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Unveiling Novel Pathways: Exploring the Adoption of FGM Abandonment through the Lens of the Technology Acceptance Model (TAM)

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Abstract

Numerous global organizations are leading efforts to eliminate Female Genital Mutilation (FGM), urging affected communities to embrace the newly advocated practice of abandoning FGM. This paper addresses the intricate challenge of FGM in Sudan by introducing FGM abandonment as an innovative behavior to be adopted. The study employs the Technology Acceptance Model (TAM1) and the Revised Technology Adoption Model (TAM2) to analyze the key factors influencing the adoption of FGM abandonment in Sudanese society. Variables derived from TAM are scrutinized to comprehend adoption intentions. The results indicate that variables such as perceived usefulness, perceived ease of use, subjective norms, facilitating conditions, experience, and voluntariness significantly influence the acceptance and adoption of the newly promoted behavior of abandoning FGM. These findings offer valuable insights for policymakers, presenting a unique approach to understanding the essential factors contributing to the adoption of the newfound behavior. This research contributes to the ongoing discourse on FGM abandonment and suggests distinctive perspectives for consideration.

Introduction

Background

Female Genital Mutilation (FGM)

Since the mid-20th century, numerous international and domestic governmental as well as non-governmental organizations and entities have devised initiatives aimed at diminishing the prevalence of female genital mutilation (FGM). This traditional practice has historical roots in central Africa, Egypt, and the Middle East. The World Health Organization (WHO) defines these practices as any procedure that involves the total or partial removal of the external female genitalia without medical justification [1]. Approximately 100 to 140 million girls and women globally have reportedly undergone the practice of FGM, and despite rigorous international and national initiatives aimed at eradicating the practice, FGM remains prevalent across a significant part of Africa and is primarily associated with social, cultural, and religious motivations [1].

To underscore the motivations behind Female Genital Mutilation (FGM), it is important to mention that specific communities perceive it as a method to deter premarital sexual activity and uphold the preservation of virginity. In Sudan, 30% of women endorsing the continuation of the practice believe that FGM contributes to preserving virginity and preventing immorality. Similarly, in Nigeria, women exhibit a comparable rate of 36%, while 45% of supporting men agree with this notion [2].

In a study by Kramer et al. (2011), which involved 12,049 women in Sudan, the results revealed that age and religion are the most significant demographic variables associated with the risk of FGM. As age increases, the proportion of women and their daughters who have practiced FGM increases. Also, in studies carried out by the WHO in 2012, it was concluded that the likelihood of girls and women practicing FGM might be attributed to socioeconomic factors. Accordingly, it is believed that the practice of FGM is therefore a social norm and a source

of income. Findings from the WHO's studies indicate that 80% of women subjected to FGM are both illiterate and unemployed. This is attributed to girls in these communities discontinuing their education to fulfill family responsibilities, often leading them to consider marriage or engagement at an early age. In Sudan, families with limited education tend to keep their children at home to assist with family duties, often involving agricultural work. Consequently, factors such as poverty, lack of education, insufficient information, and inadequate knowledge may expose women to the risk of becoming victims of FGM.

Worldwide, as campaigns against FGM take place, researchers have focused on the socio-cultural, legal, and clinical aspects of FGM. There has also been an increasing awareness among health providers and human rights campaigners of the influence of socio-cultural factors, which can be a channel for the abandonment of the practice [3]. Experience reports that large-scale abandonment can only take place when FGM is no longer a favorable social norm, and families are expected to stop the practice without the risk of being socially excluded [4]. Additionally, the risk of being socially excluded from community activities is represented by being excluded from financial and practical support as well as marriage opportunities [4]. Hence, community-led programs have been identified as an essential step in overseeing the social support of FGM. Also, these programs aim at strengthening the empowerment of women and girls to examine their traditions and to have control over the decisions that control their lives. Likewise, the interventions present the issue in a wider learning package, including concepts of gender, social, political, legal, health, and economic development of the community [4]. In this study, the eradication programs serve as a pivotal variable, functioning as an independent construct assumed to exert influence on other constructs, especially the subjective norms of FGM.

Technology Adoption Model (TAM)

Fred Davis introduced the Technology Adoption Model (TAM) in 1989, offering insights into the factors influencing the acceptance of technology within the Information Technology (IT) domain. This theory is considered an expansion of the Theory of Reasoned Action (TRA), which was developed by Fishbein and Ajzen in 1980 to explain and predict human behavior [5]. Recognized for its rapid adaptability, TAM has gained widespread popularity. Over time, TAM has evolved and been applied in various contexts. Examples include its application in graphics [6, 7], e-government (Phang et al., 2006; Walker and Johnson, 2008), and e-health (Lanseng and Andreassen, 2007).

As illustrated in Figure 1, TAM consists of the following components: Attitude (A), Behavioral Intention (BI), Perceived Usefulness (PU), Perceived Ease of Use (PEOU), and External Variables. Firstly, A reflects human emotions toward engaging (or refraining from engaging) in a specific behavior [8]. Secondly, BI gauges the strength of the intention to perform a particular behavior [9]. Thirdly, PU represents "the extent to which a person believes that using a specific system would improve his/her job performance" [9]. Fourthly, PEOU reflects users' expectations regarding the ease of using specific technologies [9]. Lastly, external variables encompass "explicitly included factors in the model expected to impact BI and Actual Behavior (AB) through the mediation of PU and PEOU" [9]. Considering TAM, Figure 1 illustrates that PU has both a direct and indirect influence on BI. TAM specifically confirms that PU and PEOU have a direct impact on a user's attitude and behavioral intention regarding the adoption of a technology. Furthermore, external factors, such as social influence and facilitating conditions, can also affect the user's perception and, consequently, their decision to embrace a specific technology [9].

