

Financial Well-being and Households' Intention to Participate in ROSCAs: An Extended TPB Model

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ABSTRACT:

Rotating savings and credit associations (ROSCAs) are informal credit associations emerging in underprivileged communities around the world as a key financial management tool for poor individuals. Although ROSCAs have been widely studied for decades to clarify their benefits, risks, operation rules, the investigation of factors influencing individuals' intention to participate in ROSCAs is ignored. By employing the extended theory of planned behavior (TPB), the research aims to unearth key antecedents of the rural households' intention to participate in ROSCAs. The partial least squares structural equation modeling (PLS-SEM) is applied to analyze 205 rural households in Vietnamese context. The research findings showed the importance of perceived economic usefulness, attitudes towards ROSCAs, financial well-being, and the ability to access formal credit facilities in predicting rural households' intention to participate ROSCAs, in which perceived economic usefulness and attitude towards ROSCAs had significantly positive impacts on intention to participate, whereas financial well-being and the ability to access formal credit facilities had significantly negative impacts. The implications for policy and practice are discussed from the perspective of how the increased financial well-being and formal credit access, as well as the decrease in ROSCAs' perceived economic usefulness and positive attitudes can discourage rural households from participating.

Keywords: Rotating savings and credit associations (ROSCAs), extended theory of planned behaviour (TPB), Financial well-being, saving commitment, perceived trust

1. Introduction

People living in underprivileged communities, especially in developing countries, are facing financial and economic hardship. Many find themselves trapped in a vicious cycle of poverty, where they spend almost all their earnings, save minimally, and have limited access to formal financial institutions due to their poor credit ratings (Tanaka & Nguyen, 2009). The exclusion from formal financial market forces people to look for alternative financial solutions to meet their basic needs. ROSCA has emerged as a popular alternative for formal financial institutions, serving as a vital source of capital for both basic essentials and income-generating activities such as starting small businesses or shops (Shoaib & Siddiqui, 2020).

Defined as an informal credit organization where members make periodical contribution to a pot and receive payments from that pot in return (Ardener, 1964), ROSCA exhibits local variations in characteristics, but maintain a consistent underlying structure: (i) regular meetings with a fixed maturity among a particular number of

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members, (ii) each member contributes a fixed amount of money, and (iii) the gathered pot is then distributed a member who has not received yet (Alpay & Kahyaoglu, 2016; Ahn et al., 2017).

There are three different ROSCA types depending on its pot allocation strategies, namely random, fixed, and bidding (Zambrano et al., 2023). While random ROSCAs have accidental order of pot allocation in each meeting (Ardener, 1964), fixed ROSCAs predetermine the orders before the cycle starts (Baland et al., 2019) and bidding ROSCAs prioritize members who contribute highest amounts for earlier access to the pot (Ke & Ye, 2019). Based on allocation mechanism, each type of ROSCAs poses different risks and levels of access. In terms of random ROSCAs, members face idiosyncratic risk due to uncertainty in pot allocation timing and thus are less efficient for risk hedging since the payout timing is not aligned with members' financial needs (Klonner, 2001, 2003). Due to the simplicity in structure and regulatory framework shortage, random ROSCAs require minimal financial literacy and are highly most accessible, especially appealing to homogeneous communities with similar savings goals and risk tolerance level (Fang et al., 2015). Although fixed ROSCAs are more secure than random ROSCAs drawing to the predictable time of fund receiving, they are similar to random ROSCAs in lacking flexibility to adapt to stochastic income shocks, thus are more suitable for those with planned expenditures (Ibrahim, 2019). From bidding ROSCAs perspective, although they gain an advantage in addressing urgent needs and functioning as a form of insurance against income shocks (Calomiris & Rajaraman, 1998), they are less accessible to individuals with limited financial resources or bargaining skills and thus are the least inclusive ROSCA type (Klonner, 2001; Fang et al., 2015). Regardless of the type, ROSCAs provide funds to financially disadvantaged individuals, filling the gap left by formal financial institutions (Sedai et al., 2021a).

Vietnam — a Southeast Asian developing country — has a long history of informal credit systems. Despite government efforts to increase formal financial inclusion, previous research indicates that informal finance has deeply rooted in which approximately one-third of all credit transactions take place outside of formal channels and ROSCA is considered the most three popular types of informal credit existing (Lainez, 2014). ROSCAs are referred to a number of names in the cultural and social context of Vietnam, such as “họ,” “hụi,” “biểu,” and “phường” (The Civil Code, 2015). Bidding and fixed ROSCAs are the two main forms practiced in Vietnam, in which bidding ROSCAs are primarily found in the south and fixed ROSCAs are more prevalent in the north (Tanaka & Nguyen, 2009).

While previous studies have predominantly focused on the ontological and developmental aspects of ROSCA, the determinants driving ROSCA participation have received insufficient attention, as shown in Table 1. This research aims to address the following question: *What factors influence rural households' intention to participate in ROSCAs in Vietnam?* This research question is important because the insights gained will enrich the existing literature.

