheses	Relationships	Coefficient	<i>t-values</i>	<i>p-values</i>	Remarks
H1	PE -> ATT	0.234	4.840	0.000	Supported
H2	EE -> ATT	0.037	1.000	0.159	Not Supported
H3	SI -> ATT	0.020	0.503	0.308	Not Supported
H4	SI -> PE	0.015	0.218	0.414	Not Supported
H5	FC -> BI	0.259	5.156	0.000	Supported
H6	FC -> PE	0.309	5.814	0.000	Supported
H7	PR -> ATT	-0.540	12.049	0.000	Supported
H8	ATT -> BI	0.150	2.856	0.002	Supported

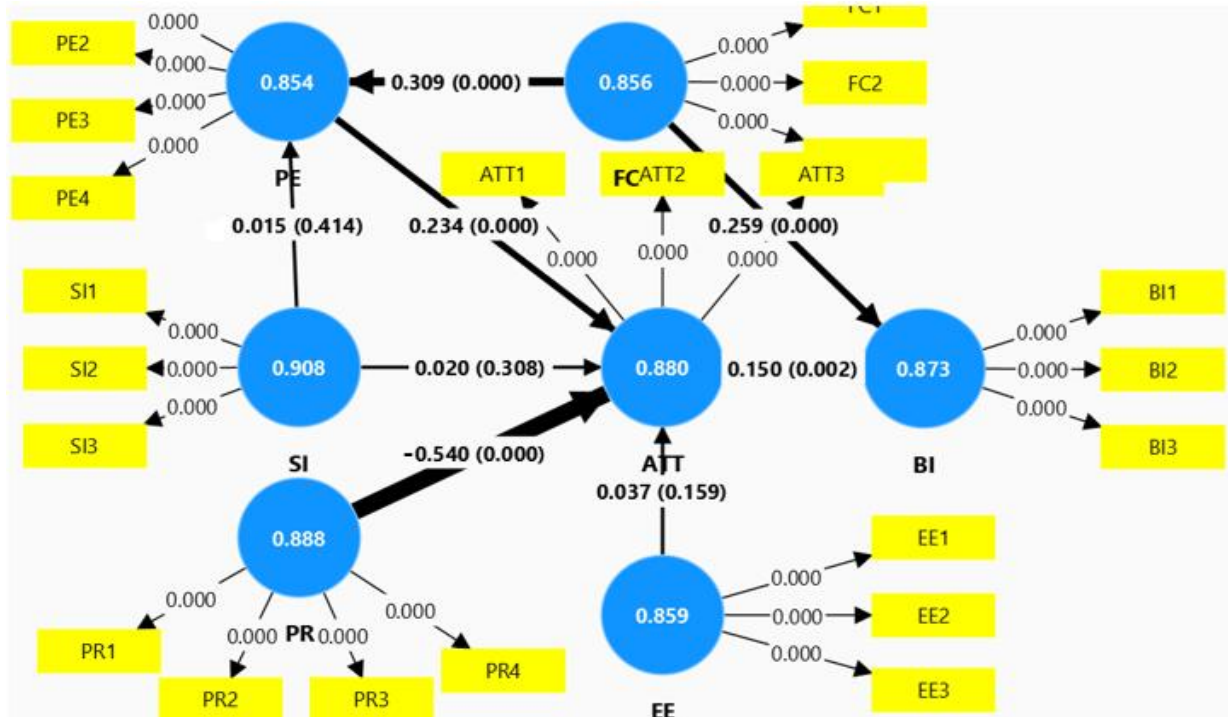


Figure 2: Path Coefficients and p-values of the constructs

5. Discussion of Results

This study used the extended Unified Theory of Acceptance and Use of Technology (UTAUT) with perceived risk to assess the factors influencing the adoption of Open Government Data in Tanzania. The results aligned with previous empirical studies examining perceived risk. In their study, Kleiman et al. (2020) found that when public employees face significant risks or uncertainties about the anticipated benefits of implementing OGD policies, they tend to adopt a more passive, conservative stance, often opposing the release of government data. In a related study, Huang et al. (2020) went further, categorizing the risks associated with OGD policy implementation and conducting a survey of public servants in Taiwan. Their findings revealed that as the expected personal risks associated with OGD policies increase, public servants' motivation to implement them decreases.

