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Technology and communal culture of sharing and giving: implications on household savings behavior in Fiji

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Abstract

Purpose – This study examines how the introduction of mobile money transfers, while making it efficient and convenient to access funds, has affected rural households' savings behavior and the banking sector.

Design/methodology/approach – This study utilizes Fiji's most recent agricultural census data to model the agricultural household's saving decision. The study estimates an probit model to examine rural households' savings behavior. Furthermore, it utilizes time series secondary data to examine how funds transfer has been channeled to rural households in Fiji.

Findings – Firstly, the results demonstrate that with the mobile money transfer platform launch, the banking sector has lost substantial money previously used to pass through its system, thus losing service fees and interest income. Furthermore, the findings demonstrate that those using mobile wallet platforms to receive money are more likely not to have a savings account with the bank. Noting the cultural systems and social settings of the native households and the ease of payments via the mobile platform, they tend to spend more on consumption rather than saving, thus making these households more vulnerable during shocks such as natural disasters.

Originality/value – While mobile money transfer is hailed as a revolution, no research has yet picked up the downside to it, that of undermining the very effort by policymakers to get low-income rural households to save. Secondly, this study also highlights how mobile money transfer deprives the banking system of a significant transfer fee income and a source of funds to pool and lend to earn interest income. Furthermore, this study brings to the forefront a dichotomy about how a rural indigenous community sees the welfare and prosperity of their community much differently than what economics textbooks portray.

Keywords Savings, Technology, Communal villages, Banking, Culture, Rural household, Mobile money transfer, Vulnerability

Paper type Research paper

1. Introduction

Small developing countries are trying desperately to foster rapid growth while, at the same time, ensuring that the poor and the underprivileged can participate in this growth process so that the surplus created is widely distributed rather than concentrated in the hands of the few. The ability of people with low incomes to participate is a function of several factors, particularly their skills and education, as well as external shocks, which increase their vulnerability and thus raise their inability to participate in the formal growth-generating sector.

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To build resilience amongst the rural poor, the government has been allocating significant resources to improve rural infrastructure and raise the productive capacity of rural farming households to increase production and productivity, which, in turn, can improve their living standards. Furthermore, the government has also been encouraging savings at the national level, noting that the household sector can save the most among the three parties: corporate, government and household (Burney and Khan, 1992). Rural families are encouraged to save for several reasons, but first and foremost, personal savings provide the first call for social security during natural disasters. As Miracle *et al.* (1980) and Zeller and Sharma (2000), argue, savings can be depended upon for improving well-being, insuring against times of shock, and providing a buffer to help people, particularly in rural households, cope in times of crisis with little or no external assistance. However, without personal savings, governments move in to organize rehabilitation programs following the distribution of relief support. However, for most small developing countries, savings by rural households have been meager, and Fiji is no exception. The Fijian policymakers have been worried as the rural sector does have several channels of income flowing to it. If proper infrastructure is unavailable, this money will not be used to raise their productive capacity but will be spent on consumption expenditure.

The income channels include payment for those working off the farm in the urban areas, thus sending money to their loved ones in the rural areas, remittances from relatives abroad, land rental income collected by the trustees of the land owners and remitted to the land owners in the villages residing in the interior or the maritime areas, and payment by exporters and middlemen in the urban areas for collected produce from farmers residing in the rural areas. Land rental, produce payment and remittance income are major transfer categories. Almost all the land in the rural areas is owned by the landowning units, known as *mataqalis*. A significant proportion of this land is leased to other communities who, in return, pay annual rent to iTLTB, the trustees of the landowners. The trustees of the landowners collect this rent money and distribute it to the various *mataqalis* and their members. Intermediaries, exporters and other buyers collect produce from rural areas and farm gates and pay cash for the collected produce. Then, we have large amounts of remittance money that flow into rural households. If not saved and banked, these channels of cash income for the rural community will all be spent on consumption expenditure, thus perpetuating the poverty status of the rural poor and dependency on government assistance.

Noting the above and a surge in socially responsible banking in other developing countries (Andaleeb *et al.*, 2016), the government in Fiji, policymakers and civil society organizations have repeatedly called on rural farming households to engage in savings, particularly noting the vulnerability of these communities during natural disasters. Furthermore, noting that innovations in banking services have revolutionized how firms conduct business (Nejad, 2016), they have urged the banking sector to reach out to rural dwellers, educate them on financial literacy, develop new products and get them to participate in the financial sector.