First, although ROSCA has been extensively studied – more than a hundred articles have been written about it (Zambrano et al., 2023) – the majority of studies rely on mathematical modeling techniques, with very few employing structural equation modeling (SEM). Traditional mathematical modeling concentrates solely on direct and linear

relationships between a limited set of variables, thus oversimplifying the research findings. In contrast, SEM allows researchers construct a network of direct and indirect relationships among various variables by its ability to integrate latent variables as a game-changer. In the case of Amaroh *et al.* (2023), PLS-SEM revealed how social relationships mediate the link between financial attitudes and trust, offering a layered understanding that a simpler regression model might underestimate. Furthermore, some abstract dimensions related to psychology and society, which cannot be directly measured through proxies as in regression model, are explicitly modeled as latent constructs and inferred from observed indicators in SEM to reduce measurement error. For example, Pambekti *et al.* (2022) applied CB-SEM to analyze the effects ROSCA participation motivations and benefits on household wealth and entrepreneurship. Finally, unlike traditional methods that examine variables' relationship separately and thus risk fragmented insights, SEM tests theoretical frameworks comprehensively at once through proposed paths. Therefore, the limited application of SEM in ROSCA research deters researchers' understanding of complex relationships between multiple variables simultaneously, leads to oversimplified conclusions which hinder the ability to generalize research findings across different contexts, and consequently results in inadequate evidence for policy development aimed at enhancing financial inclusion and well-being.

Second, existing research on determinants of ROSCA participation has primarily been qualitative, utilizing either interviews (Shoaib & Siddiqui, 2020) or scoping reviews based on the PRISMA-ScR protocol (Zambrano *et al.*, 2023). There is a scarcity of research exploring this topic from quantitative perspective, with the exception of Alpay & Kahyaoglu (2016), who used exploratory factor analysis (EFA) to investigate motivations for ROSCA participation. Lastly, this study unearths and examines the factors influencing ROSCA participation in Vietnamese financial context, which has received relatively little attention compared with African and other Asian nations (such as Japan, India, China) where most previous research has concentrated on (Zambrano *et al.*, 2023). Lainez (2014) stated that knowledge regarding informal finance and credit in Vietnam remains fragmented. Therefore, by applying the extended TPB as a theoretical foundation and PLS-SEM as the analytical method in identifying the factors influencing individuals' intentions to participate in ROSCAs in rural areas of Vietnam, this study addresses the mentioned research gap.

Table 1: Literature review

Authors	Country	Research subjective	Research objective	Methodological approach
Zambrano <i>et al.</i> (2023)	N/A	<ul style="list-style-type: none"> ▪ ROSCA benefits to their members ▪ ROSCA evolution in terms of structure, rules, use of technology over time 	Articles relating to ROSCAs	PRISMA-ScR protocol
Amaroh <i>et al.</i> (2023)	Indonesia	<ul style="list-style-type: none"> ▪ The mediating role of social relationships in the link between financial attitudes and trusts 	Females	PLS-SEM

Maitra et al. (2023)	India	<ul style="list-style-type: none"> ROSCA participation impacts on household welfare 	ROSCA members	Mathematical model
Pambekti et al. (2022)	Islam	<ul style="list-style-type: none"> The effects of ROSCA participation motivations and benefits on household wealth and entrepreneurship 	ROSCA members	CB-SEM
Dinç et al. (2021)	Turkey	<ul style="list-style-type: none"> A two-person saving-based finance (SBF) model A Mudarabah-Wakalah hybrid model 	SBF companies	Mathematical model
Sedai et al. (2021a)	India	<ul style="list-style-type: none"> ROSCA participation impacts on women socio-economic freedom and autonomy 	Females	Mathematical model
Shoaib & Siddiqui (2020)	Pakistan	<ul style="list-style-type: none"> Determinants of ROSCA participation 	Lower-class and middle-class	Interviews
Altuntas et al. (2019a)	Indonesia	<ul style="list-style-type: none"> The effects of ROSCA participants on microinsurance purchase 	ROSCA members	Mathematical model
Bonan et al. (2019)	Benin	<ul style="list-style-type: none"> The effects of time preferences on ROSCA and funeral membership 	ROSCA members	Mathematical model
Sato et al. (2019)	Japan	<ul style="list-style-type: none"> The effect of ROSCA participation on the maintenance of higher-level functional capacity in older adults 	Older adults	Mathematical model
Bauchet & Larsen (2018)	Taiwan	<ul style="list-style-type: none"> The influence of social relationships on contribution behavior and ROSCA failure 	ROSCA members	Mathematical model
Acquah & Dahal (2018a)	Indonesia	<ul style="list-style-type: none"> The lending capacities of ROSCA institutions after the financial crisis in Indonesia in 1998 	ROSCA institutions	Mathematical model
Alpay & Kahyaoglu (2016)	Turkey	<ul style="list-style-type: none"> Motivations for ROSCA participation 	ROSCA members	Exploratory factor analysis (EFA)
Reito & Spagano (2014)	Italy	<ul style="list-style-type: none"> Conditions to establish ROSCAs and Rotating Savings and Collateral Association (ROSCoA) 	Entrepreneurs	Mathematical model
Lainez (2014)	Vietnam	<ul style="list-style-type: none"> Three types of informal credit in Chau Doc 	Rural households	Interview
Etang et al. (2011)	Cameroon	<ul style="list-style-type: none"> The relationship between trust and ROSCA membership 	ROSCA members and non-members	Mathematical model

Tanaka & Nguyen (2009)	Vietnam	▪ The impacts of trust, risk aversion, reciprocity, and time discounting on shaping ROSCA participation	ROSCA members	Mathematical model
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2. Theoretical Background

2.1 Brief description of the TPB

As an extension of theory of reasoned action (TRA), TPB posits behavioral intention which is shaped by three main factors — attitude (ATT), subjective norms (SN), and perceived behavioral control (PBC) — can predict actual behavior (Ajzen, 1991). While ATT is defined as an individual's positive and negative assessment regarding the perceived outcomes of performing a certain behavior, SN refers to an individual's perception of whether important referents support or oppose a behavior; and PBC is defined as an individual's perceived difficulty level of performing the behavior (Ajzen, 1991).