Facilitating conditions also significantly affect the adoption of OGD in Tanzania. There is often a realistic acknowledgement of the inadequacy of the facilitating conditions involved in implementing OGD initiatives, including data quality, resource constraints, and the need for proper infrastructure to support data sharing. This implies that facilitating conditions, such as networks, internet connectivity, and sufficient open data infrastructure, impact the adoption of OGD. The significance of the facilitating conditions factor was also demonstrated in the research by Matheus et al. (2024) and Shao (2024b).

Performance expectancy, also known as perceived importance, is the third factor that is significantly assessed in the adoption of OGD in Tanzania. The results indicate that anticipation of enhanced performance from ongoing OGD use has a significant positive effect on adoption. This observation aligns with previous studies on the adoption and continuance of information systems and the adoption of OGD (Saxena & Janssen, 2017; Talukder et al., 2019, 2019b). The study's findings suggest that governments should enhance the ongoing use of OGD technologies by boosting users' expectations of the benefits of OGD data, such as improved job performance, increased productivity, and faster task completion.

Also, the findings show that attitude has a positive and significant influence on OGD adoption. This implies that data providers with a favorable attitude toward OGD are more likely to perceive the associated risks as manageable. This shift in attitude can reduce barriers to data sharing and promote a culture of openness, both of which are essential for successful OGD initiatives. Several previous studies have provided solid theoretical evidence for a positive correlation between attitude toward use and actual use (Alexopoulos & Saxena, 2023; Shao, 2024). Some service providers' positive attitudes reflect a commitment to transparency and a desire to improve governance. They see OGD as a way to enhance public trust and enable citizens to access information that can empower them.

The findings show that social influence and effort expectancy did not significantly affect OGD adoption. Thus, an individual's behavior, beliefs, or decisions are not significantly affected by ease of use or by the actions of others. This might be because users of the OGD, including researchers, students, government officials, and professionals, are likely to have basic digital skills (Khurshid et al. 2022). Thus, ease of use and social influence may no longer be significant factors in adoption. Instead, users may be more concerned with whether government data is useful, reliable, accurate, and relevant to their needs. The findings are consistent with previous technology adoption studies, which found that effort expectancy becomes less influential when users are familiar with the technology environment and have sufficient experience using digital systems (Khurshid et al. 2022; Matheus et al. 2024).

6. Theoretical and Practical Implications

This study assesses the factors influencing the adoption of Open Government Data in Tanzania using an extended Unified Theory of Acceptance and Use of Technology (UTAUT) model with perceived risk. The significance of perceived risk suggests a need to incorporate risk assessment frameworks within the theoretical models of OGD adoption. Understanding how data providers evaluate risks can enhance the predictive power of adoption theories, such as UTAUT (Dwivedi et al., 2019b; Tamilmani et al., 2021). Behavioural decision-making theories can examine data providers' concerns about privacy and misuse and provide insights into the cognitive processes that influence data-sharing decisions under perceived uncertainty.

The practical implication of this study suggests that government agencies must prioritize developing and implementing robust data security protocols to mitigate concerns regarding data breaches and misuse. This could include encryption, access controls, and regular security audits (Huang & Huang, 2022; Khurshid et al., 2022; Wirtz et al., 2022). The study also suggests that government entities must clearly communicate the advantages of OGD and address the perceived risks directly. By highlighting successful case studies and the potential for improved public services and community engagement, authorities can help to address concerns and encourage participation.

Providing data providers with training on data management and the safe sharing of information can reduce perceived risks. Offering ongoing support through workshops or dedicated help desks can build trust and confidence among data providers. Establishing clear, user-friendly guidelines and policies regarding data sharing can help providers to understand their responsibilities and the measures to protect their data, thus reducing uncertainty. Creating platforms for regular dialogue between data providers and government bodies enables the sharing of concerns and suggestions. Engaging stakeholders in the decision-making process can foster trust and cooperation.

