SACJ 34(1) July 2022
Research Article

Evaluating the optimization of limited government resources in low-income countries using a sharing economy platform

Seffi Gebeyehu[a, b], Hossana Twinomurinzi[a, c]

[a] Sudan University of Science and Technology, Sudan
[b] Bahir Dar University, Bahir Dar Institute of Technology, Ethiopia
[c] Centre for Applied Data Science, University of Johannesburg, South Africa

ABSTRACT
This paper reports on the design and usefulness of a digital government innovation to share limited government resources in low-income countries (LICs) based on the sharing economy paradigm, collaborative consumption (CC). The innovation was developed using design science research and the usefulness was evaluated using the Unified Theory of Acceptance and Use of Technology (UTAUT) model (n = 321) with Structural Equation Modeling (SEM). The key findings reveal that performance expectancy, effort expectancy, and facilitating conditions are significant factors of the behavioral intention to adopt the CC platform. Social influence was however not a significant factor. These key findings suggest the practical usefulness of the CC platform in motivating the sharing of limited government resources and overcoming traditional government bureaucracy. The study contributes to information systems theory in advocating for the adoption of a sharing economy ethos as a means to maximizing limited government resources in LICs, and in creating digital artifacts using design science research methods. The study recommends for LIC governments to further extend the resource sharing capability to include non-government organisations and citizens.

Keywords: Sharing economy, collaborative consumption, WoredaNet, digital government, UTAUT, usefulness

Categories: • **Applied computing** ∼ **human-computer interaction, Human-centered computing, usability testing**

Email:
Seffi Gebeyehu gseffi2010@gmail.com (CORRESPONDING),
Hossana Twinomurinzi hossanat@uj.ac.za

Article history:
Received: 11 March 2021
Accepted: 17 November 2021
Available online: 22 July 2022

1 INTRODUCTION

Governments of low-income countries (LICs) often have limited resources that are mostly underutilised (Belachew, 2010); which resources have been further stretched by the recent

Gebeyehu, S., and Twinomurinzi, H (2022). Evaluating the optimization of limited government resources in low-income countries using a sharing economy platform. *South African Computer Journal 34*(1), 61–78. https://doi.org/10.18489/sacj.v34i1.972

SACJ is a publication of the South African Institute of Computer Scientists and Information Technologists.
ISSN 1015-7999 (print) ISSN 2313-7835 (online).

COVID-19 pandemic. Despite the resource limitations, the sharing of resources among government organisations of LICs is not common (Sutherland & Jarrahi, 2018). The sharing economy paradigm promotes the sharing of assets and services among individuals and organisations through digital technologies (Grybaitė & Stankevičienė, 2016).

The sharing may sometimes consist of constrained physical assets (e.g. cars, offices, and machinery) and/or tangible artifacts (e.g. skills, time, knowledge) (Gabriella Buda & Lehota, 2020). Several organisations have adopted the sharing economy model by creating community-based online platforms (Lindblom & Lindblom, 2017). An example is MuniRent in the United States that helps public agencies and local authorities to share heavy-duty equipment within the agency, and with other agencies (Ganapati & Reddick, 2018). The sharing economy is sometimes called collaborative consumption (CC) when it enables stakeholders to coordinate the exchange of resources and services with or without a fee (Belk, 2014).

Research on the use and adoption of sharing economy digital platforms in LIC governments is limited (Gebeyehu & Twinomurinzi, 2018). In addition, the COVID-19 pandemic has revealed the need for share-driven digital platforms to coordinate the optimal use of limited resources in LICs. Governments of LICs would benefit greatly from implementing a CC digital platform to optimise the use of their limited resources (Hevner et al., 2004; Jewer, 2018). Using a design science approach, this study explores how a CC digital platform may be designed and evaluated for its usefulness.

The paper first presents a background review of literature on digital government and the importance of collaborative consumption in digital governments of LICs. Subsequently, design science is discussed as a suitable methodology, followed by a presentation of the results of the study. The findings of the study are then discussed. Finally, the conclusion summarises the study, and highlights the value of sharing resources between government organisations, and also with businesses and individuals.

2 RESEARCH BACKGROUND

2.1 Digital government and LICs

Digital government (also called e-government) is a new wave in the information revolution. Many governments implement this phenomenon to take advantage of reduced costs, better delivery of services for citizens, businesses, and the government, and increase efficiency in the public sector. However, digital government in LICs, and specifically in Africa, experiences many challenges due to a lack of infrastructure (digital and physical), increasing resource limitations, and functional literacy (Mawela et al., 2017). Such challenges can be overcome by maximizing the limited resources through a sharing model. Introducing sharing within digital government in LICs could offer cost-effective and innovative solutions to local and regional problems (Acharya & Pathak, 2019). For example, through digital sharing platforms, different government entities could share, rent, redistribute, and donate resources among each other, or even with private entities and individuals (Leismann et al., 2013).

https://doi.org/10.18489/sacj.v34i1.972

This study focuses on the design of such a digital sharing platform to optimise limited resources as well as evaluating the usefulness of such a platform between government organisations of LICs.

2.2 Collaborative consumption in digital government

Collaborative Consumption (CC) facilitates resource sharing. CC ranges from opensource software(e.g. SourceForge and Github), content (e.g. YouTube and Instagram), files (e.g. Pirate bay), accommodation (e.g. Airbnb, Couchsurfing), mobility(e.g. bike-sharing and car-sharing), skills (e.g. TaskRabbit), appliances, and drills (Hamari et al., 2016), Through CC, some governments have effectively optimised their resources, decreased the cost of resource ownership, shared rich and timely information, and improved their decision-making capacity (Benoit et al., 2017; Ganapati & Reddick, 2018). For example, CC efforts in agriculture have enabled the sharing of machinery such as tractors and chainsaws, and the exchange of seeds and seedlings to improve the productivity of small farms (Rodrigues et al., 2021).