Although TPB is widely recognized as a preferred choice across many fields in addressing complexities of human social behavior (Shaw et al., 2000; Koon et al., 2020), limited research in financial markets has employed the TPB as a research framework, especially regarding investment decision-making (Akhtar & Das, 2018). One typical research is Schmidt (2010) which found that attitude, social pressure, and perceived behavioral control exhibited significantly positive effects on individual's willingness and investment intention in mutual funds with variances accounting for 67% and 71%, respectively. Similarly, Adil et al. (2023) enlightened that TPB components (attitude and subjective norms) were significantly associated with investors' intention to participate in stock market, whereas perceived behavioral control displayed an insignificant association. Finally, by integrating TPB and Regret Theory, Maheshwari et al. (2024) showed that attitude positively correlated with investment decision, consistent with widely accepted position of the predictable capacity of attitude on behavioral intention (Raut & Das, 2017; Akhtar & Das, 2018; Yang et al., 2021).

Therefore, it is reasonable to apply TPB in exploring ROSCA's participation, which is considered as one type of financial investment intention. Considering the preceding discussion and findings, we hypothesize:

H1: Attitude towards ROSCA positively influences intention to participate in ROSCA

H2: Subjective norms positively influence intention to participate in ROSCA

H3: Perceived behavioral control positively influences intention to participate in ROSCA.

2.2 Addition of supplementary constructs into TPB

Financial well-being is defined as financial security and freedom achievements in making financial decisions in the present and future (Consumer Financial Protection Bureau, 2015). Along with socio-economic status (Brüggen et al., 2017), financial well-being has been found to have impacts on individuals' quality of life, performance, happiness, health, social relationships, and even overall well-being (Hubler et al., 2016;

Xiao & O'Neill, 2016; Brüggem et al., 2017). Prior studies indicate that most ROSCA members are low-income and financially disadvantaged people who are unbanked (Musembi & Chun, 2020), due to their failure to meet the requirements imposed by formal financial institutions for credit applications (Alpay & Kahyaoglu, 2016). These individuals often rely on community-based initiatives to meet their financial needs. ROSCAs have a comparative advantage in monitoring and enforcing financial agreements over traditional banking services given the challenges of executing formal financial contracts (Besley et al., 1993a), and have thus become an important alternative financial mechanism in providing credit access to economically vulnerable populations (Alpay & Kahyaoglu, 2016; Zambrano et al., 2023). This evidence suggests that low financial well-being and the lack of access to formal credit facilities are the main reasons individuals engage in ROSCAs. Accordingly, the following hypotheses are proposed:

H4: Financial well-being negatively influences intention to participate in ROSCA

H5: Access to formal credit facilities negatively influences intention to participate in ROSCA

Perceived economic usefulness

Research by Besley et al. (1993b, 1994) indicated that the desire to finance investments and to purchase durable goods serves as key motivations for individuals to join ROSCAs. This is consistent with Alderfer's ERG theory (1969), which categorizes needs into three groups: growth, relatedness, and existence needs. Individuals from different economic classes experience varying needs. For instance, lower-class individuals, whose financial resources are inadequate for purchasing durable goods, are particularly inclined to participate in ROSCAs to satisfy essential needs such as financing daughter's marriage and covering hospital expenses (existence needs), providing dowries (relatedness needs), and making small business investments (growth needs) (Shoaib & Siddiqui, 2020). On the other hand, middle-class members, benefiting from stable incomes, often engage in ROSCAs to address luxury or social needs, such as buying jewelry, fashionable clothes, cars, payment for college, and repaying previous loans taken to cover these expenses (Shoaib & Siddiqui, 2020). According to Besley et al. (1993b), ROSCAs facilitate members in making indivisible payments more quickly than they would if they saved independently, taking advantage of the intertemporal benefits from member exchanges. Additionally, some ROSCA members, despite having access to bank credit, prefer informal associations due to lower or null interest rates (Ullah et al., 2016a, 2016b, 2016b) and the flexible use of funds (Hoque & Khalily, 2002), as opposed to the stringent conditions and perceived difficulties associated with bank loans, which often involve high interest rates (Datta & Aznar, 2019). Observations from international contexts indicate that members of ROSCAs have greater economic growth and lower poverty rates (Ghazali, 2003; Altuntas et al., 2019b). Correspondingly, this study posits that:

H6: Perceived economic usefulness positively influences intention to participate in ROSCA

Saving commitment

ROSCAs are considered a mechanism to accumulate savings periodically (Geertz, 1962). The commitment need due to self-control issues is found to be a primary reason for participating in ROSCAs rather than saving on one's own, stemming from individuals' tendency to prioritize today's consumption over future financial planning (Laibson, 1997).