The country's Reserve Bank has also worked with the banking system to introduce a rural banking program. With this pressure on them, the banking sector, over the past three decades, introduced numerous new technologies, commonly known as disruptive technologies (Omoge *et al.*, 2022), to improve rural connectivity and financial inclusivity, deepen the financial sector and raise savings and investment amongst poor rural households. Amongst these technologies, the expansion of mobile money transfer is now seen to ease significant issues on the demand side concerning payments, with some arguing that the current tide of innovations is more directed toward financial inclusion rather than exclusion (Nam *et al.*, 2023). While policymakers applaud this transformation to benefit the general population, particularly the rural poor, they are also concerned about how this could undermine the government's critical rural financial policy objective of promoting savings,

noting the culture and social norms of the indigenous community which is firmly rooted in communal living with sharing and giving of any surplus that is acquired or generated.

Furthermore, the banking sector also needs to be worried for two reasons. Firstly, one of the significant sources of income for banks is service fees. Prior to the launch of the mobile money transfer platform, individuals and households wanting to transfer money to their clients or loved ones transferred it via banks or currency exchange dealers. However, with mobile money transfer platforms, the banking system can be bypassed, thus resulting in a significant loss of service fee income for the banking sector. Secondly, now that the money is directly transferred to the mobile wallet of the low-income households by the sender, they may continue to keep the money in the mobile wallet rather than save it with the bank due to ease of accessibility and payments and thus a significant loss to the banks to pool money for lending at higher interest rates thus implying a loss of potential interest income. Furthermore, low-income households generally tend to have a high frequency of withdrawals, thus benefiting the banks in terms of collecting withdrawal fees (Prina, 2015). It is thus very timely that this study examines how the introduction of mobile money transfer platforms could affect the banking sector's bottom line as well as undermine the government's critical objective of promoting savings by rural households. The paper's second section provides a brief on the theoretical underpinning of economic and social welfare and prosperity in a traditional communal community vis-à-vis those who are educated, well-to-do and live in nuclear families. The third section provides a background overview of Fiji's financial inclusion strategies for people living in rural areas. The fourth section details this study's methodology, and the fifth section provides results and discussion. The last section provides a summary and conclusion.

2. Theoretical framework: classical theory of economics vs communal culture of sharing and giving

The standard classical economics theory argues that growth and development will contribute to people's welfare and prosperity. The theory argues that low-income individuals, households and farmers can only grow and develop if they save, invest, generate surplus and spend part of the surplus on consumption. The proponents of this theory argue that farmers, households or businesses must plan their production by noting the market conditions, creating a surplus, selling their surplus, saving as much surplus as possible and investing this surplus in expanding their business further. In this process, they will have a better quality of life for the current generation and, at the same time, guarantee future generations' prosperity.

This theoretical framework is acceptable for households living in nuclear families, are educated, and not subject to strong cultural and traditional norms. However, in Fiji, most indigenous communities living in the rural areas and small islands are communal and hierarchical, strongly affiliated with their extended family members, the village and the land. They live communally in villages, with all members of the *mataqali* living in one large compound with the chief's house in the middle. Each family's household size is significantly large, as a large family size is a social security measure. They have strong social and cultural bonds among their extended family members and fellow villagers. Funerals and weddings are a village affair with costs shared by all the village households rather than the affected household alone. Any income flowing into the households is generally spent on the household, social groups and other households in the village who run low on food, and a portion is passed on to the village chief as a sign of respect and the household's contribution to the chief's welfare. Those contributing regularly to the chief and chiefs' village functions and community fundraising will be given special status in the village. This, to them, is prosperity. Therefore, savings by these households for themselves only are seen as culturally

inappropriate and against the communal and social norms of the village. They can be seen as outcasts, anti-chiefs and anti-village. Defrain *et al.* (1994) noted that in a traditional Fijian village, one gains status not by amassing possessions but by giving freely to others without expecting something in return. This ***culture of sharing and giving*** has led to slow, if not stagnant, growth of the households in these traditional village settings, which has worried policymakers. Not only does this culture contribute to a loss of savings and investment by the giving party, but it also discourages the commercially minded from engaging in productive work, thus not engaging in surplus-creating activity, given that an alternative to any surplus-created will not belong to them but to the whole village. The social capital, trust, culture and the bonding of the households in a village system provide welfare and social security without any stress and worry. As children move out to work in urban areas or abroad, the money sent to one household will eventually spread to the entire village.