Despite the above benefits, CC efforts in LICs have not been well investigated (Gebeyehu & Twinomurinzi, 2018). CC potentially offers benefits, such as creating new part-time gigs or co-working (Ganapati & Reddick, 2018), efficiently utilizing government offices, reducing the physical assets required in government, or even enabling workspace optimisation in constraining circumstances, such as the COVID pandemic (Ganapati & Reddick, 2018). CC digital platforms in LIC governments could help to ensure widespread resource efficacy, and cost-saving (Botsman & Rogers, 2010; Lamberton & Rose, 2012).

3 RESEARCH METHODOLOGY

A design science research (DSR) methodology was employed to design and develop a digital artefact (Mtsweni et al., 2014), particularly using the elaborated action design research (eADR) method. DSR emphasises the creation of artefacts that are relevant while at the same time rigorous in their evaluation (Hevner et al., 2004). The study particularly adopted the eADR method for its Action Research iterations of problem formulation, artifact creation, evaluation, reflection, and learning activities as part of the DSR process (Mullarkey & Hevner, 2019). One of the advantages of the eADR is that it is not strict on the action research entry points into any of the design science stages. The eADR involves an action-intervention cycle shown in Figure 1 that moves through four iterative stages, i.e. diagnosis, design, implementation,and evolution as discussed below (Mullarkey & Hevner, 2019).

3.1 Diagnosis

In the first iteration of the diagnosis stage, the problem domain was taken from the existing WoredaNet platform. The WoredaNet is a government of Ethiopia digital platform dedicated to providing digital services including video conferencing, web service, voice over IP, and

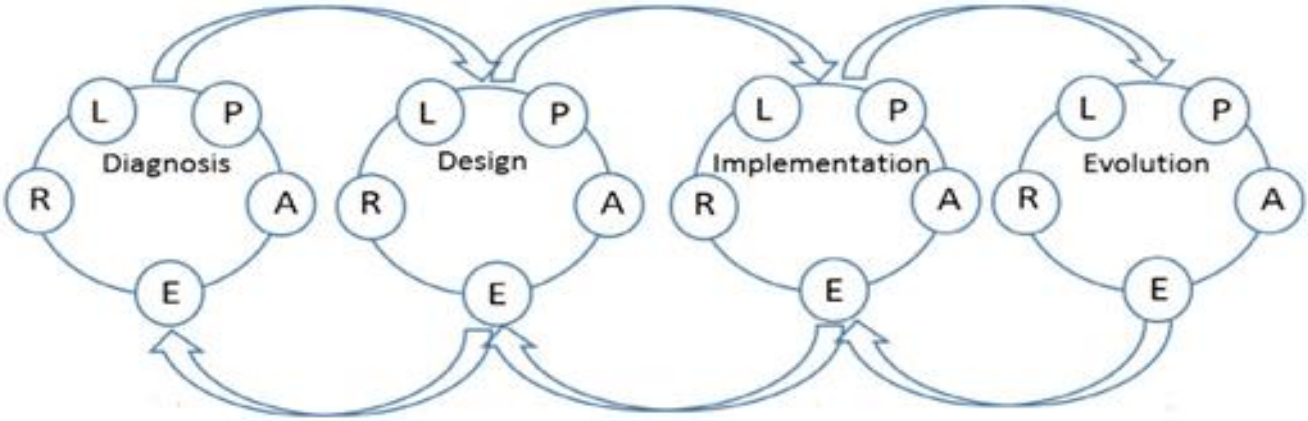

Figure 1: Stages of eADR [a]

[a]Mullarkey and Hevner (2019)

messaging to federal, regional, and woreda-level government entities in Ethiopia (Belachew, 2010). Woreda is the name for a regional government administrative district. The problem was identified as an existing digital platform infrastructure that is not being maximally utilised. In the second iteration, a solution domain was identified; to design a CC digital artefact to enable sharing of government resources using the existing WoredaNet platform.

Twenty-nine government officials from agriculture, finance, education, and revenue offices were purposively selected from four districts; Mota, Woreta, Dangila, and Finoteselam, by the Amhara Regional State Science and ICT Commission. A qualitative interpretive approach using semi-structured interviews was used for the requirements elicitation process (see Appendix A) (Mujinga et al., 2019). The data was then transcribed into text and analysed thematically using Atlas.ti8 to identify 9 themes and 17 codes as shown in Table 1. The codes and themes identified were arrived at in discussion with the ICT management. Two iterations were done to select the final themes.

The key findings of the qualitative analysis revealed the need for government to consider integrating more sharing functionality in the WoredaNet digital platform that can include the ability to swap/share/rent/donate non-digital artifacts such as government cars, offices, buildings, bicycles, and huge machinery from their context. The possibility of sharing tangible resources only emerged after the researcher triggered the opportunity in the interviews.

3.2 Design

In the design stage, a solution digital artifact was created to solve the problem identified in the diagnosis stage. The themes and codes that were identified in the diagnosis stage were used as the functional requirements. The functionalities of the designed web-based application are shown in Section 3.3, which include register resources, request for resources, training, and

Table 1: Themes and codes emerged from the qualitative analysis

Themes	Codes	Frequency
Digital services (shareable resources using the web)	Servers	8
	Email services	4
	Web services	6
	Information	4
Shared Learning (resources gained from video conferencing that could increase user's conception)	Skill	14
	Knowledge	13
	Experiences	15
Resources to be swopped (resources that can be swopped between government organisations)	Application software	4
	Reports and formats	6
	Data	6
Opportunity for renting of goods and services (addresses whether renting of resources is possible in the current platform)	Renting is not supported	5
	Sharing has no payment mechanism	4
Sharing public services	Intangible digital assets	9
Renting to business	Tangible assets	5
Redistributing goods	Innovation	3
Donating resources	Redundant goods	5
Transfer of ownership	Resources (both tangible and intangible)	3

https://doi.org/10.18489/sacj.v34i1.972

partnership. A web-based application was chosen because it is easier to deploy and test (Pinem et al., 2020).