This present-biased preference challenges both genders in maintaining saving discipline (Bawani Satkunasingam & Shanmugam, 2006; Gugerty, 2007; Dagnelie & Lemay-Boucher, 2012). Men typically have far less saving discipline than women, despite the fact that women struggle to avoid spending on non-capital goods (Tsai, 2000; Bilecen, 2019). In some cases, women actively participate in ROSCAs specifically to mitigate their husbands' self-control problems (S. Anderson & Baland, 2000). Those who struggle with self-control issues would turn to ROSCAs when substitute commitment savings mechanisms are absent (Gugerty, 2007). Accordingly, the key antecedent of ROSCA participation is the need for a commitment device (Tanaka & Nguyen, 2009; Dagnelie & Lemay-Boucher, 2012; Smets, 2019; Imami et al., 2020). ROSCAs facilitate the development of investment capital, financial resilience, and buffers against future uncertainties by offering a saving environment (Gugerty, 2007; Dagnelie & Lemay-Boucher, 2012; Mehmood et al., 2019). We thus hypothesize:

H7: Saving commitment negatively influences intention to participate in ROSCA
Perceived trust

ROSCA participation is considered a high-risk investment. Although ROSCAs have a comparative advantage in monitoring and enforcing financial agreements over formal financial institutions, their sustainability is threatened if participants default after receiving the pot (Tanaka & Nguyen, 2009). Such risks arise when members who receive funds early in the cycle stop contributing, and the ROSCA host deliberately absconds without disbursing the collected funds on the scheduled day, causing losses for other members. Consequently, for ROSCAs to be effectively functional, members must have a high level of confidence and trust in one another (Coleman, 1988; Putnam et al., 1994). Individuals incline to participate in reliable ROSCAs where host entities and members are perceived as credible (Shoaib & Siddiqui, 2020). This behavior is underpinned by situational logic, which protects trusting transactions by collective obligations. The previous literature has extensively shown the significance of trust in influencing individual participation and encouraging membership in ROSCAs (Etang et al., 2011; Shoaib & Siddiqui, 2020; Agyei et al., 2020; Amaroh et al., 2023). We thus hypothesize:

H8: Perceived trust positively and directly influences intention to participate in ROSCA

In accordance with the foregoing hypotheses, Figure 1 illustrates the proposed research model.

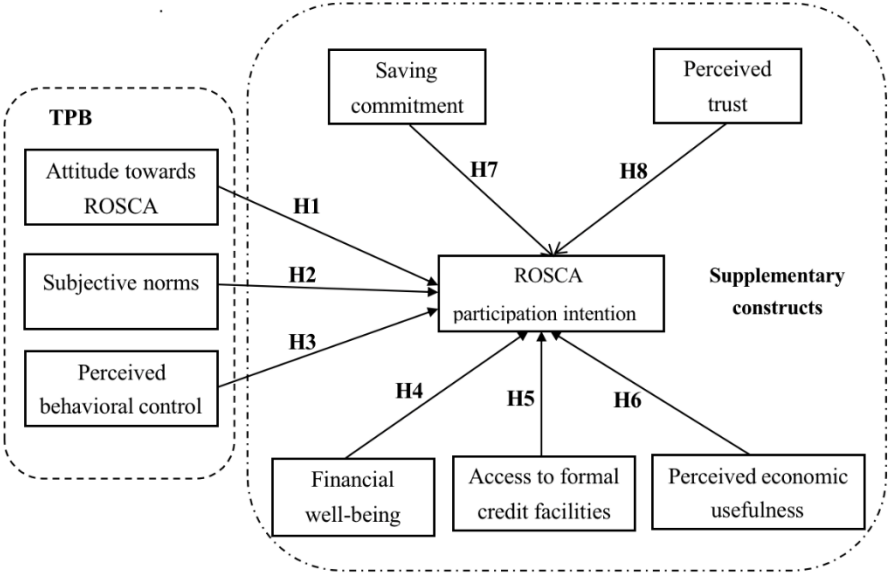


Figure 1: The proposed research model

3. Methods

The study used in-person survey — questionnaires were handed directly over to the population in rural settings in Vietnam — to gather information. The study’s purpose and the fact that respondents’ information would be kept private and exclusively used to fulfill the study’s aims were clearly explained during the survey. From a preliminary sample of 231 respondents, 205 valid responses were retained after removing incomplete submissions. This sample size exceeded Cohen’s (1992) minimum requirements for 0.80 statistical power at 0.05 significance level, with maximum eight arrows pointing at a latent variable and minimum R^2 values of 0.10 and 0.25 (requiring minimum samples of 144 and 54, respectively). With 205 responses, our sample size exceeds the above-mentioned threshold (see Table 2).

All constructs were adapted from previously validated studies (see Appendix 1). The questionnaire underwent a rigorous translation process from English to Vietnamese using a collaborative, iterative approach. Face and content validity were established through pre-testing with 20 rural households, leading to refinements in question wording, sequence, and clarity. The final questionnaire contained 35 questions covering 9 constructs and 7 demographic questions. Five-point Likert scale were employed to rate each items’ agreement level from 1 — “strongly disagree” to 5 — “strongly agree”.

Table 2: The sample's demographics (n=205)

	Demographic	Frequency	Percent (%)
Gender	Male	80	39.0
	Female	125	60.9
Age	< 25 years	39	19.0
	25-35 years	46	22.4
	36-45 years	56	27.3
	46-55 years	43	20.9
	> 55 years	21	10.2
Marital status	Married	131	63.9
	Unmarried	74	36.0
Children	Yes	118	57.5
	No	87	42.4
Highest educational degree	No degree	28	13.6
	Primary school	24	11.7
	Secondary school	31	15.1
	High school	98	47.8
	University/college	24	11.7
Monthly household net income (million VND)	< 5	76	37.0
	5-10	87	42.4
	11-20	20	9.7
	21-30	16	7.8
	> 30	6	2.9
Employment status	Unemployed	48	23.4
	Worker (blue-collar)	102	49.7
	Employee (white-collar)	26	12.6
	Self-employed	15	7.3
	Retired	14	6.8

4. Results

SmartPLS 4 was used to examine the proposed research model (Ringle et al., 2015). Since the study aimed to unearth determinants of rural households' intention to participate in ROSCAs, PLS-SEM is found to be superior than CB-SEM (Hair et al., 2019). Two data analysis phrases was taken, including the measurement and structural model assessment (J. C. Anderson & Gerbing, 1988). While the structural model helped test the statistical significance of suggested hypotheses, the measurement model made it possible to assess the validity and reliability of the variables.

