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Digital Literacy, Insurtech Adoption and Insurance Inclusion in Uganda

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Abstract: The purpose of this study is to establish whether digital literacy and insurtech adoption influence insurance inclusion in Uganda. Principally, we sought to determine whether insurtech adoption mediates the nexus between digital literacy and insurance inclusion. This study adopted a cross-sectional and quantitative correlational approach. The study's sample was 391 individuals who had used digital platforms such as mobile phones and computers to access insurance products and services in Uganda. Data were collected using structured survey questionnaires. Partial Least Squares Structural Equation Modelling (PLSEM) was employed to test the hypothesised relationships. The results demonstrate that both digital literacy and insurtech adoption significantly and positively influence insurance inclusion. We also found digital literacy to be a significant and positive determinant of insurtech adoption. Markedly, it was found that insurtech adoption mediates the association between digital literacy and insurance inclusion in Uganda. However, this study was conducted in a developing country with an underdeveloped insurance market and with low technological advancement. This may affect generalisation of the study findings. This study's novelty lies in establishing how digital literacy and insurtech adoption interplay to influence insurance inclusion in Uganda. This is the first study to examine the effect of digital literacy and insurtech adoption on insurance inclusion.

Keywords Digital literacy; Insurtech adoption; Insurance inclusion; Financial inclusion; Uganda

1. Introduction

Currently, insurance inclusion has caught the attention of development partners and scholars as the missing link to full financial inclusion. Such attention emanates from the soaring levels of insurance inclusion. Globally, insurance penetration is estimated at 7%, while in Africa, insurance penetration is estimated at 2.78 % (International Association of Insurance supervisors, 2022). In Uganda, insurance penetration is estimated at 0.80%. However, 99% of the adult population is not insured, yet, the people and businesses are susceptible to lifecycle shocks (Finscope, 2018). According to Cheston *et al.* (2018) "*insurance inclusion is the state of access to and use of appropriate and affordable insurance products for the unserved and underserved*". Arguably, studies have proved insurance to contribute to economic growth at the macro level and poverty alleviation at the micro level (Bayar, 2021; Zulfiqar *et al.*, 2020). Hence, inclusive insurance can enable poverty alleviation through savings mobilization for entrepreneurship and reducing people's risk susceptibility (Kim *et al.*, 2018).

Notably, insurance exclusion has been attributed to behavioral and non-behavioral factors. Behavioral factors such as trust, perceived value and insurance literacy have been found to influence insurance inclusion (Kiwanuka and Sibindi, 2023; Cruijsen *et al.*, 2019). Additionally, non-behavioral factors such as transaction costs, documentation requirements and distance influence insurance inclusion (Demirgüç-Kunt *et al.*, (2018). Notwithstanding, insurance inclusion continues to remain very low, especially in emerging economies. As such, developing economies are currently leapfrogging insurtech to broaden insurance inclusion (Holliday, 2019). However, insurtech is

thought to have improved insurance penetration more in the developed economies compared to the developing economies (Reddy *et al.,* 2020). Hence contributing to the persistence of the insurance inclusion gap between the developed and developed countries.

Despite rolling out insurtech in the insurance landscape, African countries are lagging behind in embracing the technology and still grappling with low insurance inclusion (Sibindi, 2022). Yet, financial technologies are playing a significant role in creating access to the unserved and underserved people, especially in the rural areas. According to Gautum and Kanoujiya (2022), governments need to adopt and promote the usage of financial technologies of mobile money and the like to promote the uptake of financial services. Digital networks render technological platforms through which financial services providers expand their reach to the unserved and underserved segments (Kanga *et al.,* 2022). However, in today's Fourth Industrial Revolution (4IR), scores of researches have earmarked the importance of digital financial literacy to foster financial services uptake (Setiawan *et al.,* 2022; Rahayu *et al.,* 2022). Conclusively, these studies have found digital financial literacy to influence financial inclusion. According to Gautum and Kanoujiya (2022), given today's proliferation of digital financial services, consumer's financial literacy level alone is not enough to foster financial inclusion. Therefore, significant attention needs to be paid to the people's digital financial literacy.