3. Digital revolution, financial sector development and rural banking program: a brief overview

3.1 Digital revolution, financial and banking sector growth

The rapid advancement of the commercial, industrial and service sectors worldwide has surpassed expectations due to technological advancements, transcending geographical, industrial and regulatory barriers for development in the banking and financial sectors (Liao and Cheung, 2002). The advent of more flexible payment methods and user-friendly banking services are two key achievements of this technological revolution (Akinei *et al.*, 2004). However, despite this revolution, a large proportion of the population in developing countries remains unbanked. The 2017 Global Findex report notes that while 94% of adults have a bank account in developed countries, only 63% have bank accounts in developing countries (World Bank, 2017). This is shocking because it shows that the digital revolution's benefits will only trickle down to the rich and well-to-do as they have a bank account. While mobile penetration rates have increased, they only help with payments. Financial advice and affordable credit can only be acquired if the individual is linked to a bank. Noting that the banking sector systematically assists in the mobilization of savings, which is later loaned out mainly for productive investments, if the rural poor remain unbanked, then the digital revolution will not assist in any way to leverage these households' growth and development because they are not part of the banking sector and thus can neither pool their resources via savings nor can they get affordable credit for investment or any financial advice. De Laiglesia and Morrisson (2008) argue that savings are the key to lifting rural households to a more sustainable and faster growth and development path in developing countries. Given the relatively rudimentary financial system in a small developing country's rural sector, De Laiglesia and Morrisson (2008) state that savings also allow a means for acquiring productivity-raising capital equipment passed on to future generations of farmers. Apart from these direct benefits, Bautista and Lamberte (1990) demonstrate that savings also allow complementary production inputs and serve as a conduit to technology adoption. Therefore, financial sector growth and development are binding constraints for economic growth in developed and developing countries dependent on their agriculture sector, as financial support helps raise production, productivity and technology adoption.

Fiji's financial sector consists of the Central Bank, the Reserve Bank of Fiji, six commercial banks, four non-banking credit institutions, seven general insurers, two life insurers, four insurance brokers, the lone compulsory superannuation fund, a small stock exchange with 19 listed companies, two-unit trusts, two statutory lenders, nine foreign exchange dealers, two money changers, 89 cooperatives and 21 credit unions (Reserve Bank of Fiji, 2024).

For a country with a population size of 936,375, this level of financial sector development can be considered to be very good for the country's growth and development. However, the worry

that has preoccupied policymakers is whether the financial sector would reach out to low-income families living in the interior and on the islands that lacked access to the services of formal financial institutions. To do so, the banking sector, in particular, should ensure that its products and services align with the needs of its customers across geographical space and that the customers understand these products (Tucker and Jubb, 2018). A 1999 inquiry into financial services in Fiji noted, "There appears to be an insufficient number of products and services for lower-income earners who have difficulty meeting opening or minimum balance requirements. Nor can they access certain loan products that may suit their needs, as they lack security." Ministry of Finance (1999: 10). In a 2002 study on financial sector inclusion in Fiji, Sharma and Reddy (2003) found that 69% of indigenous Fijians living in rural and deprived urban areas of Fiji do not have a convenient and secure means of managing money and may not have access to reliable banking services. Furthermore, the study by Sharma and Reddy (2003) determined the principal reasons for financial exclusion in rural Fiji were institution-led causes, for example, lack of an accessible branch or ATM, pricing, perception that banks would not provide services to lower-income rural dwellers, rather than personal factors. Similarly, a survey of the demand for rural banking services by Tebbut Research (2005) undertaken for the Reserve Bank of Fiji found that while bank and non-bank savings are low, the demand for savings services is high. This study confirmed the findings of Sharma and Reddy (2003) who found that 65% of respondents did not currently have a bank account (Tebbut Research, 2005).

The rural poor's lack of access to financial services makes them vulnerable to shocks. The 2005 World Bank Microfinance study stated, "Poor and low-income people in Fiji need access to convenient, liquid deposits protected against inflation by positive real interest rates. Savings help individuals smooth consumption expenditures in uncertain income streams and protect against catastrophic events such as cyclones that would otherwise force the vulnerable to divest productive assets. Similarly, the poor and low-income who make a living outside the formal sector of the economy need access to credit to increase self-employment and productivity or free them from exploitative financial relationships. Fijian households have relatives working away from home, in urban centers or overseas and receive periodic remittances. Transaction costs of remittances for recipients are high" (World Bank, 2005: 3).