4.1 Measurement model

Except for SAC-1, SAC-2, SAC-3, FWB-2, FWB-3, FWB-6, PEU-2, PEU-3, PEU-4, PT-1, and PT-4, the analysis results indicated all indicators had a factor loading higher than 0.708 (Hair et al., 2019), thus confirming converge-criterion validities of each

indicator. Table 3 shows the convergent validity testing results after SAC-1, SAC-2, SAC-3, FWB-2, FWB-3, FWB-6, PEU-2, PEU-3, PEU-4, PT-1, and PT-4 are eliminated. By calculating each construct's average variance extracted (AVE) value, the convergent validity was further tested. Table 3 showed that all AVE values were greater than 0.5, suggesting all constructs were valid (Hair et al., 2019). The construct's reliability is considered reliable when composite reliability and Cronbach's Alpha (α) are greater than 0.70 threshold (Henseler et al., 2009). The test criteria were satisfied as shown in Table 3.

Table 3: Construct reliability and convergent validity

Construct	Item	Outer Loading	Cronbach's alpha	Composite reliability (rho_a)	Composite reliability (rho_c)	Average variance extracted (AVE)
Access to formal credit facilities (ACF)	ACF-1	0.907	0.836	1.017	0.891	0.732
	ACF-2	0.819				
	ACF-3	0.838				
Attitude towards ROSCA (ATT)	ATT-1	0.810	0.754	0.761	0.859	0.669
	ATT-2	0.849				
	ATT-3	0.795				
Financial well-being (FWB)	FWB-1	0.850	0.747	0.797	0.850	0.655
	FWB-2	*				
	FWB-3	*				
	FWB-4	0.846				
	FWB-5	0.727				
	FWB-6	*				
Intention to participate in ROSCA (INT)	INT-1	0.850	0.829	0.831	0.898	0.745
	INT-2	0.872				
	INT-3	0.868				
Perceived behavioral control (PBC)	PBC-1	0.808	0.704	0.703	0.835	0.627
	PBC-2	0.795				
	PBC-3	0.773				
Perceived economic usefulness (PEU)	PEU-1	1.000	1.000	1.000	1.000	1.000
	PEU-2	*				
	PEU-3	*				
	PEU-4	*				
Perceived trust (PT)	PT-1	*	0.747	0.748	0.888	0.798
	PT-2	0.889				
	PT-3	0.897				
	PT-4	*				
Saving commitment (SAC)	SAC-1	*	0.816	0.833	0.890	0.730
	SAC-2	*				
	SAC-3	*				
	SAC-4	0.816				
	SAC-5	0.865				

	SAC-6	0.881				
Subjective norms (SN)	SN-1	0.800				
	SN-2	0.870	0.746	0.759	0.855	0.663
	SN-3	0.769				

*Item deleted

Finally, the discriminant validity of the constructs was assessed using multiple approaches. As presented in Table 4, an AVE root value greater than the correlation value by latent variables, thus confirming discriminant-criterion validities of each construct (Fornell & Larcker, 1981). The discriminant validity was further examined by calculating Heterotrait–Monotrait (HTMT) ratio. Table 5 showed all HTMT ratios were below the threshold value of 0.9, thus additionally verifying discriminant validity (Henseler et al., 2015; Jr. et al., 2017).

Table 4: Fornell-Larcker discriminant validity test

	ACF	ATT	FWB	PBC	PEU	PT	INT	SAC	SN
ACF	0.856								
ATT	0.223	0.818							
FWB	-0.328	-0.698	0.810						
PBC	0.276	0.573	-0.553	0.792					
PEU	0.057	0.344	-0.325	0.400	1.000				
PT	0.359	0.476	-0.465	0.590	0.303	0.893			
INT	0.128	0.591	-0.627	0.479	0.578	0.457	0.863		
SAC	-0.385	-0.570	0.646	-0.664	-0.312	-0.578	-0.498	0.854	
SN	0.214	0.284	-0.235	0.273	0.215	0.351	0.321	-0.308	0.814

Table 5: Heterotrait–Monotrait test

	ACF	ATT	FWB	PBC	PEU	PT	INT	SAC	SN
ACF	-								
ATT	0.264	-							
FWB	0.441	0.896	-						
PBC	0.359	0.780	0.759	-					
PEU	0.064	0.394	0.355	0.475	-				
PT	0.413	0.629	0.613	0.821	0.350	-			
INT	0.140	0.742	0.759	0.625	0.632	0.583	-		
SAC	0.430	0.717	0.824	0.878	0.344	0.734	0.598	-	
SN	0.255	0.373	0.313	0.377	0.243	0.465	0.402	0.388	-

4.2 Structural model

Variance inflation factor (VIF) analysis was used to evaluate lateral multicollinearity. All independent constructs demonstrated VIF values below 3, meeting Becker et al.'s (2015) threshold and indicating no multicollinearity concerns in the model.