7. Limitations, Future Research, and Conclusion

This research used data collected within a definite timeframe, and all variables were assessed using a self-administered tool, which may introduce self-reporting bias. Conducting a longitudinal study could further investigate OGD in the adoption phase, and employing multiple measurement approaches in future studies could help mitigate this potential issue. The use of convenience and snowball sampling approaches increases bias in sample selection and it limits the generalizability of the results beyond the study. Future research should apply probability sampling techniques, such as stratified or random sampling for increasing generalizability of the findings.

Lastly, the focus of this study was primarily on the Tanzanian public sector and its context, leaving the roles of the private sector and non-governmental organizations as OGD users largely unexamined. In future research, the established OGD adoption framework could be expanded to encompass other IS/IT innovation studies, thereby enhancing the exploration of adoption. Both OGD users and beneficiaries play a vital role in ensuring the sustainability of the OGD ecosystem. Investigating these perspectives could shed light on how OGD is utilized and its effects on individuals' lives. This understanding could help government agencies to improve the quality of data published through OGD initiatives.

The adoption dilemma of Open Government Data (OGD) stems from the gap between the availability of government data and its use by users. Despite the government's investment in open data portals, policies, and digital infrastructure, the expected level of adoption has not been achieved in developing countries. The dilemma in OGD adoption is caused by user-related factors such as low perceived usefulness, inadequate facilitating conditions, and concerns about privacy, security, and data quality. The extended UTAUT framework, incorporating perceived risk, shows that users consider both the potential benefits and perceived risks of OGD before deciding whether to adopt it. Therefore, simply publishing datasets is insufficient; governments must also address the barriers that discourage citizens, businesses, researchers, and civil society organizations from engaging with open data.

Despite the problems that hinder adoption, OGD presents significant opportunities for developing countries. By promoting data-driven decision-making, OGD can improve public service delivery, strengthen government transparency and accountability, encourage citizen participation, and support evidence-based policymaking. Open data can also stimulate innovation and entrepreneurship by enabling businesses and startups to develop new products, services, and digital solutions. Furthermore, OGD can enhance academic research, support sustainable development initiatives, and foster economic growth by creating data-driven ecosystems. To unlock this potential, developing countries should focus on improving data quality, strengthening technological infrastructure, and implementing user-centered open data policies. The results of this study encourage governments, policymakers, and managers to consider the various factors and devise strategies to advance the adoption of OGD. By addressing both the adoption barriers and the opportunities presented by OGD, developing countries can transform underutilized open government data into a powerful catalyst for socio-economic development and good governance.

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Appendix 1: Construct Items

Construct	Items
Performance Expectancy	PE1: Using the open government data portal is useful in my daily life. PE2: Using the open government data portal will enable me to accomplish my work quickly. PE3: Using the open government data portal will increase my productivity in my work. PE4: Using an open government data portal improves my work quality.
Effort expectancy	EE1: I realize learning to use the open government data portal is easy. EE2: I clearly understand how to use the open government data portal. EE3: I find the open government data portal easy to use.
Social influence	SI1: People who influence my behavior think that I should use the open government data portal. SI2: People who are important to me (e.g. family, friends) think that I should use the open government data portal. SI3: People whose opinions I value prefer that I should use the open government data portal.
Facilitating conditions	FC1: I have the necessary resources to use the open government data portal. FC2: The open government data portal is compatible with the other systems I use. FC3: A specific person or group is available for assistance with difficulties concerning the use of the open government data portal.
Perceived Risk	PR1: Using an online open government data portal is risky due to a lack of data security. PR2: Data and information provided through the open government portal are often inconsistent. PR3: Government authorities will probably use my personal data for unknown purposes. PR4: The underlying transaction processes of open government data appear risky because of a lack of transparency.
Attitude	AT1. Using the open government data would be a good idea. AT2. Using the open government data would be a wise idea. AT3. I like the idea of using the open government data. AT4. Using the open government data would be pleasing.
Behavioral Intention	BI1: I intend to use the open government data portal in the future. BI2. I will always try to use the open government data portal in my daily life. BI3. I plan to use the open government data portal frequently.