The widespread utilization of TAM in diverse domains has motivated us to expand its application to the realm of FGM abandonment. Our objective in employing TAM is to gain a deeper understanding of the acceptance and adoption of the recently endorsed practice of FGM through scientific approaches. This endeavor aims to contribute scientifically sound solutions to the ongoing challenges of abandoning FGM, given the substantial complexities associated with this issue.
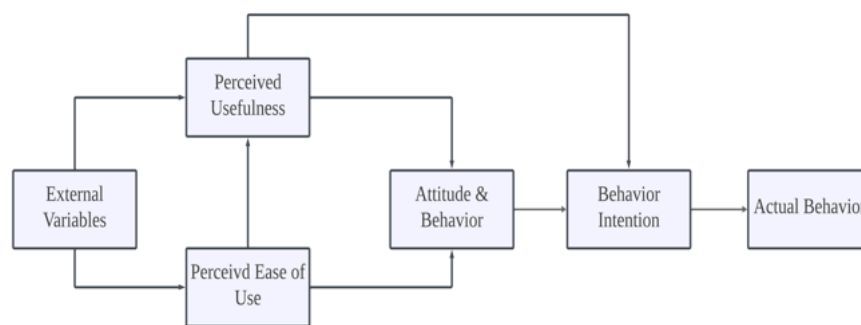

Figure 1: Technology Acceptance Model (TAM), (Source: [9])

Structural Equation Modelling (SEM)

Because of the general acceptance among researchers in information systems, behavioral, and social science (Blunch, 2008; Janssens et al., 2008; Gefen et al., 2000), structural equation modeling (SEM) is adopted to test the relationships in the proposed model. SEM is also known as path analysis, covariance structure analysis, and simultaneous equation models. It is used to test the assumed relationships among variables within the developed conceptual model. SEM; as an example of the second generation of multivariate analysis, which differs from first-generation techniques such as factor analysis and regression, is a statistical technique for simultaneously testing a set of hypothesized relationships among multiple independent and dependent variables (Gefen et al., 2000). Similarly, Hair et al. (2010) define SEM as a multivariate technique, which involves features of multiple regression and factor analysis. It is used to estimate multiple networking relationships simultaneously [10]. Thus, SEM enables the researcher to test a set of interrelated hypotheses into a single systematic analysis (Gefen et al., 2000). In the context of this research, SEM was used to test the relationships in the proposed model which explores the factors that are assumed to influence an individual's adoption of FGM abandonment behavior based on TAM-formulated construct. This research will test a set of hypothesized relationships of the constructs of the developed model which is more appropriate for SEM as it employs a confirmatory modeling strategy (Tabachnick and Fidell, 2000).

Methods

Study Design

The main aim of this study is to develop and test a conceptual model based on TAM to measure the factors that explain individual, social, cultural, and organizational factors affect the people' acceptance and adoption of the behavior raised by programs of abandoning FGM. These factors include behavioral beliefs, social factors, individual factors, and cultural factors. The study also examines the effect of sets of moderators in the model which are (age, gender, educational level, place of residence, and ethnicity).

The model regarded as empirically validate the model in the context of cause-effect approach, and examine the dynamics of belief systems, individual culture, and the intervention mechanism which will help in examining the efficiency of the programs directed to combat unfavorable practices such as FGM in different communities.

According to Hair et al. (2010), there are 6 stages in the SEM decision process (see Figure 2): "1) Defining individual constructs, 2) Developing the overall measurement model, 3) Designing a study to produce empirical results, 4) Assessing measurement model validity, 5) Specifying the structural model, and 6) Assessing structural model validity" [9]. Four stages are usually covered within the measurement model while the other two stages are covered in the Structural model.

Scientifically, there are two sets of SEMSEMS: 1) Covariance-based modeling using software such as LISREL, Mplus, AMOS, and EQS and 2) Variance-based modeling, partial least squares (PLS) (Gefen et al., 2000). The covariance-based SEM is used when the objective of the research is theory testing and confirmation, while PLS-SEM is more suitable when the goal of the research is prediction and theory development. For the current study, Analysis of Moment Structures (AMOS version 18.0), a covariance-based SEM approach is employed to test the assumptions of the proposed model. With relevance to the previous section, this study uses [10] recommendations of assessing the structural model by using a two-step approach (first the measurement model and then the structural model). Moreover, the Multiple Group Analysis (MGA) technique is employed to estimate the impact of moderators on the conceptual model. The following figure explains the process followed to develop the SEM used in this research. The data analysis technique employed in this research is SEM using AMOS version 18.0. A clarification of the selection is rationalized to complexity of the conceptual model. Confirmatory Factor Analysis (CFA) and the structural equation model are the second-step approach in the SEM analysis that will be adopted in this study to test the relationships among independent and dependent constructs.
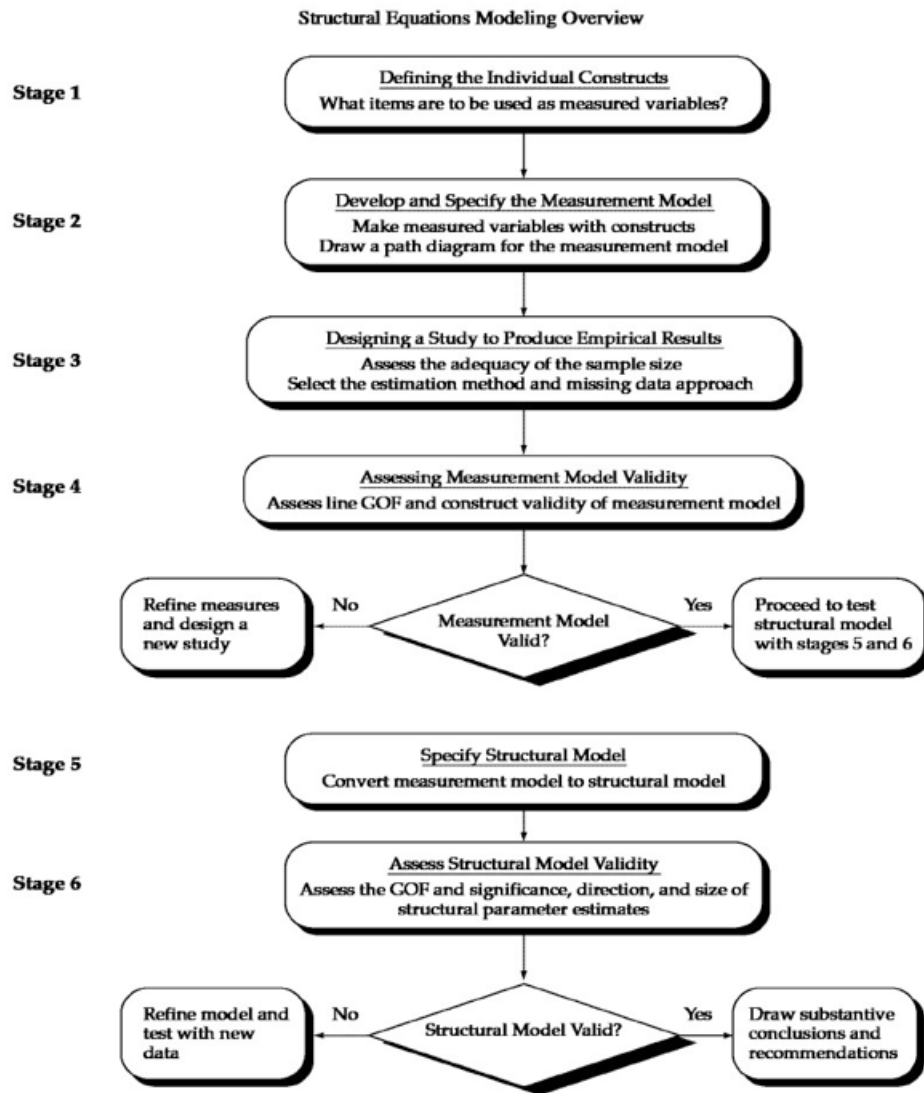
Structural Equations Modeling Overview