3.3 Implementation

The designed prototype was launched on the web as a software system for government organisations to access and provide feedback for improvement. The digital prototype depicting shared, as well as rented goods (such as cars, machinery, etc.) by government agencies, is shown in Figures 2 and 3.

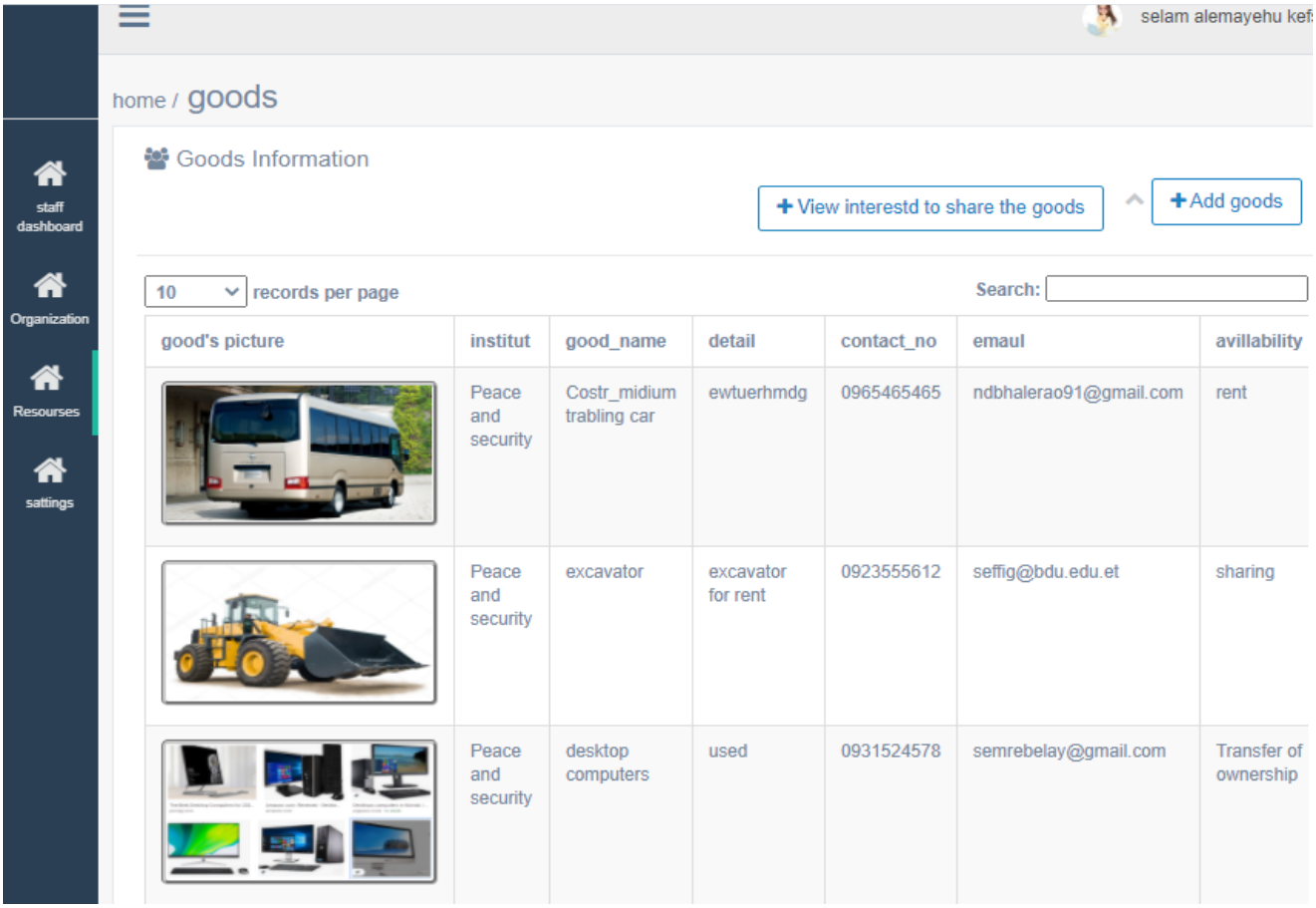

Figure 2: Goods shared/rented by organisations

Figure 3 further presents an interface page for registering, swap, share, rent, redistribute, donate, and/or transfer of goods and ownership.

