Determinants of Digital Insurance Adoption among Micro-Entrepreneurs in Uganda

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Abstract: - The insurance industry is constantly evolving with the help of technological advancements across the globe. The purpose of this study was to explore the critical factors that influence the adoption of digital insurance among microentrepreneurs in Uganda. The study involved 209 participants. The study used a modified DOI theory as a framework and analyzed the data using structural equation modeling (IBM SPSS Amos 23.0). The results of the study indicated that knowledge of digital insurance, relative advantage, and perceived trust have a significant positive impact on digital insurance adoption among micro-entrepreneurs in Uganda. Conversely, the study found that perceived social influence had no significant impact. This study adds valuable insights to the literature on digital insurance and microentrepreneurs and aids policymakers and managers in understanding the influential factors for implementation.

Key-Words: - Insurance, digital insurance, DOI theory, Entrepreneurship, microentrepreneurs, Perceived trust, Social influence, relative advantage, Uganda.

1 Introduction

Businesses worldwide are showing an increasing interest in digital insurance for sustainability, continuity, and safety. According to [1] and [2], digital insurance refers to the provision and operation of insurance and related financial services using digital solutions. For example, individuals and organizations can use their mobile phones to access property and health insurance products anytime and anywhere. As a result, insurance businesses now prefer to use automated digital systems to offer insurance services and products to people and institutions conveniently. Compared to traditional insurance systems, digital insurance solutions are frequently more affordable and can reach underserved and unserved communities promptly [2]. Digital insurance is believed to enhance financial transaction security and prevent losses, [3], [4], making it possible for micro-entrepreneurs to address risk issues and grow their businesses quickly with a digital strategy.

Digital insurance offers customers the convenience they desire in an insurance service. By going digital, customers can save time and effort when conducting transactions, [5] and [6]. The traditional branch insurance system is expensive, time-wasting, and bureaucratic. This hinders microentrepreneurs from accessing and using insurance services on demand. For instance, microentrepreneurs in Uganda have to travel more than 20 kilometers to reach insurance branches, [7]. The [7], report classifies microenterprises as businesses with a workforce of fewer than four individuals and a capital investment of less than 10 million Uganda shillings. Most of them are located in rural or hard-to-reach areas. Yet, the branch insurance system tends to target established and wealthy businesses that can pay fair premiums, leaving microbusiness owners open to financial risks despite being crucial to Uganda's economy. As a result, microenterprises prioritize financial benefits like uncalculated loans over risk management, [4]. But with digital insurance, microentrepreneurs can have access to efficient and effective insurance services for business growth, [3], [8]. Despite this

call, insurance companies and governments have a limited understanding of the factors determining digital insurance adoption among microentrepreneurs.

Although microentrepreneurs confront significant risks in developing countries, there has been limited attention to the utilization of digital insurance despite having access to technology [3], [9]. [10], highlighted the neglect of digital insurance by prominent authors, particularly when it comes to microentrepreneurs in low-income countries like Uganda. Moreover, prior studies focused on major economies like China [4], [11], Germany [12] and India [13]. Despite [3]'s study being of Ugandan origin, it did not delve into micro-entrepreneurship. Therefore, the study aims to fill these gaps in the existing literature and provide specific recommendations to enhance the operations of microentrepreneurs. The study employs a modified diffusion of innovation model to explore its purpose. [14], asserts that the diffusion of innovation model has strong prediction capabilities for the acceptance of new technologies.

2 Literature Review

2.1 Microentrepreneurs
[15], defines micro-entrepreneurs as startups because their businesses have a capital base of less than ten million Uganda Shillings and employ less than five individuals. Essentially, startups are newly established businesses that operate with limited resources in the early stages of development, [16], [17]. Innovative ideas motivate these entrepreneurs, who are prepared to take risks to turn their vision into a successful venture, [18]. Despite encountering multiple obstacles, micro-entrepreneurs significantly contribute to job creation, innovation, and the overall economic development of Uganda. Some studies, [18], [19], [20], [21] put micro-enterprises in the same category as small and medium-sized businesses (SMEs). However, [17], a study of 379 businesses of different sizes in Northern Uganda found that micro-entrepreneurship is defined by using the right technological resources available in the community. Thus, ensuring their protection through digital insurance is vital. The existing branch insurance model favors larger and more prosperous businesses that can afford higher premiums while neglecting the financial vulnerabilities of microbusiness owners.