Stage 1 — Defining the Individual Constructs
What items are to be used as measured variables?

Stage 2 — Develop and Specify the Measurement Model
Make measured variables with constructs
Draw a path diagram for the measurement model

Stage 3 — Designing a Study to Produce Empirical Results
Assess the adequacy of the sample size
Select the estimation method and missing data approach

Stage 4 — Assessing Measurement Model Validity
Assess line GOF and construct validity of measurement model

Measurement Model Valid?
No → Refine measures and design a new study
Yes → Proceed to test structural model with stages 5 and 6

Stage 5 — Specify Structural Model
Convert measurement model to structural model

Stage 6 — Assess Structural Model Validity
Assess the GOF and significance, direction, and size of structural parameter estimates

Structural Model Valid?
No → Refine model and test with new data
Yes → Draw substantive conclusions and recommendations

Figure 2: The Six-Stage Process For Structural Equation Modelling Development

Source: [10].

Study Area and Population

Sudan was selected for this study because the problem of the research is one of the most essential cultural issues that need to be tackled seriously in this nation. Sudan is a developing country located in east-north Africa. The estimated population is forty-six million in 2022, based on the last census [11]. The country has a major youth population, with more than fifteen million children under the age of 18 and 4.5 million below the age of five [12]. Furthermore, the country has thirteen states with different ethnic groups and different socio-cultural practices. FGM is widely practiced in Sudan, particularly among girls aged between 6 and 12 years old [12]. Additionally, it is usually performed by the midwife without any anesthesia or antibiotics. The act of FGM is highly prevalent in Sudan; more than 70 percent of girls in Northern Sudan are subjected to the most severe form of FGM [13]. The survey was conducted in Khartoum, the capital of Sudan.

A community-based cross-sectional study was performed on 600 cases to develop and test the model. In the selected sample, 84% of women within the age range of 20-80 years underwent some form of FGM, while 16% did not. The majority of participants reside in the Bahari area (17.7%), identified as an urban location, while a small portion (2.3%) live in Ammarat, also classified as urban. Rural respondents are predominantly located in Ombadda (11.7%) and Karari (13.3%). Among the sample, there are 178 male respondents (29.7%) and 422 female respondents (70.3%). However, there is a disproportion between male and female respondents due to a lack of interest shown by most selected males in participating. Regarding age distribution, the majority of respondents (66.3%) fall within the 40–60 age group, while (33.7%) belong to the older age group. In terms of education, a significant portion of respondents completed primary school (21%), 12.7% were illiterate, and 10% held university and post-university degrees. Ethnicity-wise, the largest representation is from the Nubian North ethnicity (46.7%), followed closely by the Arab Central (44.7%). The Mapan-Angassana and the Nubian Central Kordofan make up only 5% and 3.7%, respectively. As for income levels, most respondents (43.0%) belong to the low-income stratum, with 31.7% falling within the middle-income level and 25.3% categorized as high-income respondents.

Ethical Considerations

The present study ensured that participants signed a printed consent form, acknowledging their right to withdraw from the study at any point and emphasizing voluntary participation. However, the issues of confidentiality and anonymity are critically pointed out by EUC which are guaranteed at all stages of the research. This procedure is essential for the research validity as participants can answer the questionnaire with complete faith. Also, this study addresses additional ethical concerns, including the researcher's role post-data collection, especially during the data analysis phase. Participants are provided with a cover letter detailing the study's title, objectives, and impact, along with information about the questionnaire's length and duration. In fulfilling the ethical terms of EUC, a cover letter is offered to all participants which involves the title, objective, and impact of the study, in addition to the length and time of the questionnaire. Also, the contact information of the researcher and the supervisor is provided if there are any later questions measures collectively uphold ethical standards and contribute to the credibility of the research. It is important to highlight that permission was taken from the concerned directives in Sudan to conduct the survey.

Dat Collection Method

This study employed a survey-based cross-sectional design for data collection, given the need for many respondents required by Structural Equation Modeling (SEM) and the limited timeframe precluding longitudinal data collection. The chosen data collection method was a questionnaire, with meticulous attention given to various stages such as development, scaling, pre-testing, and piloting. Two pre-testing stages were conducted before finalizing the questionnaire.

The questionnaire incorporated nominal and ordinal/interval measurement scales. Demographic details, including residence, age, gender, educational attainment, and ethnicity, were captured using nominal scales. Participants' opinions and perceptions of the TAM instruments were assessed using Likert scales, with questions presented on a six-point Likert scale (as detailed in Table 4). This scale was selected to ensure a diverse range of participant responses, and its successful application in similar studies is noted in the literature [9, 14, 15].