https://doi.org/10.18489/sacj.v34i1.972

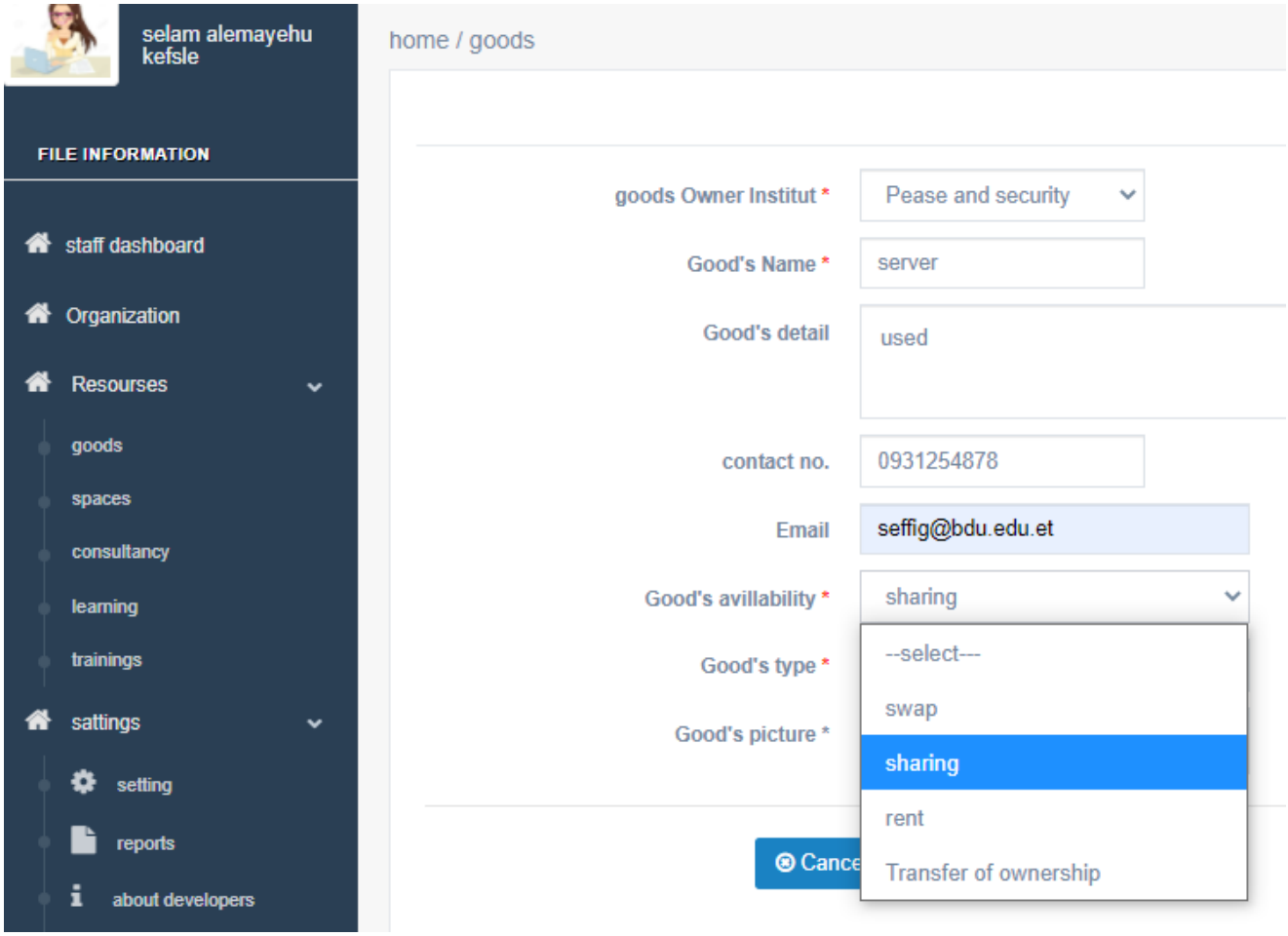

Figure 3: Register goods page for swap, share, rent, redistribute, donate, and/or transfer of ownership

3.4 Evolution

At this stage, the digital artefact was presented to the stakeholders, and any changes were effected. The final designed platform was then introduced to a wider set of stakeholders from the government for evaluation of its usefulness and acceptance. The evaluation of the artifact was conducted using the Unified Theory of Acceptance and Use of Technology (UTAUT) model as shown in Figure 4. This is because UTAUT is one of the most acceptable models in the studies of user acceptance that could be tested in various contexts (Cohen et al., 2013). UTAUT combines the following eight evaluation models; the Theory of Reasoned Action (TRA), the Technology Acceptance Model (TAM), the Motivation Model (MM), the Theory of Planned Behavior (TPB), the Combined Model (TAM/TPB), the Model of PC Utilisation (MPCU), the Innovation Diffusion Theory (IDT) and the Social Cognitive Theory (SCT) (Marques et al., 2011). Quantitative analysis was done using the SmartPLS tool as discussed in Section 4.

Most studies using UTAUT employed only a subset of the constructs, particularly by exclud-

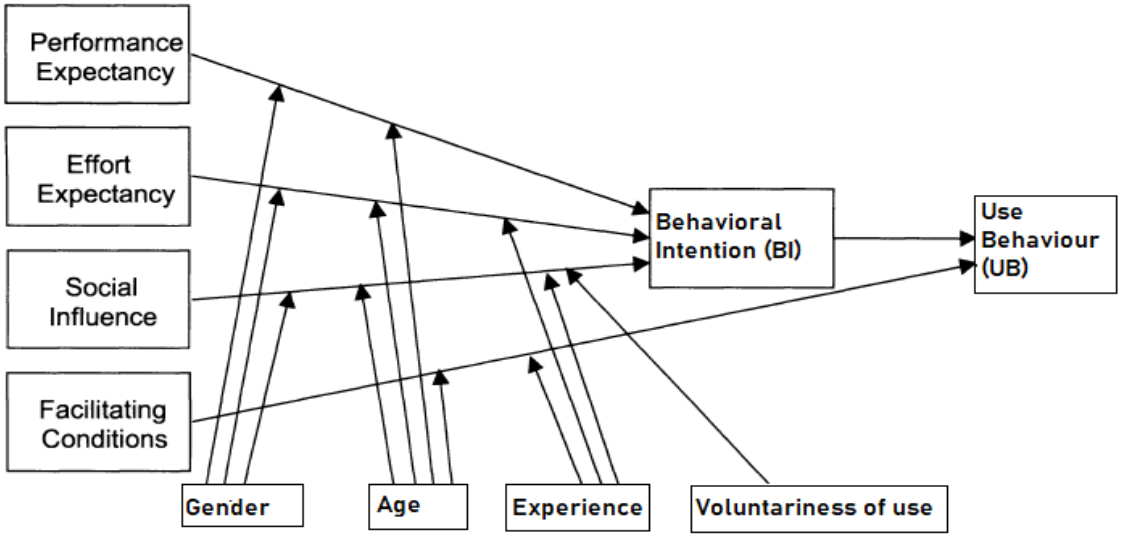

Figure 4: UTAUT model [a]