Particularly in low-income countries characterized by low digital insurance functionality. Consequently, microentrepreneurs tend to prioritize access to loans over risk management strategies. [4], state that digital insurance offers comprehensive and easily accessible insurance choices for microbusiness owners. Through the utilization of digital insurance, microentrepreneurs may proficiently and successfully handle risks to enable business advancement, [3]. Adopting this novel methodology has the potential to foster financial stability and sustainability, aspects that traditional insurance suppliers often overlook, [21].

2.2 Digital Insurance
According to [1] and [2], the concept of digital insurance involves utilizing advanced technologies to provide insurance services. According to [11], it is a way to improve business processes in the insurance industry. This means that customers can access insurance products and services anytime and anywhere through online systems. Today, a reasonable number of insurance companies have invested in information technology to speed up sales processes, [22]. Previous studies have shown that online peer-to-peer insurance can provide customers with the desired level of security to guarantee business success, [23], [24]. However, there is a notable surge in scientific research concerning insurance technology. [10], called on authors to improve their interest in the field of digital finance. This literature gap has been more evident among microentrepreneurs in developing countries. Yet, [25], has emphasized that digital insurance can transform the insurance industry. Microenterprises are not exceptional. A study by [13], has noted the need for insurance companies and governments to prioritize digital transformation efforts to address insurance customers' changing demands. This is because the digital insurance industry has the potential to stabilize operational efficiency and effectiveness when serving insurance customers globally, [2], [25]. On that note, insurance regulators are working on digital insurance policies to strengthen the insurance industry, [26]. If developing countries like Uganda prioritize digital innovations in the insurance sector, it can lead to increased adoption of digital insurance solutions by customers, thereby establishing a stable and dependable trajectory for the industry. However, digital insurance adoption is still low overall, particularly in developing nations like

Uganda, [4]. Also, [12], found that digital penetration was low across the insurance industry, highlighting the need for continued advancement. To help micro business owners adopt digital insurance, we employ the diffusion of innovation theory to examine crucial factors in this study. Table 1 shows a list of insurance providers in Uganda.

Table 1. Insurance companies in Uganda.

Life insurance companies	Non-life insurance companies	Microinsurance companies
CIC Africa, ICEA, Jubilee, Liberty (Assurance), Metropolitan, NIC (Assurance), Prudential (Assurance), Sanlam, and UAP Old Mutual (Assurance)	AIG, Alliance Africa, APA, Britam, CIC, Excel, First Insurance, Goldstar, ICEA General, Liberty General, Mayfair, MUA, NIC General, Pax, Rio, Sanlam General, Statewide, The Jubilee, Trans Africa, UAP Old Mutual	Grand micro, Edge micro

Source: author compilation

2.3 Diffusion Innovation Theory

[14], defines the diffusion of innovation (DOI) as a process of communicating a novel idea through channels within a social group or system. Societies across economies desire great change to improve well-being. Technology has proved to be a great pillar in this effort of community transformation, [27]. Factors such as compatibility, relative advantage, trialability, observability, and complexity are the baseline for the DOI theory that enhances society's desire to adopt new technology, [28], [29]. We observe from previous studies that relative advantage has the greatest influence on customers in the process of adopting technology to cause community change, [29], [30]. Relative advantage spells out the convenience associated with adopting technology to a business community, [30]. Similarly, in this study, we argue that compatibility, observability, trialability, and complexity are grounded on social influence. Individuals learn from each other new ways of doing business or addressing their financial interests, [31]. Furthermore, when individuals share information, confidence levels increase, leading to perceived trust. This perceived trust encourages members of the groups to have a significant influence on the choices of others, especially regarding new technology, which moves businesses across the globe and builds knowledge. On that note, this study modifies the DOI model to indicate that perceived trust, social influence, knowledge of digital insurance, and relative advantage have a significant effect on the adoption of new technology among microentrepreneurs in developing countries characterized by low levels of technology adoption and usage.