Hypothesis & Model Development

In the context of this study, the abandonment of FGM is considered a novel behavior to be embraced. The proposition put forth suggests that the adoption of the newly advocated practice of relinquishing FGM is primarily influenced by the supportive conditions provided by eradication programs. These conditions are anticipated to enhance the participants' awareness of the hazardous consequences associated with FGM, ultimately leading to the complete abandonment of this practice (Figure 2). As per [9], the external variables presented in TAM can encompass any potentially influential factors that are expected to impact BI and AU through the mediation of PU PEOU. In the envisioned model for abandoning FGM, various variables are incorporated under the category of "external variables" and postulated to affect the acceptance of the recommended behavior. The variables hypothesized to influence the adoption of FGM-abandonment behavior are explained as follows:

Facilitating Conditions (FC)

Facilitating conditions, as defined by Ajzen (1985), encompass technical and organizational resources that ease the adoption of a specific technology or behavior [16]. Within the framework of this model, facilitating conditions refer to the supportive elements of awareness programs launched by various organizations to underscore the health hazards associated with FGM. These initiatives, acting as "cognitive instrumental influencers," represent organizational resources that facilitate the comprehension of messages integrated into programs advocating for FGM abandonment.

Facilitating conditions encompass the accessibility and continuity of these programs, the clarity of embedded messages, and the comprehensibility of the topics addressed in eradication programs. These factors, linked to facilitating conditions, are theorized to contribute to individuals developing a thorough awareness of the adverse consequences associated with FGM, ultimately leading to a decision to abstain from the practice. In the presented conceptual model, facilitating conditions are hypothesized to exert a direct influence on both perceived ease

of use and perceived usefulness (H4 and H5) and an indirect influence through the mediator (SN) by flagging prevailing beliefs surrounding the practice (H2 and H3).

H1. Facilitating conditions of the eradication programs has a positive and significant effect on subjective norms of FGM.

H2. Facilitating conditions of the eradication programs has a positive and significant effect on the perceived usefulness of abandoning FGM through the mediation effect of subjective norms of FGM.

H3. Facilitating conditions of the eradication programs has a positive and significant effect on perceived ease of abandoning FGM through the mediation effect of subjective norms of FGM.

H4. Facilitating conditions of the eradication programs has a positive and significant effect on Perceived Usefulness of abandoning FGM.

H5. Facilitating conditions of the eradication programs has a positive and significant effect on perceived ease of use.

Perceived Ease of Use (PEOU)

PEOU considered the users' expectations towards the ease of understanding and adopting certain technologies, new ideas, or behaviors [8]. Several researchers found support for the indirect relationship between PEOU and BI through PU [16]. In the context of the study, PEOU highlights the level of ease of adopting the promoted behavior of abandoning FGM when understanding the concepts and false beliefs that are part of the awareness programs. Within our model, perceived ease of use is hypothesized to influence the perceived usefulness of abandoning FGM.

H6. Perceived ease of use has a positive and significant effect on perceived ease of use.

Perceived Usefulness (PU)

Perceived usefulness (PU) is defined as "the degree to which a person believes that using a particular behavior would enhance his or her life" [9]. In the TAM, PU is theorized as a direct determinant of BI. Compared to other behavioral constructs, like PEOU, PU was found to have a significant correlation with BI [9]. A number of researchers found support for the indirect relationship of PEOU on BI through PU [17]. Moreover, strong evidence supports the important role that PU plays in predicting the BI [9, 15, 18, 19].

In the context of this research, PU is defined as the perceived usefulness of adopting the promoted behavior of abandoning FGM. FGM is associated with cultural and socio-economic benefits based on the beliefs prevalent in affected communities. Highlighting the advantages that people can derive from abstaining from FGM is expected to enhance the likelihood of adopting the new behavior of abandoning FGM. In the proposed model, the perceived usefulness of abandoning FGM is significantly influencing the behavior intention of adopting FGM abandonment.

H7. Perceived usefulness has a positive and significant effect on the intention to abandon FGM.

Voluntariness (VOUL)

VOLU is defined as "the extent to which potential adopters perceive the adoption decision to be non-mandatory" [14]. In the context of this study, FGM is observed to be a complex and deeply rooted practice with strong ties to cultural and heritage systems that have been in place for generations. The decision not to engage in FGM is often perceived as challenging due to the deeply ingrained nature of the practice within households [20]. Within such communities, individuals may feel a strong sense of obligation to adhere to these cultural norms, as deviating from them can result in social ostracism and exclusion. The community's expectations and the desire to maintain harmony within the extended family and broader social circles create a powerful force that reinforces the continuation of FGM [21]. In this research, VOUL represents the degree of voluntariness in adopting the promoted behavior of abandoning FGM and is hypothesized to be a strong influencer in abandoning FGM.

H8. Voluntariness has a positive and significant effect on the behavior intention of abandoning FGM.

Experience (EXP)

EXP refers to "the degree of familiarity with a particular system" [15]. Adopters may employ the knowledge they have gained from their prior experience to form their intentions [8]. Previous research has found that a user's degree of relevant experience moderates a number of relationships within TAM, e.g. [22-25]. In our model, EXP denotes an individual's experience with FGM within the context of their marital life. Furthermore, the suggestion posits that EXP influences the adoption of the new behavioral norm (BI) of renouncing FGM, subsequently affecting the actual implementation of the new behavior of refraining from FGM (AU). In the proposed model, EXP is assumed to influence the intention and actual adoption of FGM abandonment.

H9. Experience with FGM has a significant relationship with the behavior intention of adopting FGM abandonment.

Subjective Norms (SN)

Subjective norm, also known as social influence, is defined as "the person's perception that most people who are important to him or her think he or she should or should not perform the behavior in question" [26]. Moreover, SN represents "the implication of other people on an individual's adoption decision" [8]. The direct effect of SN on BI originated from the fact that people may be affected by the opinions of others and thus involved in certain behaviors even if they don't like them.

Venkatesh and Davis (2000) believe that the effect of SN occurs only in imperative environments and has less influence in permissive environments [15]. Following this argument, FGM

is believed to have evolved in environments where societal influence plays a significant role in shaping individuals' mindsets, often overshadowing their own independent evaluation. Several studies reveal that individuals who make the decision to cut their daughters are influenced by different individual, cultural, social, and organizational influences [20]. In such imperative settings, community norms exert substantial pressure on individuals, contributing to the perpetuation of FGM practices. In this research, it is hypothesized that subjective norms of FGM practices have a profound effect on FGM abandonment.

H10. Subjective norms have a significant relationship with the intention to adopt FGM-abandonment.