[a]Venkatesh et al. (2003)

ing the moderators (Al-Gahtani et al., 2007) and the dependent variable use behavior (UB). UB as a dependent variable was therefore excluded due to the digital artefact not being in use, but rather a prototype (Marques et al., 2011), and BI is a direct predictor of UB (Venkatesh et al., 2003). Excluding the moderators and the dependent variable UB resulted in the evaluation model shown in Figure 5.

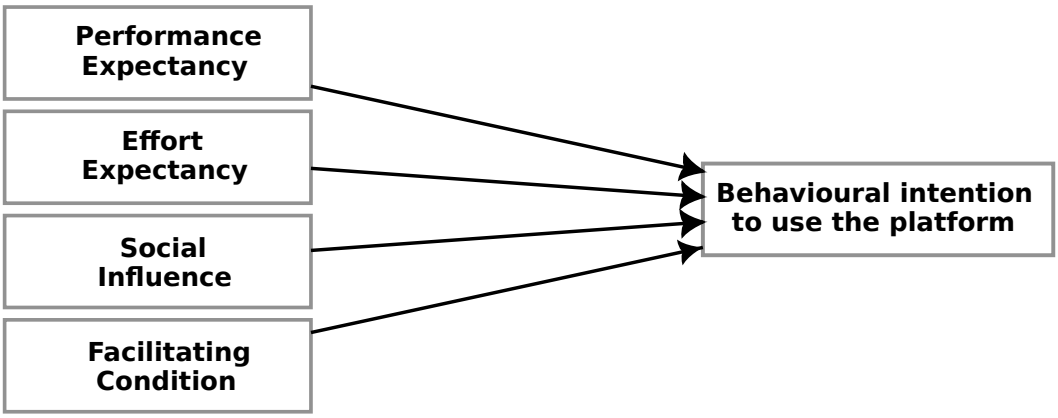

Figure 5: The modified UTAUT model

Adopting the UTAUT hypotheses (Venkatesh & Zhang, 2010), the factors of behavioral intention (BI) to use the CC platform were now the following (see Table 2):

- Performance expectancy (PE) describes the extent to which a user believes that using the CC platform will improve job performance

- Effort expectancy (EE) represents how easy it is to use the CC platform
- Facilitating conditions (FC) describe the organisational and technical infrastructure to support using the CC platform, and
- Social influence (SI) describes the extent to which the user is influenced by peers to use the CC platform.

Table 2: Hypotheses formulated for the study

	Hypothesis
H1	PE positively affects users' BI to use the CC platform.
H2	EE is positively related to users' BI to use the CC platform.
H3	FC positively influences users' BI to use the CC platform in the organisational context.
H4	SI positively affects users' BI to accept the platform in the organizational context.

4 ANALYSES AND RESULTS

4.1 Reliability and validity testing

The Cronbach's coefficient alpha values (Appendix C, Table 7) satisfied the threshold value of 0.7 (Bellaaj et al., 2015) reflecting the evaluation model reliability as a group. The evaluation was also convergent since both the composite reliability values and the average variance values exceeded the threshold. All square roots of AVEs were greater than the correlations between constructs (Appendix C, Table 8) reflecting that items showed better strong relation to their latent constructs than the others, therefore confirming acceptable discriminant validity.

4.2 Hypothesis Testing and goodness of model fit

Partial least squares structural equation modeling (PLS-SEM) was used to estimate the path models with latent variables, the causal relationship between each of the dependent and independent variables, and describe the analysis results (Sarstedt et al., 2017). The path coefficient measured from the R^2 value determined the significance of the dependent variable. The R^2 value of the construct behavioral intention (BI) was 0.407 and significant as also supported in other studies (Varma, 2018) (Appendix C, Table 9). The goodness of fit measure from the summary value of the standardised root mean square residual (SRMR) was 0.083 (Table 3) which is below the threshold standard value of 0.14 (Henseler & Sarstedt, 2013). Thus, the model had an overall good fit.

To determine the relationship between variables, the study used t-statistics and p-values to reject or accept the hypothesis (Table 4) (Leismann et al., 2013; Venkatesh & Zhang, 2010).

https://doi.org/10.18489/sacj.v34i1.972

Table 3: Standardised root mean square residual (SRMR)

Fit Summary	**Saturated Model**	**Estimated Model**
SRMR	0.083	0.084

Table 4: t-statistics and p-values, and the resultant decision

Variable	t**-statistics**	p**-values**	**decision**
EE→BI	3.392	0.001	accepted
FC→BI	2.331	0.020	accepted
PE→BI	2.845	0.005	accepted
SE→BI	0.300	0.764	rejected

5 DISCUSSION OF FINDINGS

The results from the SEM analysis showed that performance expectancy, effort expectancy, and facilitating conditions positively influenced the behavioural intention to use the CC platform (H1, H2, and H3 were accepted) while social influence did not have a significant influence on the behavioural intention to use the CC platform (H4 was rejected). This means that the users (government officials) found that sharing resources using the CC platform improved their job performance and better utilises the existing digital technology infrastructure as part of their jobs. Further research would need to be conducted on what aspect of the CC platform improves job performance.