Albeit previous studies emphasising the importance insurance literacy to foster insurance inclusion (Kiwanuka and Sibindi, 2023; *Cruijsen et al.,* 2019), few studies have investigated the influence of digital literacy on insurance inclusion. Moreover, despite the emphasized importance of insurtech towards access to insurance services, barely any study has explained how digital literacy and insurtech interplay to influence insurance inclusion. However, previous studies proffer mixed results on the association between digital literacy and adoption of technology. Some studies found digital literacy to influence technology adoption (see for instance Kabakus *et al.,* 2023; Nikou *et al.,* 2022) while others find digital literacy not to influence technology adoption (see for instance Kabakus *et al.,* 2023; Jang *et al.,* 2021). Moreover, the foregoing studies were conducted in work settings and learning institutions. Thus, the need to particularly investigate how digital literacy and insurtech influence insurance inclusion.

Against this backdrop, we sought to examine how digital literacy and insurtech influence insurance inclusion in the Ugandan context. Distinctly, we aimed to examine the mediating role of insurtech adoption in the relationship between digital literacy and insurance inclusion. As such, our study cross-sectionally surveyed individuals that have used digital platforms such as mobile phones and computers to access insurance in Uganda. The study hypotheses were tested through PLS-SEM We found digital literacy and insurance inclusion to be significantly and positively related. Also, insurtech adoption was found to positively influence variations in insurance inclusion. More so, digital literacy was found to positively influence insurtech adoption. Further, a significant partial mediation effect of insurtech adoption in the relationship between digital literacy and insurance inclusion in Uganda was found.

The article sections are oraganised as follows: Section 2 discusses the related literature. The third section details study's methodology; Section 4 entails the findings; Section 5 discusses the findings; Section 6 summarises the study.

2. Literature Review and Hypotheses Development

2.1. Theoretical review

The Technology Acceptance model (TAM) by Davis (1989) was used to examine the mediating role of insurtech adoption between digital literacy and insurance inclusion. We sought to determine how TAM constructs mediate the association between digital literacy and insurance inclusion in Uganda. The TAM (Davis 1989) is a theory that explains users' acceptance and usage of technologies. In that regard, the TAM theory (Davis, 1989) postulates that actual technology usage is directly or indirectly influenced by; perceived usefulness, perceived ease of use and attitude towards usage of the technology. In the TAM, perceived usefulness implies the extent to which the technology

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improves user's activity performance while perceived ease of use denotes how the user perceives the technology as effortless. In addition, attitude towards usage denotes the cause of intention leading to future behaviour. When a technology is not easy to use, it might not be perceived as useful (Gie and Fenn, 2019). Ajzen and Fishbein (2000) buttress that the usage attitude has an evaluative effect of positive and negative feelings of people in performance of a specific behaviour. In the TAM perceived usefulness, perceived ease of use and attitude towards use predict actual usage and behavioral intentions of users (Nikou *et al.,* 2022). According to Elkaseh *et al.* (2016), perceived usefulness and perceived ease of use influence behavioral intention. Accordingly, the TAM (Davis, 1989) is adopted in the current study to understand how adoption of insurtech influences insurance buying behaviour of individuals by mediating the relationship between digital literacy and insurance inclusion.

2.2. Hypothesis development

2.2.1. Digital literacy and Insurance Inclusion

In the wake of the current digital revolution, being digitally literate is considered a vital quality that people must have (Hassan *et al.,* 2022). Presently, almost all financial products and services are provided digitally (Prasad *et al.,* 2018). As such, in addition to the traditional financial literacy, digital literacy is increasingly fostered to broaden financial inclusion (Lyons and Hass-Hanna, 2021). People can only actively partake in the current digital economy if they are knowledgeable and skilled to undertake digital financial transactions (Kass-Hanna *et al.,* 2022). Despite the digitisation to foster increased access to financial services, most of the people are not aware of how to operate the digital technologies (Hassan *et al.,* 2022). According to the Demirgüç-Kunt *et al.* (2022), almost two thirds of the unbanked do not know how to use mobile money accounts. Regardless, Wang *et al.* (2022) found digital literacy among the elderly and middle-aged people to significantly influence the possibility of participating in financial markets. People without digital literacy are less represented in financial investment. Markedly, in the current digital financial services-based economy, being financially literate alone is inadequate (Chan *et al.,* 2022), hence the need to focus on the people's digital financial literacy. As such, digital financial literacy skills and financial literacy enable efficient usage of financial services and protection against risks (Rahayu *et al*., 2022). Thus, we hypothesise that;