Behavioral Intention (BI)

The presentation of behavioral intention (BI) in TAM is one of the major differences with the Theory of Reasoned Actions (TRA) [26]. BI is observed to be an immediate antecedent to using a specific behavior and gives information about an individual's willingness to perform the initiated behavior [9]. In the context of this research, it is assumed that BI will have a direct influence on predicting the use of the new behavior of abandoning FGM.

H11. The behavioral intention has a positive and significant relationship with the actual adoption of FGM abandonment.

Actual Use (AU)

The AU construct, as defined by Davis in 1989, relates to an individual's tangible and observable engagement in a specific behavior [9]. When referring to the AU construct, the emphasis is on the practical and visible manifestation of behavior, rather than mere intentions or hypothetical scenarios [9]. In the proposed model, AU signifies the actual adoption of the advocated behavior of abstaining from FGM, serving as the dependent construct within the model.

As depicted in Figure 2, the study posits that the facilitating conditions of eradication programs are presumed to influence the subjective norms of FGM (H1), subsequently impacting the perceived usefulness (H2) and perceived ease of use of the newly promoted behavior of refraining from FGM (H3). Additionally, the model explores the direct influence of the facilitating conditions of eradication programs on perceived ease of use (H5) and perceived usefulness (H4) without the mediation effect of subjective norms.

Moreover, it is assumed that the perceived usefulness of abandoning FGM will influence the behavioral intention to adopt FGM abandonment (H7), subsequently affecting the actual adoption of refraining from FGM (H11).

In agreement with TAM2, the study examines the experience of FGM related to the mother and its potential influence on her decision to either perpetuate this practice to her daughter or granddaughter (H9). Voluntariness of abandoning FGM is tested to measure its influence on the behavioral intention to forsake the practice (H8). Additionally, the effect of the social norms of FGM on the behavior intention to adopt FGM is also examined (H10). Figure 3 depicts the measurement model, and the arrows indicate the causal paths.
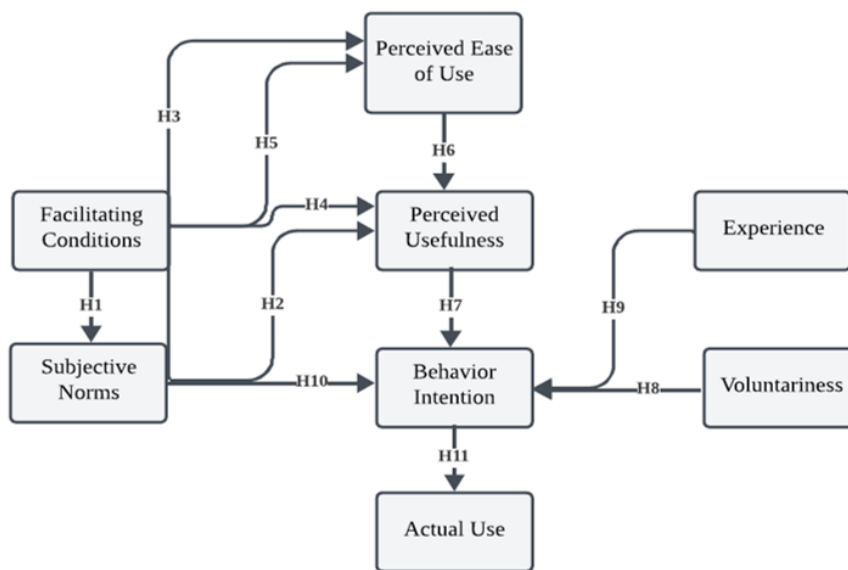

Figure 3: FGM Abandonment Measurement Model

Source: Author

Results

Reliability and Validity of the Model Instrument

The analysis consisted of two steps: initially evaluating the measurement model and subsequently scrutinizing the hypotheses through the application of the structural model. The assessment encompassed an examination of construct reliability, convergent validity, and discriminant validity for the various constructs, with the detailed findings presented in Table 1.

Factor	Number of Items	Cronbach Alpha	Inter-Item Correlation	Item-to-total correlation
PU	3	.931	.7 - .880	.798 -.894
PEOU	2	.932	.754 - .935	.813 -.95
FC	1	.896	.422 - .94	.572 - 792
SN	3	.801	.514 - .661	.652 - 758
BI	2	.912	.795 - .849	.853 - 893
AU	3	.712	.721 - .721	.721 - 721
EXP	2	.831	.336 - .830	.675 - 758
VOUL	2	.912	.540 - .800	.662 - 861

Table 1: Cronbach's Alpha and Items Correlations for TAM Constructs.

The results in Table 1 suggest that the constructs had adequate reliability, with a score ranging from 0.712 for AU to 0.932 for PEOU. This reveals that each item in the questionnaire related to a single variable is correlated to another. Table 1 also shows two internal consistency and reliability indicators, which are inter-item correlation and item-to-total correlation. Hair et al. (2010) argue that values exceeding 0.5 for the item-to-total correlation and 0.3 for the inter-item correlation reveal a good reliability test. Accordingly, all values exceed the cutoff value [10].

According to Hair et al. (2010), validity and reliability can be assessed through "Composite Reliability (CR), Average Variance Extracted (AVE), Maximum Shared Squared Variance (MSV), and Average Shared Squared Variance (ASV)" [10]. For reliability, Hair et al. (2010) recommend a CR greater than 0.6, preferably exceeding 0.7. Convergent validity is ensured when AVE is greater than 0.5 and CR is greater than AVE [10]. Additionally, discriminant validity is achieved if MSV is less than AVE and ASV is less than AVE. Tabachnick and Fidell (2007) suggest testing convergent validity through factor loading and AVE. As AMOS lacks automatic CR and AVE calculations, the formulas provided by Fornell and Larcker (1981) are manually applied for assessment.

AVE = sum of squared factor loadings/number of items within each construct.

$$AVE = \frac{\sum_{i=1}^{n} \lambda_i^2}{n} \tag{1}$$

The formula mentioned above, represents factor loadings (standardized regression weights) and represents the total number of items. Regarding the CR, it can be calculated using the following formula (Chau and Hu, 2001):

CR = (square of summation of factor loadings) / (square of summation of factor loadings) + (summation of error variances).

$$CR = \frac{\left(\sum_{i=1}^{n} \lambda_i\right)^2}{\left(\left(\sum_{i=1}^{n} \lambda_i\right)^2 + \left(\sum_{i=1}^{n} \delta_i\right)\right)} \tag{2}$$

In the formula mentioned above, represents factor loadings (standardized regression weights), represents the total number of items, and represents the error variance term for each latent construct. Table 2 presents the results of the validity test.