The CC platform was also easy to use and could illustrate the reality that government officials already understand how to share using other sharing platforms, except do not have the capability enabled on the existing digital platforms. The CC platform was built on top of the existing WoredaNet infrastructure and therefore did not require any new physical or organisational infrastructure. This further illustrates the extent to which existing infrastructure in many LICs is not being maximally utilised.

Contrasting, and contrary to many digital government adoption studies (Venkatesh et al., 2003; Yu, 2012), peer influence did not significantly influence the government officials' behavioural intention to use the CC platform. This means that the officials found the sharing capability of the CC platform critically important enough that they do not require peer approval to use it.

https://doi.org/10.18489/sacj.v34i1.972

6 CONCLUSIONS AND RECOMMENDATIONS

The study aimed to investigate, in the design science paradigm, the design, and evaluation of a CC digital platform prototype in LIC contexts that could enable the optimisation of limited resources in LIC. The study evaluated the CC digital artefact for its acceptance using a modified UTAUT model and used Ethiopia for its empery, particularly the WoredaNet platform.

One of the outstanding findings at the design stage was the need to trigger the capability to share physical artefacts in government. In traditional government settings, sharing of resources is not usually considered and it is common to find government departments each owning a resource but not using it maximally. This means that an intentional effort would be required as part of digital government transformation efforts to expose government officials to the vast capabilities that digital technologies offer.

The government officials also found the newly created CC digital platform easy and practical to use despite not having ever used it previously, to the extent that they did not require peers to encourage them to use it. This confirms that government officials are aware of the need to better maximise limited resources and already know how to use advanced digital technologies yet do not have the appropriate mechanisms and/or platforms. The advantage of sharing limited resources using digital technology is that many typical bureaucratic government processes would be overcome and/or embedded within the digital platform. It is therefore recommended to further extend such functionality beyond the scope of G2G to include business (G2B) and individuals (G2C).

6.1 Contributions of the study

The study makes a contribution to Information Systems theory, method, and practice. In terms of theory, the study begins a discourse on enabling sharing in LIC governments using digital technologies. Sharing in LIC governments is not common, and there is little to no research on the phenomenon. The discourse is therefore important considering the increasing demands on LIC governments to become more efficient and to maximise their limited available resources amid reduced international funding. Further, LIC governments struggle to overcome legacy policies that prevent sharing within government itself, or with businesses and citizens. The study demonstrates that a CC paradigm to digital government in LICs could enable new sources of revenue for government as well.

In terms of practice, the study demonstrates that sharing in LIC government contexts is not only possible through digital artefacts, but that government employees welcome such artefacts as a new, valuable and practical ways of working.

In terms of method, the study demonstrates the efficacy of design science as a suitable method that integrates innovation in the creation of digital artefacts in LICs. The study found the DSR method of Mullarkey and Hevner (2019) much easier to follow compared to other DSR methods.

https://doi.org/10.18489/sacj.v34i1.972

6.2 Limitations and further research

The study was limited in its choice of participant selection and sampling since the participants were pre-selected by the ICT management. Nonetheless, this was considered sufficient since obtaining permissions in LIC governments is often difficult. The study was also limited since it was conducted in only one LIC country, Ethiopia. Further studies in different LIC countries would improve the generalizability of the CC digital government artefact.

Further research on sharing in digital government of LICs should be considered beyond G2G to include sharing with business, with citizens, and internationally.

References

Acharya, K. P. & Pathak, S. (2019). Applied Research in Low-Income Countries: Why and How? *Frontiers in Research Metrics and Analytics*, *4*(3). https://doi.org/10.3389/frma.2019.00003

Al-Gahtani, S. S., Hubona, G. S. & Wang, J. (2007). Information technology (it) in saudi arabia: Culture and the acceptance and use of it. *Information & Management*, *44*(8), 681–691. https://doi.org/10.1016/j.im.2007.09.002

Belachew, M. (2010). E-government initiatives in Ethiopia. *ICEGOV '10: Proceedings of the 4th International Conference on Theory and Practice of Electronic Governance*, 49–54. https://doi.org/10.1145/1930321.1930332

Belk, R. (2014). You are what you can access: Sharing and collaborative consumption online. *Journal of Business Research*, *67*(8), 1595–1600. https://doi.org/10.1016/j.jbusres.2013.10.001

Bellaaj, M., Zekri, I. & Albugami, M. (2015). The continued use of e-learning system: An empirical investigation using UTAUT model at the university of tabuk. *Journal of Theoretical and Applied Information Technology*, *72*(3), 464–474.

Benoit, S., Baker, T. L., Bolton, R. N., Gruber, T. & Kandampully, J. (2017). A triadic framework for collaborative consumption (CC): Motives, activities and resources & capabilities of actors. *Journal of Business Research, 79*, 219–227. https://doi.org/10.1016/j.jbusres.2017.05.004

Botsman, R. & Rogers, R. (2010). *What's mine is yours – how collaborative consumption is changing the way we live*. London, UK: Collins.