Table 6: Evaluation of VIF, f^2 , R^2 , Q^2 , and q^2

Construct	VIF INT	f^2 INT	R^2	Q^2 _predicts
ACF	1.259	0.024	-	-

ATT	2.248	0.031	-	-
FWB	2.436	0.127	-	-
PBC	2.261	-	-	-
PEU	1.252	0.261	-	-
PT	1.846	-	-	-
SAC	2.471	-	-	-
SN	1.194	-	-	-
INT	-	-	0.596	0.421

We evaluated the proposed hypotheses using path coefficients (β), t-values, and p-values through SmartPLS bootstrapping with 5000 resamples (Hair et al., 2019). Except for H2, H3, H7 and H8, Table 7 showed that all hypotheses were supported with a t-value > 1.96 and p-value < 0.05 . Particularly, PEU had the strongest positive impact on INT ($\beta=0.363$, t-value=6.249, p-value=0.000), revealing that perceived economic usefulness played a key role in shaping rural households' intention to participate in ROSCAs. In contrast, FWB exhibited a negative impact on INT ($\beta=-0.354$, t-value=4.317, p-value=0.000), indicating that financial well-being was a key factor diminishing intention to participate in ROSCA among rural households. Next was the significance of ATT in forming INT ($\beta=0.168$, t-value=2.343, p-value=0.020). This finding indicated that rural households' attitude towards ROSCAs was an important facilitator of their intention to participate in ROSCAs. Finally, INT was found to be negatively affected by ACF ($\beta=-0.110$, t-value=2.409, p-value=0.016), suggesting that the ability to access to formal credit facilities was an important hinder of intention to participate in ROSCA.

Table 7: Structural model analysis

Sig ($p<.05$)	Hypotheses	Path coefficient	Sample mean	Standard deviation	t-value	p-value
S	H1: ATT -> INT	0.168	0.171	0.072	2.343	0.020
R	H2: SN -> INT	0.097	0.092	0.059	1.641	0.101
R	H3: PBC -> INT	-0.047	-0.037	0.083	0.567	0.571
S	H4: FWB -> INT	-0.354	-0.346	0.082	4.317	0.000
S	H5: ACF -> INT	-0.110	-0.094	0.045	2.409	0.016
S	H6: PEU -> INT	0.363	0.364	0.058	6.249	0.000
R	H7: SAC -> INT	-0.038	-0.040	0.071	0.528	0.598
R	H8: PT -> INT	0.114	0.107	0.065	1.746	0.082

**Note: S = Supported and R = Rejected*

The model predictive power was evaluated through R^2 with values of 0.25, 0.50, and 0.75 considered weak, moderate, and substantial, respectively (Hair et al., 2019). The R^2 value of INT (59.6%) indicates a moderate predictive power (see Table 6). Effect size (f^2) analysis, which displays any changes in R^2 by an independent variable, was calculated to further assess the constructs' strength with values of 0.02 (small), 0.15 (moderate) and (0.35) substantial (Cohen, 1988). When compared to all other constructs, Table 6 demonstrated that PT had the biggest effect size in forming INT with a moderate value of 0.261.

The model's predictive performance was further validated using PLSpredict algorithm with 10-fold cross-validation and 10 repetitions. Q^2 prediction exceeding zero indicate acceptable predictive performance (Hair et al., 2019). Our findings revealed Q^2 prediction value of 0.421 for INT, demonstrating robust predictive capacity for rural households' intention to participate in ROSCAs.

To further evaluate model's predictive capacity, the comparison of RMSEA values of dependent construct's indicators between PLS-SEM model and linear regression model (LM) is undertaken. Table 8 showed that PLS-SEM has lower prediction errors than LM, validating the study model's good predictive performance (Shmueli et al., 2019).

Table 8: PLSpredict statistics

Indicators of endogenous latent construct	RMSE_PLS-SEM	RMSE_LM	Is RMSE_PLS-SEM < RMSE_LM?
INT-1	0.461	0.510	Yes
INT-2	0.410	0.430	Yes
INT-3	0.352	0.360	Yes

As an overview, Figure 2 provides the result with all path coefficients and interrelationships between the constructs.



Figure 2: Structural equation model analysis of the research model

5. Discussion and implications

This study aimed to provide a foundational model for future research by unearthing key factors influencing rural households' intention to engage ROSCAs. Using the extended TPB, a well-established framework for analyzing behavioral intentions, the

study's empirical findings identified four important determinants of ROSCA participation in rural Vietnam: perceived economic usefulness, financial well-being, attitudes towards ROSCAs, and access to formal credit facilities. Among these, perceived economic usefulness and attitudes towards ROSCAs were found to directly and positively affect intention to participate, whereas financial well-being and access to formal credit facilities exhibited negative effects. Hence, H1, H4, H5 and H6 are supported. In contrast, subjective norms, perceived behavioral control, saving commitment, and perceived trust were found to have insignificant impacts on shaping rural households' intentions, leading to the rejection of hypotheses H2, H3, H7, and H8.