H1. *Digital literacy positively influences insurance inclusion in Uganda.*

2.2.2. Insurtech and insurance inclusion

Insurtech, a subset of fintech, is the application of technology to deliver insurance specific solutions through innovations for traditional and nontraditional market players (Bittin *et al.,* 2022). Although insurtech emerged much later than fintech for the banking sector, it has entrenched every part of the insurance industry (Lin and Chen, 2020). Principally, with the introduction of financial technologies, access to financial services has improved significantly (Asif *et al.,* 2023). As such, Gautum and Kanoujiya (2022) buttressed that governments need to adopt financial technologies to proliferate financial inclusion programmes across all levels. With the fourth digital revolution, financial technologies are expected to deepen the global financial inclusion index (Rosyadah *et al.,* 2021). According to Beck (2020), Mobile phone technologies have enabled developing countries to leapfrog traditional financial services provision models to increase broader access to financial services and products. Digitalisation enables transactions across larger geographical coverages and at faster speeds (Rosyadah et al. 2021). According to Sibindi (2022), it was established that ICT significantly impacts on insurance market development in Africa. Particularly, the penetration of mobile phones usage has a significant positive impact on consumption of life insurance (Asongu and Odhiambo, 2020). Accordingly, this study hypothesises that;

H2. *Insurtech adoption influences insurance inclusion in Uganda.*

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2.2.3. Digital literacy and insurtech adoption

Although financial technologies have been argued to promote financial inclusion (Rosyadah *et al.,* 2021; Beck, 2020), Morgan *et al.* (2019) argue that to achieve increased financial inclusion, it will require higher levels of digital literacy to effectively use the financial technologies. Furthermore, Nikou *et al.* (2022) argued that the obstacle to digitalisation lies in making people to know how to use the technology. Thus, the fast introduction of digital technologies has rendered digital skills important (Mikheev *et al.*, 2023). However, previous literature on the influence of digital literacy and technology adoption has found mixed results. According to Kabakus *et al.* (2023), digital literacy was found to directly influence perceived ease of use but not perceived usefulness. On the one hand, in their research on higher education institutions in Finland, Nikou and Aavakare (2021) found digital literacy to have no influence on the student's intention to use digital technologies. On the other hand, while investigating the effect of digital literacy on intention to use e-learning among small and medium enterprises in Mohammadyari and Singh (2015) found digital literacy to significantly influence intention whether to or not continue using web 2.0 technologies. On this footing, it can be deduced that the influence of digital literacy on technology adoption is inconclusive. Regardless, prior studies attribute digital exposure to adoption of technologies (Kabakus *et al.*, 2023; Moenjak *et al.*, 2020). Therefore, based on the foregoing, the current study hypothesizes that;

H3. *Digital literacy positively influences insurtech adoption*

H4. *Insurtech adoption mediates the relationship between digital literacy and insurance inclusion.*

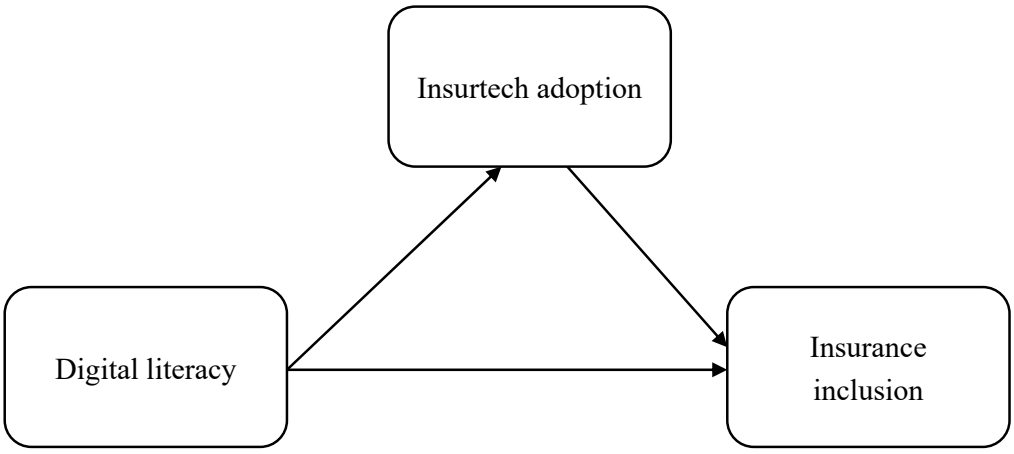

Figure 1. Conceptual framework. Source: Authors own conceptualisation.