2.4 Hypothesis Development

Digital insurance is a modern transformative tool in the insurance sector that helps customers experience a user-friendly environment that enables maximized utilitarian value, [32]. With digital insurance, customers can experience lower transaction costs, quick, and easy operations, [2]. As such, customers are more than willing to adopt and use innovative technologies, [33]. Therefore, microentrepreneurs can enhance their experiences by investing in technological advancements, [34]. This aligns with [35] study, which stipulates that novel technology saves time and money when utilized in business operations. On that note, innovative technology transforms customers' perceptions based on the relative advantages. Against such a backdrop, the study hypothesizes that:

H1: Relative advantage has a positive impact on the adoption of digital insurance among micro-entrepreneurs.

The relationship between individuals and the surrounding community embeds perceived social influence. For example, an individual can adopt a new technology based on the reactions they receive from their family, peers, and work colleagues, [36], [37]. As a result, the power of social cohesion creates an everlasting influence on individuals in a given society to adopt new technology for the sake of inclusive well-being. According to [36] and [37],

social decisions bond members and make them work together for the common good. The adoption of innovative technology is not exceptional. On a similar note, [38], study revealed that perceived social influence leads to high rates of technological adoption. Based on such a background, the study hypothesizes that:

H2: Perceived social influence has a positive effect on the adoption of digital insurance among micro-entrepreneurs.

Trust is fundamental to ensuring consistent business operations. According to [32], perceived trust involves a person's confidence, belief, and dependence on individuals within their immediate surroundings. People tend to develop a sense of trust in the community of their interest. Against such a backdrop, it can be understood that customers can easily and quickly adopt and use a new technology based on honesty and self-assurance from business practitioners. On that note, businesses need to emphasize the provision of services rather than just focusing on increasing profits to improve their customers' confidence and mitigate the occurrence of any kind of misunderstanding. According to [3], insurance companies provide transparent payout and rejection procedures to streamline operations for all stakeholders using digital insurance. In addition, the study conducted by [39], revealed that customers' perceptions of trust have an impact on adoption. Therefore, the level of customer trust determines the usefulness of an insurance system. Based on such a discussion, the study hypothesizes that:

H3: Perceived trust has a positive effect on the adoption of digital insurance among micro-entrepreneurs.

Knowledge of digital insurance refers to an individual's understanding of how digital systems operate in the insurance sector, [40]. On this note, knowing digital insurance plays a significant role in the adoption process. A previous study by [41], found that embracing a digital agenda can enhance people's knowledge of the insurance industry. According to [2], it involves a process for an individual in the micro-business sector to obtain knowledge of digital insurance. When people become conversant with digital operations in the insurance sector, [4], the adoption and usage of digital insurance will increase in the shortest time. Based on such a discussion, the study hypothesizes that:

H4: Knowledge of digital insurance has a positive impact on the adoption of digital insurance among micro-entrepreneurs.

3 Methodology

The study adopted a scale from previous studies for measurement. We obtained the scale items from previous studies and modified them to meet the purpose of the study. Relative advantage (four items) from [32], social influence (four items) from [36], perceived trust (three items) from [3], knowledge of digital insurance (three items) from [42], and digital insurance adoption (three items) from [43]. We employed a Likert scale (Strongly agree, agree, neutral, disagree, and strongly disagree). Additionally, we subjected the designed questionnaire to expert opinion for validity check. This involved an academician in the field of insurance and a practitioner. Their opinions were incorporated. Furthermore, the questionnaire was printed out and distributed to microentrepreneurs in Mbale city, Mbale district, and Sironko district. These areas are disaster-prone and are experiencing rapid technological change, especially in insurance. This highlights the necessity of digital insurance. We employed two screening questions, "Do you have an insurance account?" and "Do you have internet services?" to determine eligibility for the study. (modified from [43]). We allowed individuals who passed the screening questions to complete the questionnaire. We selected the participants using purposive and snowball sampling techniques to ensure we obtained the right respondents for the study, [44], [45]. This involved visiting microentrepreneur businesses and conducting referrals to identify respondents. A total of 254 questionnaires were issued, with 209 valid responses received and analyzed, resulting in an 82.3% effective rate (Table 2). We utilized AMOS 23.0 structural equation modeling for analysis due to its strong predictive power.