Factor Correlation Matrix with AVE on the Diagonal											
	CR	AVE	MSV	ASV	PU	PEOU	SN	FC	AU	BI	EXP	VOUL
PU	0.922	0.703	0.507	0.393	0.839							
PEOU	0.925	0.711	0.416	0.328	0.645	0.843						
SN	0.838	0.633	0.271	0.207	0.521	0.385	0.795					
FC	0.893	0.738	0.516	0.360	0.580	0.580	0.458	0.859				
AU	0.725	0.575	0.711	0.414	0.638	0.529	0.467	0.718	0.758			
BI	0.898	0.745	0.579	0.425	0.712	0.637	0.507	0.616	0.707	0.863		
EXP	0.994	0.983	0.830	0.665	0.824	0.793	0.787	0.741	0.835	0.808	0.991	
VOUL	0.969	0.913	0.856	0.744	0.884	0.789	0.825	0.817	0.925	0.876	0.911	0.55

Table 2: Construct Reliability, Convergent & Discriminant Validity for the Sample.

The computations in Table 2 establish the reliability and validity of the constructs, with average extracted variances surpassing 0.575 and Composite Reliability (CR) values exceeding 0.725. This signifies that all factors exhibit acceptable reliability and convergent validity. Furthermore, the overall Average Variance Extracted (AVE) for the variables in the model is higher than their correlation values, except for AU, where the Mean Shared Variance (MSV) is greater than AVE. Given that AU is the central variable in the proposed model, comprising three items, the removal of any of these items has the potential to impact the model's identification status. Consequently, the overall discriminant validity of the constructs is considered acceptable, as outlined by Byrne (2006).

Descriptive Statistics for TAM Constructs

Table 3 displays the averages and standard deviations of the TAM diagnostic instruments. The results reveal that on average, the actual abandonment of FGM is 3.72/6, with a standard deviation of 1.229/6. The mean value of the behavior intention to adopt FGM abandonment is 3.89/6 with a standard deviation of 1.400/6.

Dimensions	Mean Scale (1-6)	SD [a] Scale (1-6)	Minimum	Maximum
Perceived ease of adopting FGM abandonment.	3.92	1.514	1.60	6.00
Perceived usefulness of adopting FGM abandonment.	3.73	1.525	1.40	5.80
Facilitating conditions of the eradication programs	3.87	1.111	1.00	5.80
Subjective norms of FGM practice.	3.25	1.666	1.67	5.33
Perception of FGM experience.	3.73	1.552	1.00	6.00
Voluntariness of abandoning FGM.	3.83	1.484	1.00	6.00
Behavior intention to abandon FGM.	3.89	1.400	1.00	6.00
Actual adoption of abandoning FGM.	3.72	1.229	1.00	6.00
Source: Author's survey.				
Note: N = 600. Actual range: 1-6 (*1 strongly disagree*, *2 disagree*, *3 disagree somewhat*, *4* undecideds, *5 agree*, and *6 strongly agree).* Median = 3.				
[a] SD is a standard deviation in the range 1-6.				

Table 3: Mean and the Standard Deviation Values of TAM Constructs.

The average ratings for the entire set of instruments and the individual components are found to be slightly higher than the central value of the scale (1 to 6). Thus, there is an indication that the cessation of FGM is somewhat advantageous. Table 4 provides a comprehensive overview of the mean and standard deviation analysis outcomes for the items associated with the model constructs. These items are reflective of the questions incorporated in the questionnaire. It is important to note that each construct is defined by a specific number of items and the data presented in Table 4 shed light on the central tendencies and variability of responses for each construct.

FGM Eradication Instruments:	Mean	SD [a]
I confirm that I attended any type of awareness session, and I am aware of the consequences of FGM (FC1)	3.87	1.111
I easily perceived the new behavior of abandoning FGM (PEOU1).	3.72	1.432
I feel I can adopt the new behavior of FGM abandonment (PEOU2).	3.94	1.251
I believe I will have a better sexual life after dumping FGM (PU1).	3.64	1.334
I think that the shape of the genitalia will be beautiful, clean, and intact after dumping FGM (PU2).	3.73	1.525
I believe that FGM is not affiliated with religion (PU3).	3.84	1.443
As a result of the knowledge, I received from the programs, I will not recommend FGM to others (BI1).	3.89	1.400
I have the intention to adopt the new behavior of abandoning FGM (BI2).	3.94	1.499
After I understood FGM hazards, I didn't perform FGM (AU1).	3.91	1.413
I have already abandoned FGM (AU2).	3.65	1.577
I didn't cut my daughter after the awareness programs (AU3).	3.62	.999
The decision to abandon FGM is my own decision (VOUL1).	3.81	1.271
The decisions related to my family are uninfluenced by others' opinions (VOUL2).	3.77	1.319
I believe that abandoning FGM will not harm my life (EXP1).	3.84	1.385
I feel safe when adopting the new behavior of abandoning FGM (EXP2).	3.89	1.228
I believe SN is affiliated with a religion (SN1).	3.98	1.500
I believe FGM promotes marriage likelihood and womanhood (SN2).	4.03	1.486
I believe FGM maintains hygiene and beauty of genitalia (SN3).	4.29	1.291
Source: Author's survey.		
Note: Actual range of 1-6 (*1 strongly disagree, 2 disagree, 3 disagree somewhat, 4 undecided, 5 agree,* and *6 strongly agree).* Median = 3. SD is the standard deviation in the range 1-6.		

Table 4: Standard Deviation and Mean Values for TAM's Constructs' Items.

Assessment of the Measurement Model

The maximum-likelihood method was utilized to estimate model parameters, with a particular emphasis on variance-covariance matrices in the analysis [10]. In evaluating the goodness-of-fit of the model, as recommended by Kline (2005) and [10], fit indices play a crucial role. The initial use of the χ^2 statistic is influenced by its sensitivity to sample size, which can potentially lead to model rejection based on slight differences between observed and ideal fits, as noted by Hu and Bentler (1999). To address this concern, alternative measures such as the χ^2/df ratio proposed by Carmines and McIver (1981) were introduced. Hair (2010) suggests utilizing the indices presented in Table 5 for a comprehensive assessment of the model's acceptability [10]. These indices collectively offer a thorough evaluation of the model's fit, taking into account both its goodness and parsimony.