3. Research Methodology

In this study, we cross-sectionally gathered the quantitative data to estimate the study hypotheses. This design was adopted owing to its ability to provide large amounts of data at a point in time. The data were collected from individuals that have used digital platforms such as mobile phones and computers to access insurance products and services in Uganda. The study participants were clients of three insurance providers (Yeko, Turaco and Prudential) that have adopted insurtech to extend insurance services in Uganda (Insurance Regulatory Authority, 2022). The data was collected by distributing questionnaires to the study participants. Overall, a sample of 391 participants partook in the current study. Yamane's (1973) sample size determination formula [n = N/1 + N (e)2] was adopted to arrive at the sample. The study participants were selected through a single stage sampling procedure. Accordingly, the study participants were selected using proportionate stratified simple random sampling. This sampling procedure enabled to give equal chance to all the participants to partake in the study. A structured questionnaire with response items ranging from 1=strongly disagree to 5= strongly agree was adopted to gather the primary data. Prior

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to data collection, participants' consent to partake in the study was sought. Notably, the complete data was tested for robustness. The data were tested for validity and reliability. Accordingly, discriminant and convergent reliability were performed. Additionally, multicollinearity among variables was tested for using the Variance Inflation Factors. The Diagnostic findings are presented in the next section. The measurements of the study variables were adopted from previous studies. Digital literacy was measured using knowledge (KNW) and skill (SKL) as adopted from Hassan *et al.* (2022); Kass-Hanna *et al.* (2022). Insurtech adoption was measured by perceived ease of use (PEU) and perceive usefulness (PU) as suggested by Davis (1989). While the measures for insurance inclusion were access (ACS) and usage (USG)as suggested by Kiwanuka and Sibindi (2023); Cheston *et al.* (2018).

4. Empirical Results Presentation and Analysis

4.1. Diagnostic results

Diagnostics were run to establish any biases that could compromise reliability of the research findings. Data were checked for composite reliability, discriminant validity, content validity, construct validity and tests for multicollinearity. Tables 1 and 2 present the results from the diagnostic tests. Cronbach's alpha (α) coefficient was used to test for composite reliability, where values above 0.70 were accepted (Hair *et al.*, 2019). Alike, discriminant validity and multicollinearity were tested using the Heterotrait-monotrait ratio (HTMT) and Average variance extracted as guided. Discriminant validity and multicollinearity results are presented in Table 2. The diagnostics revealed all the study variables to be above 0.70 cut off and below the 0.95 upper limit. Additionally, all the results for the Average variance extracted (AVE) were above the 0.5 cut-off. Similarly, it was established that there was no multicollinearity since all the variance inflation factors (VIFs) were below 5 as guided by Hair et al (2019).

Table 1. Reliability and validity.

Variables	Composite Reliability	Average Variance Extracted (AVE)	Content Validity Index (CVI
Digital Literacy	0.878	0.673	0.750
Insurtech Adoption	0.922	0.590	0.800
Insurance Inclusion	0.873	0.671	0.833

Table 2. Multicollinearity and Discriminant Validity.

Variables	Heterotrait-monotrait ratio (HTMT)	Variance Inflation Factors (VIF)
Insurance Inclusion <-> Digital Literacy	0.601	1.394
Insurtech Adoption -> Insurance Inclusion	0.590	1.000
Digital Literacy -> Insurtech Adoption	0.756	1.394

4.2. Sample Characteristics

The results in Table 3 showed that there were more females accessing insurance via digital platforms compared to the male counterparts. The female respondents comprised 57.1% of the sample while the males were 42.9% of the sample. The findings also indicated most of the respondents to be in the age range of 34-49 years with a 49.7% sample representation. Additionally, 45.7% of the respondents were in the age range of 18-33 years. Only 4.6 % of the study sample was in

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the age range of 50-65 years. In terms of level of education, majority of the respondents indicated to be degree holders at 65.7% of the sample, followed by diploma holders at 14,6% of the sample. Further, 10.7% of the respondents held masters' degrees while only 5.1% and 2.6 % of the respondents had advanced level UACE and UCE respectively. Also, Results showed that only 1.3% of the respondents had PhDs while there were no respondents with Primary Leaving Certificate. Lastly, 91.6% of the respondents indicated to have used the mobile phone platform to access insurance services, while 8.4% of the respondents used the computer to digitally access insurance products and services.