4 Study Results

Table 2. Demographic data

Category	Number	Percentage	Cumulative %
Gender			
Female	139	66.5	66.5
Male	70	33.5	100
Age			
20-30	40	19.1	19.1
30-40	41	19.6	38.8
40-50	31	14.8	53.6
50-60	63	30.1	83.7
60 and above	34	16.3	100
Education			
Primary	26	12.4	12.4
Secondary	98	46.9	59.3
Bachelor degree	82	39.2	98.6
Master degree	3	1.4	100
Experience			
Less than 5 years	25	12	12
5-10	49	23.4	35.4
10-15	58	27.8	63.2
15-20	37	17.7	80.9
20 and above	40	19.1	100

Table 3. Measurement model summary

Constructs	Items	Factor Loading
Relative advantage AVE (.837), α (.935), CR (.954),	Digital insurance services save time.	.909
	Digital insurance services are cost-effective.	.922
	I can easily access digital insurance services.	.921
	I can perform a transaction anywhere with digital insurance.	.907
Perceived social influence AVE (.822), α (.929), CR (.949)	My peers encouraged me to use digital insurance services.	.897
	I use digital insurance services because my friends do.	.903
	People I value influence my decision on digital insurance services.	.916
	I believe digital insurance services are good for everyone.	.911
Perceived Trust: AVE (.783), α (.920), CR (.915)	Digital insurance services are reliable.	.846
	Digital insurance services are handled with care.	.903
	I have faith in the services of digital insurance.	.904
Knowledge of digital insurance AVE (.688), α (.880), CR (.869)	I am aware of and understand digital insurance services.	.829
	I can use digital insurance services.	.862
	I can share digital insurance information with others.	.797
Digital Insurance Adoption: AVE (.706), α (.912), CR (.900)	I will continue interacting with digital insurance platforms.	.866
	I prefer to use digital insurance services.	.918
	I will use digital insurance services more often.	.797

Model Fit: CMIN/DF (1.713), CFI (0.976), NFI (0.945), IFI (0.976), TLI (0.968), RMR (0.062), RMSEA (0.59)

Table 4. Descriptive Statistics and Correlation Matrix

	Mean	Std D	1	2	3	4	5
Relative advantage (1)	4.084	1.062	.954[c]				
Perceived social influence (2)	3.785	1.225	.428**	.907 [c]			
Perceived trust (3)	3.823	1.225	.401**	.460**	.885 [c]		
Knowledge of Digital Insurance (4)	4.242	.901	.422**	.362**	.368**	.830 [c]	.840 [c]
Digital Insurance Adoption (5)	4.160	.9222	.515**	.465**	.495**	.677**	

∗∗ Correlation is significant at the.01 level; standard deviation = [c] AVE Square root of the latent construct.

Table 5. Construct path analysis

Hypothesis relationship	(β)	SE
Relative Advantages → Digital Insurance Adoption	.231*	.076
Perceived social influence → Digital insurance adoption	.102 ns	.062
Perceived Trust → Digital Insurance Adoption	.194*	.061
Knowledge of Digital Insurance → Digital Insurance Adoption	.309**	.061

$**p<.01$, $*p<.05$, CMIN/DF (2.063) ($p<.001$), CFI (0.966), NFI (0.936), IFI (0.966), RMSEA (0.072), TLI (0.952), RMR (0.063), ns=not significant.

4.1 Measurement Model Analysis

We conducted a confirmatory factor analysis using AMOS 23 to determine whether the observed variables were valid indicators for the study constructs (Table 3). The study examined a total of five measurement models, with results displayed in Table 3. These results indicate that all constructs had Cronbach alpha coefficients greater than 0.7 and model fit indices greater than 0.9. Additionally, the RMR and RMSEA were less than 0.08, aligning with the recommended guidelines for scale reliability, [46], [47]. Table 3 also revealed AVE values greater than 0.68 and CR values greater than 0.7, which fulfill the recommended guidelines for convergent validity, [48], [49]. Table 4 also showed that the square root of the AVE was higher than each construct correlation coefficient. This supported the discriminative validity of the scale. On a similar note, construct correlation coefficient values ranged from 0.362 to 0.677, indicating the absence of multi-collinearity, [49], [50].