Cohen, J., Bancilhon, J.-M. & Jones, M. (2013). South African physicians' acceptance of e-prescribing technology: An empirical test of a modified UTAUT model. *South African Computer Journal*, (50), 43–54. https://doi.org/10.18489/sacj.v50i1.175

Gabriella Buda, B. P. & Lehota, J. (2020). Dominant consumer attitudes in the sharing economy – a representative study in Hungary. *Resources*, *9*(1), 1–27. https://doi.org/10.3390/resources9010001

Ganapati, S. & Reddick, C. G. (2018). Prospects and challenges of sharing economy for the public sector. *Government Information Quarterly*, *35*(1), 77–87. https://doi.org/10.1016/j.giq.2018.01.001

Gebeyehu, S. & Twinomurinzi, H. (2018). Prospects of collaborative consumption in the context of digital government. *Proceedings of the 11th Annual Pre-ICIS SIG GlobDev Workshop*. https://aisel.aisnet.org/globdev2018/1

Grybaitė, V. & Stankevičienė, J. (2016). Motives for participation in the sharing economy – evidence from Lithuania. *Engineering Management in Production and Services*, *8*(4), 7–17, issue number here https://onlinelibrary.wiley.com/toc/14706431/2017/41/4. https://doi.org/10.1515/emj-2016-0028

Hamari, J., Sjöklint, M. & Ukkonen, A. (2016). The sharing economy: Why people participate in collaborative consumption. *Journal of the Association for Information Science and Technology*, *67*(9), 2047–2059. https://doi.org/10.1002/asi.23552

Henseler, J. & Sarstedt, M. (2013). Goodness-of-fit indices for partial least squares path modeling. *Computational Statistics*, *28*(2), 565–580. https://doi.org/10.1007/s00180-012-0317-1

Hevner, A. R., March, S. T., Park, J. & Ram, S. (2004). Design science in information systems research. *MIS Quarterly*, *28*(1), 75–105. https://doi.org/10.2307/25148625

Jewer, J. (2018). Patients' intention to use online postings of ED wait times: A modified UTAUT model. *International Journal of Medical Informatics*, *112*, 34–39. https://doi.org/10.1016/j.ijmedinf.2018.01.008

Lamberton, C. P. & Rose, R. L. (2012). When is ours better than mine? a framework for understanding and altering participation in commercial sharing systems. *Journal of Marketing*, *76*(4), 109–125. https://doi.org/10.1509/jm.10.0368

Leismann, K., Schmitt, M., Rohn, H. & Baedeker, C. (2013). Collaborative consumption: Towards a resource-saving consumption culture. *Resources*, *2*(3), 184–203. https://doi.org/10.3390/resources2030184

Lindblom, A. & Lindblom, T. (2017). De-ownership orientation and collaborative consumption during turbulent economic times. *International Journal of Consumer Studies*, *41*(4), 431–438. https://doi.org/10.1111/ijcs.12336

Marques, B. P., Villate, J. E. & Carvalho, C. V. (2011). Applying the UTAUT model in engineering higher education: Teacher's technology adoption. *6th Iberian Conference on Information Systems and Technologies (CISTI 2011)*, 549–554.

Mawela, T., Ochara, N. & Twinomurinzi, H. (2017). E-government implementation: A reflection on South African municipalities. *South African Computer Journal*, *29*(1), 147–171. https://doi.org/10.18489/sacj.v29i1.444

Mtsweni, J., Biermann, E. & Pretorius, L. (2014). iSemServ: A model-driven approach for developing semantic web services. *South African Computer Journal*, (52), 55–70. https://doi.org/10.18489/sacj.v52i0.185

Mujinga, M. M., Eloff, M. & Kroeze, J. H. (2019). Towards a framework for online information security applications development: A socio-technical approach. *South African Computer Journal*, *31*(1), 24–50. https://doi.org/10.18489/sacj.v31i1.587

Mullarkey, M. T. & Hevner, A. R. (2019). An elaborated action design research process model. *European Journal of Information Systems*, *28*(1), 6–20. https://doi.org/10.1080/0960085X.2018.1451811

Pinem, A. A., Yeskafauzan, A., Handayani, P. W., Azzahro, F., Hidayanto, A. N. & Ayuningtyas, D. (2020). Designing a health referral mobile application for high-mobility end users in indonesia. *Heliyon*, *6*(1). https://doi.org/10.1016/j.heliyon.2020.e03174

Rodrigues, T. C., Leitão, F. O., Thomé, K. M. & Cappellesso, G. (2021). Sharing economy practices in agri-food settlements: Integration of resources, interdependence and interdefinition. *Journal of Cleaner Production*, *294*. https://doi.org/10.1016/j.jclepro.2021.126357

Sarstedt, M., Ringle, C. M. & Hair, J. F. (2017). Partial least squares structural equation modeling. In C. Homburg, M. Klarmann & A. Vomberg (Eds.), *Handbook of market research*. Springer. https://doi.org/10.1007/978-3-319-05542-8_15-1

Sutherland, W. & Jarrahi, M. H. (2018). The sharing economy and digital platforms: A review and research agenda. *International Journal of Information Management*, *43*, 328–341. https://doi.org/10.1016/j.ijinfomgt.2018.07.004

Varma, A. (2018). Mobile banking choices of entrepreneurs: A unified theory of acceptance and use of technology (UTAUT) perspective. *Theoretical Econonomics Letters*, *8*(14), 2921–2937. https://doi.org/10.4236/tel.2018.814183

Venkatesh, V., Morris, M. G., Davis, G. B. & Davis, F. D. (2003). User acceptance of information technology: Toward a unified view. *MIS Quarterly*, *27*(3), 425–478. https://www.jstor.org/stable/30036540

Venkatesh, V. & Zhang, X. (2010). Unified theory of acceptance and use of technology: U.S. vs. China. *Journal of Global Information Technology Management*, *13*(1), 5–27. https://doi.org/10.1080/1097198X.2010.10856507

Yu, C. S. (2012). Factors affecting individuals to adopt mobile banking: Empirical evidence from the UTAUT model. *Journal of Electronic Commerce Research*, *13*(2), 104–121.