Table 3. Sample Characteristics.

	Frequency	**%**
Gender		
Male	168	42.9
Female	223	57.1
Total	391	100
Age		
18-33 years	179	45.7
34-49 years	194	49.7
50-65 years	18	4.6
Total	391	100.0
Education Level		
Primary Leaving Examination (PLE)	0	0
Uganda Certificate of Education (UCE)	10	2.6
Uganda Advanced Certificate of Education (UACE)	20	5.1
Diploma	57	14.6
Degree	257	65.7
Masters	42	10.7
PhD	5	1.3
Total	391	100
	Frequency	**%**
Gadget Used to Access insurance		
Mobile Phone	358	91.6
Computer	33	8.4
Total	391	100

4.3. Correlational analysis

We used Pearson's correlation to establish the relationship between digital literacy, insurtech adoption and insurance inclusion. The correlation results are indicated in Table 4. The results show digital literacy to be positively and significantly associated with insurance inclusion ($r = 0.525$, $p < 0.01$). The results suggest that positive variances in digital literacy leads to positive variances in insurance inclusion. Also, the results also revealed a significant positive relationship between insurtech adoption and insurance inclusion ($r = 0.683$, $p < 0.01$). This suggests that as insurtech adoption increases, insurance inclusion increases significantly. Lastly, correlational results showed that digital literacy is positively associated with insurtech adoption ($r = 0.532$, $p < 0.01$). This finding suggests that, positive changes in digital literacy are associated with positive changes in insurance inclusion. Given that insurtech adoption is positively associated with both digital literacy and insurance inclusion, it is an indication that insurtech adoption can mediate the digital literacy and insurance inclusion nexus. Based on Hair *et al.* (2019), a mediation effect suffices when the mediating variable is associated with both the independent and the dependent variable.

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Table 4. Correlation results.

	Digital Literacy	Insurtech Adoption	Insurance Inclusion
Digital Literacy	1.000		
Insurtech Adoption	0.532**	1.000	
Insurance Inclusion	0.525**	0.683**	1.000

**. Correlation is significant at the 0.01 level.

4.4. Structural equation modelling Results

This study sought to establish the effect of digital literacy and insurtech adoption on insurance inclusion. Markedly, the study sought to establish the mediating role of insurtech adoption in the relationships between digital literacy and insurance inclusion in Uganda. As such, PLS-SEM was adopted to test the study hypotheses. PLS-SEM results revealed that digital literacy significantly and positively ($\beta = 0.226$; $t = 3.940$; $p < 0.0001$) influences insurance inclusion in Uganda. This finding supports hypotheses (H1). Furthermore, the findings revealed insurtech adoption has a significant positive impact ($\beta = 0.563$; $t = 12.634$; $p < 0.0001$) on insurance inclusion in Uganda. Hence hypothesis (H2) of is supported. Additionally, the study findings revealed that digital literacy significantly and positively influences insurtech adoption in Uganda ($\beta = 0.532$; $t = 13.526$; $p < 0.0001$). Hence hypothesis (H3) is supported. Particularly, the results revealed that insurtech adoption partially mediates the relationship between digital literacy and insurance inclusion in Uganda ($\beta = 0.299$; $t = 8.884$; $p < 0.0001$). Hypothesis testing results are presented in Table 5. Overall, the findings revealed that the direct and indirect effects of digital literacy and insurtech adoption explain 50.3% of variance in insurance inclusion as depicted in Figures 2 and 3. According to Hair et al. (2019), an R^2 of 0.26 and above is a substantial effect of the predictors on the exogenous variable. Thus, it can be inferred that the in current model, digital literacy and insurtech adoption sufficiently predict insurance inclusion in Uganda.

Table 5. Hypothesis results.