Fit Index	Recommended Value (Hair, 2006)	Measurement Model
$\chi 2$	Non-significant at $p <0.05$	2568.096
Degrees of Freedom (df)	n/a	569
$\chi 2$ /df	<5 preferable <3	4.513
Goodness-of-Fit Index (GFI)	>0.90	.963
Adjusted Goodness-of-Fit Index (AGFI)	>0.80	.857
Comparative fit index (CFI)	>0.90	.963
Root Means Square Residuals (RMSR)	<0.10	.145
Root Means Square Error of Approximation (RMSEA)	<0.08	.075
Normed Fit Index (NFI)	>0.90	.953
Parsimony Normed Fit Index (PNFI)	>0.60	.857

Table 5: Model Goodness of Fit Results.

Structural Model Results

After evaluating the reliability and internal consistency of the items within the dimensions of the constructed model, a SEM was formulated using Analysis of Moment Structures (AMOS) version 24, based on the obtained results. The SEM outcomes encompass path coefficients and R^2 values, with the R^2 coefficient denoting the extent to which a construct's variance can be elucidated by its predictive variables, as expounded by Bryman (2008). Figure 4 illustrates the structural equation model that best aligns with the data, while Table 6 and Table 7 detail the results of the path analysis conducted on the developed SEM.
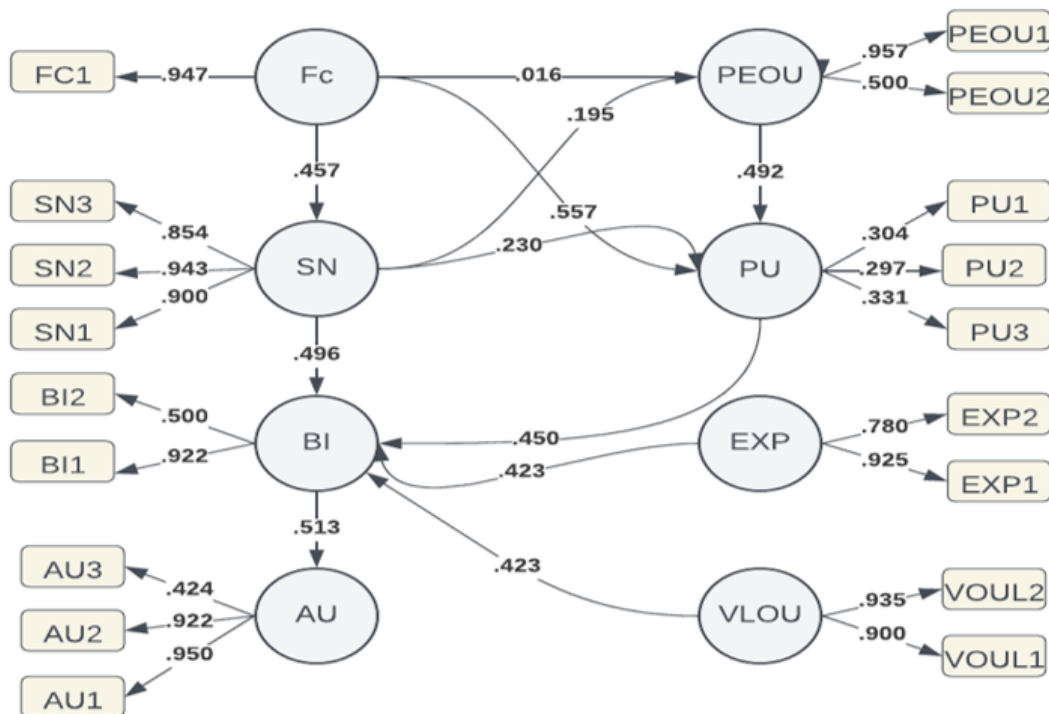
Figure 4: Path Analysis of the FGM Abandonment Model.

Note: The model was fitted using Analysis of Moment Structures (AMOS) version 24 with Full Information on Maximum Likelihood.

Variables	Structural Coefficients	Results
FC-- PEOU	0.016	Unsupported
FC-- PU	0.557***	Supported
FC-- SN	0.457***	Supported
SN--PEOU	0.195**	Supported
PEOU-- PU	0.492***	Supported
SN -- PU	0.230**	Supported
EXP-- BI	0.423***	Supported
SN-- BI	0.496***	Supported
PU-- BI	0.450***	Supported
VOLU-- BI	0.423***	Supported
BI-- AU	0.513***	Supported
Source: Results of Analysis of Moment Structures (AMOS) performed on the data used to complete the author's Ph.D. study. *Note: *p<.05, **p<.01, ***p<.001*		

Table 6: Path Analysis Results.

The model explains 56.60% of the variance in the actual adoption of advocated behavior (AU) (R^2 =.566). Noteworthy findings include the substantial influence of subjective norms on the intention to adopt FGM abandonment (ß =.496) and the equally significant impact of individual experiences and voluntariness on the intention construct (ß =.423). Facilitating conditions of eradication programs significantly contribute to the perceived usefulness of adopting FGM abandonment (ß =.557), while the impact of the facilitating conditions of the programs insignificantly influences the perceived ease of using FGM abandonment (ß =.016). The perceived usefulness of abstaining from FGM notably influences the behavior intention (ß =.450). The behavior intention construct significantly influences the actual use of FGM abandonment (ß =.513).

Hypothesis	Path	Path Coefficient	P-Value	Remarks
H1	Fc --- SN	0.457	0.000	Supported
H2	FC --- PU "mediated by SN"	0.230	0.000	Supported
H3	FC --- PEOU "mediated by SN"	0.450	0.000	Supported
H4	FC --- PU	0.557	0.000	Supported
H5	FC --- PEOU	0.016	0.000	Unsupported
H6	PEOU --- PU	0.492	0.000	Supported
H7	PU --- BI	0.450	0.000	Supported
H8	VOLU --- BI	0.423	0.000	Supported
H9	EXP --- BI	0.423	0.000	Supported
H10	SN --- BI	0.496	0.000	Supported
H11	BI--- AU	0.513	0.000	Supported
Note: *p<.05, **p<.01, ***p<.001				

Table 7: Hypothesis Testing Results.