A INTERVIEW PROTOCOL FOR THE QUALITATIVE ANALYSIS

Table 5: Interview Protocol for the qualitative analysis

General demographic Information of the Interviewee

Age ____ Education _____ Gender ____ Department you are working _____
Location _____ Job-Title _____

Research sub-questions	**Service user**	**ICT Technician**	**Executive Manager**	**ICT Manager**
What resources can be shared between government departments via government platforms of Ethiopia?	1. What resources are you capable of sharing using the WoredaNet in your department/organisation?	1. What resources can the WoredaNet stakeholders share in your department/woreda?	1. What resources can the WoredaNet stakeholders share in your department/woreda?	1. What manageable resources can government organisations share using the WoredaNet?
What public services or goods can be swopped between government departments via government platforms of Ethiopia?	1. What other goods and services are you able to exchange using the WoredaNet in your woreda/ organisation?	1. What goods and services can be exchanged by the WoredaNet in your woreda/organisation?	1. What goods and services can be exchanged by government departments in the WoredaNet to support decision-making capacity of managers in your woreda?	1. What resource and service exchanges are supported by the WoredaNet among and between government organisations?
What public services or goods can be rented between government departments via government platforms of Ethiopia?	1. From your experience, do you think that the WoredaNet is capable of renting goods or services among government departments? *(Yes/No)*	1. From your experience, do you think that the WoredaNet is capable of renting goods or services among government departments in your woreda? *(Yes/No)*	1. From your experience, do you think that the WoredaNet is capable of renting goods or services among government departments in your woreda? *(Yes/No)*	1. Is the WoredaNet organised to rent goods and services for public organisations? *(Yes/No)*

continued on next page –

https://doi.org/10.18489/sacj.v34i1.972

Table 5 – continued from previous page

Research sub-questions	Service user	ICT Technician	Executive Manager	ICT Manager
	2. If your answer to question 1 above is "Yes", would you please mention public goods and services that can be rented between government departments in your department/organisation?	2. If your answer to question 1 above is "Yes", would you please mention public goods and services that can be rented between government departments in your woreda?	2. If your answer to question 1 above is "Yes", would you please mention public goods and services that can be rented to support the administrative processes of government departments in your woreda?	2. If your answer to question 1 above is "Yes", would you please mention public goods and services expected to be rented in the WoredaNet between public organisations?
How can the CC digital platform in the G2G domain enable government departments to save costs and resources in Ethiopia?	1. How would a CC digital platform help you to save costs in your department/organisation?	1. How would the CC digital platform help public agencies to save costs in your department/organisation?	1. How would the CC digital platform help public agencies to save costs in your woreda?	1. How would the CC digital platform help government organisations to save costs?
	2. How would the CC digital platform assist you to increase resource optimisation in your organisation?	2. How would the CC digital platform help government organisations and departments to optimise their resources using the CC platform?	2. How would the CC digital platform help public agencies to optimise resources in your department/organisation?	2. How would the CC digital platform help government organisations to optimise their resources?

https://doi.org/10.18489/sacj.v34i1.972

B INTERVIEW PROTOCOL TO UNDERSTAND THE ACCEPTANCE LEVEL AND IDENTIFY THE MOST SIGNIFICANT FACTORS

Table 6: Interview protocol to understand the acceptance level and identify the most significant factors [a]

Variable	Question item	no items
Performance Expectancy (PE)	PE1: I find the platform useful in my work PE2: Using the CC platform helps me to complete tasks more quickly PE3: Using the platform increases my productivity	3
Effort Expectancy (EE)	EE1: Learning how to use the platform is easy for me EE2: My interaction with the platform is clear and understandable EE3: I find the platform easy to use EE4: The platform is not compatible with other systems that I use	4
Social Influence (SI)	SI1: People who are important to me think that I should use the platform SI2: People who influence my behavior think that I should use the platform SI3: The management of the organisation thinks that I should use the platform	3
Facilitating Conditions (FC)	FC1: I have the resources required for the platform FC2: I have the necessary knowledge to use the platform FC3: The platform is compatible with other technologies I use FC4: The organization has encouraged the use of the platform	4
Behavioural Intention (BI)	BI1: I intended to use the platform in the future BI2: I will always try to use the platform in my daily life BI3: I plan to continue to use the platform frequently	3

[a]Venkatesh and Zhang (2010)

https://doi.org/10.18489/sacj.v34i1.972

C MEASUREMENT MODEL RESULTS

Table 7: Detail of Cronbach's alpha, composite reliability, and average variance values

Construct Reliability and Validity				
Variables	**Cronbach's Alpha**	**Rho_A**	**Composite Reliability**	**Average Variance**
Behavioural Intention	0.723	0.761	0.841	0.639
Effort Expectancy	0.789	0.795	0.664	0.615
Facilitating Condition	0.857	0.870	0.905	0.705
Performance Expectancy	0.842	0.843	0.905	0.760
Social Influence	0.783	0.827	0.869	0.689

Table 8: Discriminant validity results

	Discriminant Validity				
	Behavioural Intention	Effort Expectancy	Facilitating Condition	Performance Expectancy	Social Influence
Behavioural Intention	**0.799**				
Effort Expectancy	0.597	**0.784**			
Facilitating Condition	0.562	0.753	**0.840**		
Performance Expectancy	0.550	0.692	0.661	**0.872**	
Social Influence	0.485	0.687	0.688	0.634	**0.830**

Table 9: R^2 Values

	R^2	R^2 **adjusted**
behavioural intention	0.407	0.400

https://doi.org/10.18489/sacj.v34i1.972