4.2 Path Analysis

We used the AMOS 23 structural equation model for this study to examine how relative advantage, perceived social influence, perceived trust, and knowledge of digital insurance influence digital insurance adoption in Uganda. CMIN/FD (2.063) is less than 3, model fit indices above 0.9 (CFI (0.966), NFI (0.936), IFI (0.966), and TLI (0.952), RMR (0.063), and RMSEA (0.072) are all less than 0.08. This meets the standards and means the model is fit, [47], [48], [49], [51], [52]. Also, Table 5 shows that relative advantage (H1) (β=0.231, p<.01), perceived trust (H3) (β=0.194, p<.01), and knowledge of digital insurance (H4) (β=0.309, p<.001) all have a positive effect on people's decisions to adopt digital insurance. Therefore, we found support for hypotheses H1, H3, and H4. However, perceived social influence (H2) (β=0.102, p>.05) was found to have an insignificant impact on digital insurance adoption. Therefore, the study did not support hypothesis H2. On the other hand, the R^2 value of

digital insurance adoption was 0.56. Thus, the study model explained 56% of the variations in digital insurance adoption.

5 Discussion

Insurance plays a vital role in safeguarding businesses against risks, and this trend is expanding across the globe, [2], [3], [40]. Business owners aim to provide their customers with top-notch services and products while maximizing profits, and having the right insurance coverage is essential to achieving these objectives. It is imperative to develop an approach that is both affordable and practical for everyone, particularly those living in underprivileged areas. Digital insurance has emerged as a promising solution due to its cost-effectiveness and wider reach, especially in developing countries like Uganda [12], [41]. To ensure its successful implementation, it is crucial to understand the driving forces behind consumer adoption of digital insurance, [4], [53]. Based on the modified theory of innovation diffusion, this study highlights relative advantage, perceived social influence, perceived trust, and knowledge of digital insurance as key factors in its adoption.

The study's results (Table 5) revealed that customers' knowledge of digital insurance significantly influenced its adoption. This emphasizes the significance of having a fundamental understanding of insurance and the digital system to interact with online insurance products and services conveniently (as noted by [4], [32]). When customers have a better understanding of insurance and associated digital systems, it builds confidence and can help people in low-income economies greatly because it enables them to avoid pricey branch visits and work around the clock, [2]. Armed with the appropriate knowledge, consumers can pay their premiums promptly, report fraud through chatbots and other online chat systems, and easily request reimbursements when needed. Consequently,

increased internet literacy is pushing the insurance industry towards digitization, [40].

The study's findings indicate that relative advantage follows customers' knowledge of digital insurance as a key factor in its adoption (Table 5). Microbusiness owners are not only willing but also eager to embrace digital insurance services, provided that they are quick, safe, secure, and affordable. By contrast with traditional branch-based insurance, digitalization can offer greater convenience in paying monthly premiums. These results align with previous research by [38], [39] and [43], which demonstrated that customers embrace digital services when they provide cost savings, faster transactions, and enjoyable digital interactions. To facilitate the adoption of digital insurance, insurance companies should focus on employing cutting-edge tools that benefit low-income individuals, such as microentrepreneurs.

The results (Table 5) also indicate that perceived trust has a significant positive influence on the adoption of digital insurance. Against such a backdrop, micro-entrepreneurs are more likely to switch their interests from traditional branch insurance, which is riskier, especially when insurance consumers grow to trust the insurance processes on digital platforms, [2]. By doing this, insurance customers' knowledge of online systems can grow, giving them more confidence to adopt digital insurance. The study findings support, [3], position that insurance companies should permit open payouts and denials. If customers can access digital systems at any time and from any location, trust improves and provides more opportunities for microentrepreneurs to adopt digital insurance. This is consistent with [39], study, which revealed that perceived trust affects the adoption of technological innovations. On the other hand, the rise in online financial fraud across the globe has reduced customer trust levels. Thus, it is necessary to strengthen platforms for consumer redress to emerging risks, [40].

Finally, the study revealed that perceived social influence does not play a significant role in the adoption of digital insurance by microentrepreneurs in Uganda. This result conflicts with earlier research on financial technology by [32], in Indonesia. This could be because an individual's peers or family in low-income countries like Uganda have minimal influence due to limited knowledge relating to digital insurance. Secondly, the insurance sector is still at the infantry stage in developing countries which may

undermine the power of social influence. Against such a backdrop, social influence is not a significant factor in the adoption of digital insurance. This aligns with the argument of [36] and [54] that perceived social influence only affects the adoption of a technology that is widely familiar to the majority of the population. Therefore, social influence does not significantly impact the adoption of digital insurance among microentrepreneurs in Uganda.