Consistent with previous studies (Adil et al., 2023; Alpay & Kahyaoglu, 2016; Shoaib & Siddiqui, 2020; Zambrano et al., 2023) — that emphasizes the dependence of low-income individuals on ROSCAs as a financial alternative when their access to formal financial markets is limited due to (i) their liquidity constraints and failure to secure loans from banks owing to collateral requirements or bureaucratic hurdles, and (ii) the scarcity of formal financial services in underprivileged and underrepresented communities — the research findings confirm the importance role of improved financial well-being and ability to access to formal financial institutions in reducing the need for informal financial systems like ROSCAs, especially in their traditionally unique function as a credit mechanism. When financial well-being increases — through higher income, savings, or asset accumulation — the urgency to pool resources with others to meet immediate financial needs diminishes. Similarly, greater access to formal credit, such as bank loans or microfinance, provides an alternative source of funds that might offer lower risk, more flexibility, or larger sums compared to the fixed contributions and payout schedules of ROSCAs. Acquah & Dahal (2018) further supports this by indicating that ROSCAs are most valuable in contexts where formal credit markets are underdeveloped, and that as formal financial systems expand and become more inclusive, the economic necessity of ROSCAs tends to wane. Although improved financial well-being and formal credit access can effectively lower ROSCA participation rates among rural households by addressing the economic gaps ROSCAs conventionally fill, it is hard to eliminate ROSCA participation needs completely. Along with their economic benefits, ROSCAs play an important role in creating social capital, reinforcing social bonds and community cohesion, which, in some cases, are evaluated to be more important than financial services offered (Benda, 2013; Vokes & Mills, 2015; Onda, 2021). Informal financial associations are an opportunity to meet new people who are helpful for career development and future business, or to increase members' social status (Acquah & Dahal, 2018; Shoaib & Siddiqui, 2020). ROSCAs are also found to have positive impacts on their members' physical and psychological health. Particularly, ROSCAs (*Mujin*) can help to improve functional impairment among elderly people in Japan (Kondo et al., 2012; Sato et al., 2019). Therefore, to shift ROSCA participation entirely towards formal credit, formal financial institutions are required to fully meet both financial and social needs. The extent of this shift depends on how well formal financial systems adapt to nuanced preferences of rural households, especially in Vietnam context where communal traditions like "hội" are culturally significant (Dao, 2022).

Contrary to the widely accepted position in ROSCA participation literature (Etang et al., 2011; Shoaib & Siddiqui, 2020; Agyei et al., 2020; Amaroh et al., 2023), the

relationship between perceived trust and intention to participate in ROSCA was found statistically insignificant. Zeithaml (1988) examined that adoption of a service through the lens of perceived value, positing that participants will evaluate the value of a service by weighing what they 'gain' against what they 'give up' prior to making decision, suggesting that, in ROSCA context, individuals will participate, irrespective of associated consequences like default risk by other members, if the expected utility (e.g. easy access to lump-sum funds and interest-free credit) exceeds the cost of potential losses. Previous studies have indicated when economic usefulness is high, trust issues are downplayed (Besley et al., 1993b; Ambec & Treich, 2007; Van, 2020), especially in bidding ROSCAs where urgent need dictates payout order (Klonner, 2003). Furthermore, since ROSCAs in rural areas are formed among kin or neighbors, the cost of defaulting on ROSCA contributions is high due to informal enforcement mechanisms such as social ostracism, reputation loss, and exclusion from community activities, thus seriously ensuring members' compliance without requiring high levels of interpersonal trust (Besley et al., 1993b). In addition, the proximity and familiarity will reduce the need for trust as a standalone factor, as participants can directly observe and enforce each other's behavior. Evidence from Benin by Bonan et al. (2019) supports this, showing that enforcement mechanisms in ROSCAs rely heavily on community cohesion rather than trust per se. In other words, "the economic incentive to join often overrides mistrust when participants are embedded in tight-knit social networks" (Ardener & Burman, 1995, p. 12). This study therefore provides an alternative perspective to extant studies in terms of trust, marking the beginning of further research.

The findings offer useful information for Vietnamese policymakers to discourage rural households from participating in ROSCAs. According to the World Bank (2022), Vietnam has a higher percentage of unbanked individuals than other countries in the region and globally (see Appendix 2). This is primarily due to two key factors. First, over 80% of the population resides in rural areas where financial inclusion is limited by geographic remoteness, low population density, poor infrastructure, and uneven education levels. Additionally, high poverty rates, particularly in remote and ethnic minority regions, further restrict access to banking services. Second, commercial banks are hesitant to open branches in rural communes due to high operational costs and low profitability (Ha et al., 2023). Therefore, the key factors identified as determinants of ROSCA participant call for policies that will deepen formal financial inclusion. Firstly, increasing formal financial inclusion should be prioritized through the expansion of microfinance programs and subsidized loan schemes tailored to specific rural communities. Furthermore, given that technology adoption can play an important role in reducing poverty among marginalized communities (Rahman et al., 2017), government agencies and local governments can take advantage of mobile money services to support the economic and developmental activities in poor areas where regular banking services are scarce or non-existent. Secondly, policymakers should also support financial education programs that highlight the benefits of formal savings and investment products (e.g. higher returns and flexible terms offered by formal savings accounts) while educating the public about the dangers of ROSCAs (e.g. the absence of legal enforcement and possible financial loss). Pointing out the drawbacks of ROSCAs may reduce their perceived economic usefulness among the public. Finally, enhancing trust in formal financial institutions, through increased transparency and

localized services, could shift preferences away from informal mechanisms and enhance positive attitudes of rural households towards official banking services.