Discussion & Conclusion

The findings of the study reveal several significant relationships within the proposed model. Firstly, in support of hypothesis H1, the findings indicate a significant impact of the facilitating conditions of awareness programs on altering the prevailing norms of FGM (ß = 0.457, sig = 0.000). This implies that the success of awareness programs significantly contributes to influencing the subjective norms of FGM and fostering the intention to abandon FGM. Nevertheless, while hypothesis H2, which suggests a substantial impact of facilitating conditions of the eradication programs on the perceived usefulness of abandoning FGM mediated by declining the subjective norms of FGM, is supported (ß = 0.230, sig = 0.000), hypothesis H4 reveals that the direct influence of supportive conditions of the eradication programs on the perceived usefulness of abstaining from FGM is greater than its indirect influence through slumping the subjective norms of FGM (ß = 0.557, sig = 0.000). Additionally, the findings indicate that the impact of the supportive conditions of the programs on the perceived ease of adopting FGM-abandonment, mediated by the weakening of subjective norms surrounding the practice (H3) (ß = 0.195, sig = 0.000), surpasses the direct effect of the supportive conditions of the programs on the perceived ease of adopting FGM (H5). This is supported by the lack of a statistically significant association between the two constructs (ß = 0.016, sig = 0.003. Our research underscores the importance of actively challenging and modifying prevailing social norms linked to FGM. By actively diminishing the influence of beliefs rooted in the social motivations behind FGM.

Supporting H6, the results indicate that the perceived ease of adopting FGM abandonment positively and significantly influences the perceived usefulness of embracing the newly promoted behavior. Furthermore, the results show that the perceived usefulness of refraining from FGM positively and significantly influences the behavioral intention to abandon FGM (ß = 0.450, sig = 0.000). This implies that individuals are more inclined to adopt FGM abandonment if they perceive the usefulness that they can gain when they abstain from FGM practices.

Concerning H8 and H9, the results affirm the substantial impact of voluntariness on adopting the newly advocated behavior, along with the influence of experience with Female Genital Mutilation (FGM) on the intention to embrace FGM abandonment. The regression coefficients (ß) for both variables are statistically significant, with values of 0.423 and 0.423, respectively, and p-values of 0.000. This underscores the substantial role that voluntariness and experience with FGM play in shaping individuals' intentions to adopt the practice of FGM-abandonment. The findings emphasize the crucial role of voluntariness in shaping collective decisions to advocate for the abandonment of FGM (ß = 0.496, sig = 0.000). The interplay between decision-making and openness to change becomes apparent in experiences related to FGM, reinforcing the idea that decisions concerning FGM

are interconnected. This interconnection implies that sustained and meaningful change relies on the decisions made by various stakeholders [20]. Therefore, when addressing widespread abandonment, the primary focus of inquiry should be on communities and extended networks.

Furthermore, subjective norms are found to have a favorable impact on behavior intention to foster FGM-abandonment (ß = 0.496, sig = 0.000), supporting H10. This suggests that societal norms and social influences play a significant role in shaping individuals' intentions regarding FGM abandonment.

Lastly, H11 is supported, indicating that the intention to abandon FGM directly and significantly influences the actual adoption of this behavior (ß = 0.513, sig = 0.000). In summary, the study's results provide comprehensive insights into the factors influencing the intention and actual adoption of abandoning FGM.

Overall, the findings supported the influence of the facilitating conditions of the programs in enabling the programs to take root in the community, encouraging public education, and increasing awareness of the harmful effects of FGM. Furthermore, by emphasizing the technical and organizational role in strengthening programs' capacity to reframe the communal narrative, the results highlight their effectiveness as a tool to be used to accomplish the elimination of FGM. Our findings distinctly indicate that the impact of eradication programs on the perceived ease of adopting FGM abandonment is significantly enhanced when considering the mediating influence of subjective norms related to FGM. The mediation effect, which involves signaling prevailing beliefs, contributes to a more substantial effect compared to the direct influence on the Perceived Ease of Use (PEOU) construct. Fundamentally, given that the results from the structural equations (depicted in Figure 4) indicate internal consistency across various dimensions of the developed TAM, the FGM-abandonment model can be deemed a credible tool for assessing diverse influences on the idea of abandoning FGM.

Research Implications

The developed model contributes to the body of work in social science that uses the SEM technique to explain how behaviors are acquired across cultures. The model also investigates the extent to which the implementation of eradication programs contributes to targeted behavior modification and FGM practice elimination since it looks at and understands people's perceptions of the value and usefulness of these programs in promoting FGM abandonment. To the author's knowledge, this research represents a pioneering effort in constructing and evaluating an integrated theoretical framework utilizing TAM within the specific context of addressing challenges associated with FGM. The envisaged model is expected to provide valuable insights for organizations committed to eradicating FGM. By employing the TAM framework, it allows for a comprehensive understanding of influences from various perspectives. This approach enables organizations to focus

their efforts on variables that exhibit significant influence on the actual adoption of FGM abandonment. Consequently, this study is poised to yield managerial implications, equipping organizations with unique insights on how to strategically manage the endeavor of FGM abandonment effectively.

Limitation

Several limitations of our research must be stated. Firstly, additional causal connections could be suggested since the outcomes we provided in our model were based on theoretical assumptions. Also, one can argue that the effects of a person's experience with FGM are attributable to people with various sexually linked issues, which heavily rely on socio-cultural factors. This suggests potential avenues for further research in exploring the intricate interplay of these socio-cultural elements in understanding and addressing the broader impact of FGM experiences. Additionally, since Khartoum State (the capital of Sudan) provided our data, conclusions concerning participants in other geographical locations may not be accurate.

Data Note

The data utilized in this study are protected by a confidentiality agreement, precluding disclosure to third parties. For those interested, direct contact with us is encouraged to inquire about the procedure for obtaining access to the data. We are fully prepared to offer assistance and authorize the replication of the study's results.

Conflict of Interests

The research, authorship, and publication of this article are devoid of any potential conflicts of interest.

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