5.1 Theoretical Implications
The insurance industry is undergoing rapid evolution to align with global economic trends, particularly those concerning financial technology. To keep pace with these developments, the industry has adopted digital systems that facilitate quick insurance transactions. As such, this academic study delves into the factors that may influence insurance customers' adoption of digital insurance to contribute to the existing literature and enhance insurance managers' understanding of the models that can advance the industry. The study also expands knowledge of the relative advantage, perceived social influence, perceived trust, and the general understanding of digital insurance. Furthermore, gaining a clear understanding based on the diffusion of innovation theory, especially in the context of the insurance industry, is crucial. Additionally, this research on the uptake of digital insurance among microentrepreneurs in a low-income country like Uganda expands the geographical scope of entrepreneurship and digital insurance literature from a demand perspective.

5.2 Managerial implications
From a managerial perspective, insurance managers should adopt digital systems that are easy for micro-entrepreneurs to comprehend. With the right information, insurance companies can help their customers avoid costly branch insurance offices that are not available around the clock. Micro-entrepreneurs can easily report fraud through chatbots and other online chat systems, pay premiums on time to avoid penalties, and request reimbursements when necessary if they have access to the right information. Governments should also regulate insurance companies to ensure that customers benefit from digital insurance. Micro-entrepreneurs are not only willing but also eager to adopt and use digital insurance services that are quick, safe, secure, affordable, and sustainable in the

short and long term. For example, when microentrepreneurs conduct insurance transactions in real time, they are more likely to have repeat business and serve as references to promote the use of digital technology in the insurance market. In addition, insurance policymakers and managers should ensure reliable and uninterrupted access to digital insurance systems at all times and places. Customers of insurance are more likely to adopt open and transparent digital insurance. Finally, governments should strengthen consumer rights and redress platforms to protect customers against financial fraud and foster trust.

5.3 Limitations and Future Research

The insurance industry is in a state of flux, with new technologies emerging daily. It's worth noting, however, that the findings of this study may not be entirely reflective of changing consumer behavior over time, as it was based on a cross-sectional survey. That being said, this research is valuable because there is limited data available on the factors that influence microentrepreneurs when it comes to adopting digital insurance. Moving forward, a longitudinal study would be beneficial in detecting cause-and-effect relationships. Additionally, the sample size for this study was small, consisting of only 209 Uganda-based microentrepreneurs, despite the growing number of digital insurance users in the country. Nevertheless, this study provides valuable insights into digital insurance adoption in low-income countries like Uganda. There is ample opportunity for future studies to expand on this research and explore the topic in greater detail, including larger sample sizes and comparative studies. It's worth noting that this study focused primarily on demand factors from the customer perspective without exploring the supply side of the insurance companies. Nevertheless, as the first study of its kind to examine the determinants of digital insurance adoption from the microentrepreneur's point of view, it represents a significant contribution to the field. Moving forward, researchers could study the determinants of digital insurance adoption among small, medium, and large entrepreneurs while also exploring different theories and models, such as the planned behavior model.

5.4 Conclusion

To provide customers with services that are both simple and economical, the insurance industry needs to embrace technological advancements, [2]. Insurers should strive to make their digital platforms as convenient as possible to create a sense of delight and value for their customers. This research indicates that knowledge of digital insurance, perceived trust, and relative advantage are key determinants of its adoption among microentrepreneurs. Indeed, ease of use, minimal effort, confidence, belief, and knowledgeability when using digital insurance all have a positive influence on its adoption. Moreover, the global coverage, pleasant interface, and availability of fun and enjoyment anytime and anywhere offer significant benefits that increase customer adoption of digital insurance. Although perceived social influence is not a significant factor in economies with less insurance coverage, policymakers and insurance company management should still invest resources to ensure that digital insurance users can work in groups to experience maximum utilitarian and hedonic values based on logic and reason. This will ultimately enhance the adoption of digital insurance.

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