Hypothesised path	Path coefficient	Standard dev.	t-values	P values	Decision
Digital Literacy -> Insurance Inclusion	0.226	0.057	3.940	0.000	Supported
Insurtech Adoption -> Insurance Inclusion	0.563	0.045	12.634	0.000	Supported
Digital Literacy -> Insurtech Adoption	0.532	0.039	13.526	0.000	Supported
Digital Literacy -> Insurtech Adoption -> Insurance Inclusion	0.299	0.034	8.884	0.000	Supported

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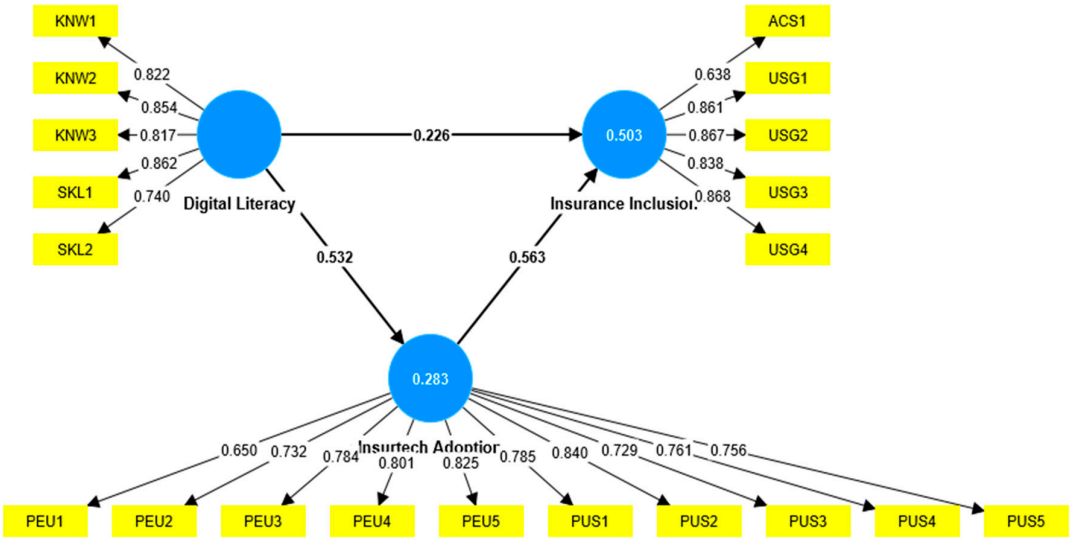

Figure 2. PLS-SEM Algorithm with direct effects and factor loadings.

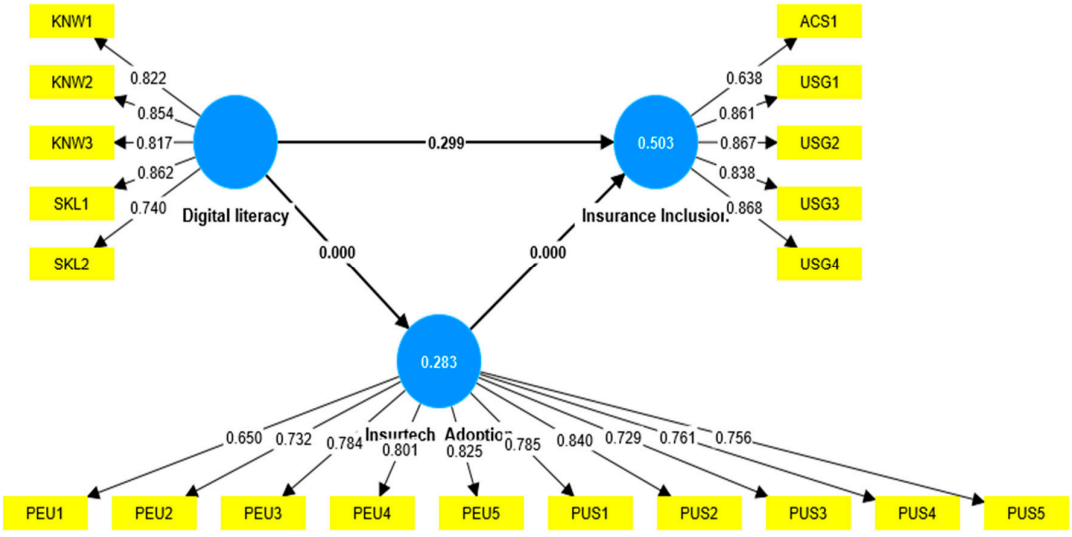

Figure 3. PLS-SEM Algorithm with indirect effects.