6. Limitations and further research

This research has a few limitations that allow further investigation. First, although the research findings provide valuable insights into factors driving and deterring intention to participate in ROSCA, their generalizability is not straightforward due to several context-specific factors. In particular, rural households in Vietnam have much lower income level characterized by agricultural dependence (Statista, 2023), limited access to formal financial institutions (Ha et al., 2023; Le & Chung, 2020), lower level of financial literacy (Morgan & Trinh, 2019; Van Nguyen et al., 2022) but more robust community ties (Kantar, 2016) compared to those in urban areas. These socio-economic and cultural disparities either strengthen or weaken the intensity of impacts of identified factors (particularly reducing perceived economic usefulness and positive attitudes towards ROSCAs while reinforcing financial well-being and the ability to access formal credit services among urban counterparts' citizens). Extending this comparison to other countries with similar ROSCA traditions, such as Kenya's "chamas," India's "chit funds," or Indonesia's "arisan", introduces even more differences. For example, Vietnam has much lower formal financial inclusion than other countries in the region (see Appendix 2), and the emphasis on familial and communal ties may differ from Turkey or Indonesia, where ethnic or occupational ties might dominate (Bagwell, 2006; Khamala, 2009; McHale et al., 2014). Prior literature has emphasized the case-specific characteristics of ROSCA studies, suggesting that determinants of ROSCA participation may not universally apply (Sedai et al., 2021b; Zambrano et al., 2023). To further validate the model's practicality, future research might broaden the focus to other regions and compare across countries with more factors supplemented. The variations in collected sample size and examined factors can partly compensate the mentioned disparities by identifying common determinants and thus enhance generalizability of research findings. Second, the research used self-reported data, which could be biased by things like recollection errors or social desirability. A mixed-method approach integrating qualitative interviews may offer more profound understanding of the ROSCA participants' decisions-making processes. Third, the study examined a limited set of factors, calling for research into other constructs, especially the role of financial norms in framing ROSCA operation. Financial norms, referring to the values, standards, routine practices, and rules that individuals and communities rely on to navigate their daily financial lives, are developed through a financial socialization process (Consumer Financial Protection Bureau, 2025). Since ROSCAs rely heavily on social pressure rather than formal contracts or legal enforcement to sustain, for example, the norm of reciprocity ensures members contribute consistently, while the fear of social exclusion discourages defaulting, exploring the impacts of financial norms on ROSCA participation can effectively design interventions that prevent ROSCA growth (Zambrano et al., 2023). Lastly, the research findings revealed that ROSCA perceived economic usefulness was the strongest predictors of ROSCA participation, calling for further investigation into antecedents shaping this factor's evolution (such as education, peer influence, social media). Moreover, due to dynamic characteristics, this

factor should be analyzed by longitudinal methods to effectively evaluate the long-term effects of market shifts and formal financial inclusion policies on changing households' intention to participate over time.

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Appendix 1: Constructs and measurement items

Item	Statement	Source
Attitude towards ROSCA (ATT)		
ATT-1	ROSCAs participation is a good idea	Adil et al. (2023)
ATT-2	ROSCAs participation is a wise choice	
ATT-3	I like the idea to participate in ROSCAs	
Subjective norms (SN)		
SN-1	Most people that are important to me participate in ROSCAs themselves	Schmidt (2010)
SN-2	Most people that are important to me regard ROSCAs as positive	
SN-3	Most people whose opinion I highly respect would approve and recommend me to participate in ROSCAs	
Perceived behavioral control (PBC)		
PBC-1	I know where to participate ROSCAs	Adil et al. (2023)
PBC-2	I can identify profitable ROSCAs easily	
PBC-3	I can participate in favorable ROSCAs conveniently	
Financial well-being (FWB)		
FWB-1	I am financially stressed these days ®	Prawitz et al. (2006)
FWB-2	I feel satisfied with my present financial situation	
FWB-3	I feel good about my present financial situation	
FWB-4	I am confident that I can find the money to pay for financial emergency that costs about twice my weekly income	
FWB-5	Because of my money situation, I feel like I can purchase things that I want in life	
FWB-6	I am confident that the money I have will last for a long time	
Access to formal credit facilities (ACF)		
ACF-1	It is easy for you to obtain loans/credit for your business investment and other financial needs	Fowowe (2017)
ACF-2	It is easy for you to get collateral security to obtain a loan for your business investment and other financial needs	
ACF-3	It is easy for you to repay loans and obtain new ones	
Perceived economic usefulness (PEU)		
PEU-1	ROSCAs participation provide me with financial benefits	Hasan et al. (2024)
PEU-2	ROSCAs participation can help me diversify my investment portfolio	
PEU-3	ROSCAs participation can offer higher returns compared to formal financial investments	
PEU-4	ROSCAs participation can provide me with greater liquidity options	
Saving commitment (SAC)		
SAC-1	I began/maintained an emergency saving fund	Hogarth et al. (2003)

- SAC-2 I save/invest money out of every paycheck (income)
 SAC-3 I increase my savings when I receive a salary increase
 SAC-4 I save regularly for long-term financial goals, such as education for my children, a house or retirement
 SAC-5 I plan and set goals for the future
 SAC-6 I avoid impulse purchases and do not use shopping as a form of recreation

Perceived trust (PT)

- PT-1 I believe that ROSCA members are trustworthy
 PT-2 I believe that ROSCA members keep their promises
 PT-3 I am convinced that the ROSCA host will fulfill his/her obligations McKnight et al. (2002)
 PT-4 I would call the ROSCA host honest

Intention to participate in ROSCA (INT)

- INT-1 It is very likely that I will participate in ROSCA within the next 12 months
 INT-2 I plan to extend ROSCAs participation in 2025 Schmidt (2010)
 INT-3 I intend to participate in ROSCA as soon as I have money free for disposal

*Note: ® Reversed item***Appendix 2: Percentage of people with a financial institution account (%)**

	2017	2021	2022
Vietnam	30.0	-	56.1
Thailand	81.0	92.4	-
Singapore	97.8	97.2	-
Philippines	31.8	46.0	-
Myanmar	25.6	36.1	-
Indonesia	48.4	50.5	-
Cambodia	17.8	32.6	-
Lao PDR	29.1	37.3	-
India	79.8	77.3	-
Malaysia	85.1	88.2	-
World	67.1	74.0	-

Source: Work Bank (2022)