5. Discussion

This study sought to establish the influence of digital literacy and insurtech adoption on insurance inclusion in Uganda. As such, the study was anchored on four hypotheses that were all supported by the findings.

Firstly, the study findings revealed that digital literacy significantly and positively influences insurance inclusion in Uganda. This finding suggests that when consumers are knowledgeable about how to use digital devices such as computers, smart phones and other related devices, they can enroll on an insurance policy using such digital devices. Additionally, consumers' digital literacy enables them to ably navigate and search for insurance information on the internet and other digital platforms. As well, when consumers are aware of the threats and risks associated with online transactions, they can have the confidence to buy insurance products and seek for insurance services through digital insurance platforms. The finding that digital literacy is associated with insurance inclusion is consistent with Kass-Hanna *et al.* (2022), who argue that people can only actively partake in the current digital economy when they are knowledgeable and skilled to undertake digital finance transactions. Moreover, extant studies have argued that in addition to the traditional financial

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literacy, there is need to foster digital financial literacy to broaden financial inclusion (Lyons and Hass-Hanna, 2021; *Lyons et al.,* 2020). When people lack digital knowledge and skills, they will not be financially included (Demirguc-Kunt *et al.,* 2022). The study's findings are also in agreement with Rahayu *et al.,* (2022), they argued that digital and financial literacies enable efficient usage of financial services and protection against risks. Also, Kass-Hanna *et al.* (2022) found digital literacy to be helpful in building inclusive and financial resilience among the unserved and underserved population.

Secondly, the results reveal a significant association between insurtech adoption and insurance inclusion. This finding suggests that when consumers find ease in learning and using digital insurance platforms, they can subsequently enroll onto insurance digitally. Furthermore, it was revealed that when digital insurance platforms are user-friendly, clients are encouraged to use them to access insurance products and services. This finding resonates with extant studies which have advanced financial technologies to have the potency to influence or foster access to financial services (Asif *et al.,* 2023; Sahay, 2022). However, such studies have been done mainly in the area of fintech and financial inclusion. In line with the current study, Holliday (2019) argued that insurtech has the potential to boost economic growth by closing the protection gap from a developing country perspective. This argument is in agreement with the current study's finding that when clients can easily buy insurance policies through digital platforms such as mobile phones, they can enroll onto various digital insurance products and services, hence fostering insurance inclusion. The mobile phone network has enabled emerging countries to increase access to financial services and at faster speeds (Rosyadah *et al.,* 2022; Beck, 2020). Our findings further indicate that, the efficiency in digital insurance platforms encourages individuals to continue using insurance in the future and also recommend others to enroll on insurance. Therefore, governments need to adopt financial technologies to proliferate financial inclusion programmes across all levels (Gautum and Kanoujiya, 2022).

Thirdly, this study's findings revealed that digital literacy has a significant positive relationship with insurtech adoption. In this regard, the finding suggests that when individuals know how to use digital devices such as mart phones, computer and other related devices, they can easily utilise insurance technologies. Insurance technologies require individuals to have the ability to navigate and evaluate the digital platforms. Accordingly, one's digital literacy will enable them to execute insurtech tasks such as enrolling on an insurance product, applying for insurance claims and logging insurance complaints through the insurtech platforms. This finding is consistent with extant literature on the one hand and inconsistent with extant literature on the other hand. On the one hand, this finding is in agreement with Kabakus *et al.* (2023), who found digital literacy to influence adoption of technologies. They found digital literacy to be associated with perceived ease of use. Nevertheless, although we found digital literacy to influence both perceived usefulness and perceived ease of use, Kabakus *et al.* (2023) did not find digital literacy to influence perceived usefulness. Additionally, this study's findings are in agreement with Mohammadyari and Singh (2015) who found digital literacy to influence intention to or not to use web 2.0 technologies. On the other hand, the current study's findings are inconsistent with Nikou *et al.* (2022) who fund digital literacy not to have a positive effect on technology usage in TAM context. Notwithstanding, the current study advances that, based on the TAM context, digital literacy influences insurtech adoption.

Fourthly, this study found that insurtech adoption mediates the digital literacy and insurance inclusion relationship. In that regard, this study makes an original contribution by positing that for a client's digital knowledge and skills to influence insurance inclusion, significant portions of digital literacy go through insurtech adoption. Moreover, the findings revealed that digital literacy alone had a weak effect size on insurance inclusion compared to its effect size on insurtech adoption. Therefore, insurtech adoption mediates the relationship between digital literacy and insurance inclusion.

6. Conclusions

This study sought to establish whether digital literacy and insurtech adoption can significantly influence insurance inclusion in Uganda. Also, the study sought to establish whether insurtech

adoption mediates the digital literacy and insurance inclusion nexus. With the aid of PLS-SEM, we found significant positive effects of; digital literacy on insurance inclusion; insurtech adoption on insurance inclusion; and digital literacy on insurtech adoption. Furthermore, it was established that insurtech adoption mediates the digital literacy and insurance inclusion nexus The study confirms that digital literacy and insurtech adoption can influence insurance inclusion in the TAM context. To our knowledge, our study comes first in examining the mediating effect of insurtech adoption in the digital literacy and insurance inclusion nexus. More still, our study is the first to examine the effect of digital literacy and insurtech adoption on insurance inclusion. Previous studies have examined the influence digital financial literacy and fintech on financial inclusion. Yet, when insurance inclusion is not addressed, attainment of full financial inclusion will remain glim. Therefore, our study's novelty lies in establishing how digital literacy and insurtech adoption interplay to influence insurance inclusion in the Ugandan context.

The findings of this study are significant for policy makers, insurance providers and development partners alike. As such, it is recommended that in addition to the tradition financial literacy programmes, policy makers should include the aspect digital financial literacy. The Bank of Uganda should revise the national financial inclusion strategy to include a digital literacy training agenda in the framework. The current strategy focuses of financial literacy yet without digital literacy, plausibility of the programme may not suffice in the wake of digital financial products and services. Additionally, as insurance providers role out insurtech, they should consider extending digital insurance literacy training to enhance insurance inclusion through digital insurance platforms. Furthermore, insurance providers and insurtech startups should design seamless and user-friendly insurtechs to encourage insurtech adoption for insurance inclusion.

Notwithstanding, this study is not without limitations. Firstly, the current study was a conducted in a developing country with an underdeveloped insurance market and with low technological advancement. This may affect generalisation of the study findings. Therefore, future studies could be done from a developed economy's perspective. Furthermore, this study was cross-sectional and quantitative. Future studies could adopt longitudinal designs with mixed methods approaches to gather deeper insights on how digital literacy and insurtech adoption interplay to influence insurance inclusion.

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Data Availability Statement: Data available on request.

Conflicts of Interest: The authors declare no conflict of interest.

Appendix 1: Study measurement items

Digital literacy	
Knowledge	
KNW1	I know how to use digital devices such as smart phones, computers and tablets.
KNW2	I aware of threats and risks associated with online services.
KNW3	I know the importance of digital securities such as having strong passwords.
Skills	
SKL1	I can ably navigate and search for information on the internet
SKL2	I can ably evaluate credibility of online information
Insurtech adoption	

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Perceived ease of use	
PEU1	I find digital insurance platforms easy to use.
PEU2	I easily learn to use digital insurance platform.
PEU3	I am confident when using digital insurance platforms.
PEU4	The interface of the digital insurance platform is friendly.
PEU5	I easily learnt how to use the digital insurance platform
Perceived Usefulness	
PUS1	Digital insurance platform made purchasing insurance easy.
PUS2	I easily monitor my insurance policy on the digital insurance platform.
PUS3	Digital insurance has made the insurance process efficient.
PUS4	The digital platform has increased transparency of the insurance provider.
PUS5	Overall, the digital insurance platform has improved my experience with the insurance provider.
Insurance inclusion	
Access	
ACS1	Digital insurance platforms provide convenient access to insurance products and services.
Usage	
USG1	I intend to continue using digital insurance services.
USG2	I would recommend others to buy insurance using digital platforms.
USG3	The digital insurance platforms has a wide variety of insurance products and services
USG5	I feel good about my decision to buy insurance through a digital platform.

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