With a meager percentage of the population having bank accounts, two approaches can be taken. Firstly, the government can derive the banking agenda by opening bank accounts for the adult population. India, for example, in 2011, noting a rate of only 35% of adults with bank accounts, embarked on a significant banking campaign. First, in 2013, the government only paid wages via banks for all civil services. As a result, 144 million new bank accounts were opened (Sen, 2023). In 2014, the government again launched a no-frills, no-minimum-balance bank account for new accounts. Within three years, this scheme resulted in 300 million new bank account holders (Cecchetti and Schoenholtz, 2017). The second approach is to push the banking sector to drive into the rural areas and open bank accounts for rural adults and children, again by waiving some of the old stringent requirements such as employment letters, salary slips and photo ID.

3.2 Fiji's rural banking program

In a 2006 paper presented at World Bank, the United Nations Development Program (UNDP) Fiji office revealed that close to 70% of the Pacific's rural population cannot access financial services (Liew, 2006). UNDP presented the rationale for launching its first-ever Rural Banking Program in 2004 in collaboration with the Australian and New Zealand (ANZ) bank. ANZ used mobile "bank" vehicles to enter deep rural areas to collect small deposits and open savings accounts, while UNDP ran financial literacy workshops.

The project was hailed as a great success as, over a short period, many individuals amongst the rural population engaged in savings. The initial value of the investment was

made possible via a grant of US$615,000 from ANZ's head office in Australia (Reddy, 2008). The team identified a fleet of 6 mobile banks, regularly traveling to 150 designated rural villages and settlements in Viti Levu, Vanua Levu and surrounding islands. The total staff in the project consisted of 20, with 12 recruited and trained specifically to provide a rural-based service that valued person-to-person contact. An essential pre-condition for making rural banking a reality in Fiji was to change the proof of identity required to open a bank account. The requirement for a driver's license, a passport and a social security card, often accompanied by a letter from an employer, effectively excluded most people with low incomes or those engaged in the informal sector and semi-subsistence living – and school children. The Reserve Bank of Fiji was very receptive to changing this to suit the realities of the rural population. A letter from the village head or district commissioner validating names and residency accompanied by another form of identity verification (school roll, baptism certificate and birth certificate) was instituted in Fiji as compliance for opening a rural bank account. The government also positively responded to its 2005 budget, announcing and implementing a 150% tax rebate to all financial institutions to extend services to rural areas (Reddy, 2008).

From its launch in October 2004 until March 2008, the program had a total deposit of US$5.0m and a total lending portfolio of US $0.65m (see Table 1). This was attained with a customer base of 62,257, who were previously unbanked rural Fijians. These groups of people were written off as non-savers and poor. Many of these were young people under 18, whom the bank staff visited their schools fortnightly to collect small yet regular deposits. Noting the success of the program, the former Prime Minister of Fiji, in his address at a Business Council Symposium, stated:

> I am pleased to report that the introduction of commercial rural banking is receiving a very good response from the indigenous community. It was launched by ANZ after I challenged the banks to extend their services to the countryside. This was consistent with our Government's frequent calls for Fijians to put some of their money aside in savings. It is difficult to do this if you do not have convenient access to a bank. The success of ANZ's service is proof that, given the opportunity, rural Fijians are ready to save from their small earnings. This gives them the capital required for entry into commerce (Qarase, 2006:1).

The initiative also sets the foundation for achieving the Millennium Development Goals. It empowers people who have been economically sidelined to accumulate the little cash they

Table 1. Personal remittances (F$m)

Year	Total remittances	Transfer channel					
		Commercial banks		Money transfer operators (FX dealers)		Mobile network operators (Vodafone and Digicel)	
Category	Total		%		%		%
2015	494.2	179.8	36.4	311.9	63.1	2.5	0.5
2016	548.6	204.9	37.3	336.9	61.4	6.8	1.2
2017	542.4	164.1	30.3	369.0	68.0	9.2	1.7
2018	577.6	156.8	27.1	407.2	70.5	13.6	2.4
2019	606.2	148.8	24.6	438.7	72.4	18.7	3.1
2020	734.9	167.7	22.8	485.1	66.0	82.1	11.2
2021	842.2	156.5	18.6	498.5	59.2	187.2	22.2
2022	1,040.8	191.4	18.4	514.5	49.4	334.9	32.2
2023 (Jan-Sep)	914.8	194.1	21.2	381.4	41.7	339.5	37.1

Source(s): Reserve Bank of Fiji (2023)

have to invest in small businesses, pay for their children's education, or meet their medical bills as and when such need arises in the future.

3.3 Current savings status and new technology

While this work has been encouraging, the latest Fiji Agriculture census results provide a worrying status on rural household savings. The 2020 agriculture census records that only 51.3% (42,751) of the farmers have savings bank accounts. Of the 42,751 farmers with savings accounts, 88.8% are male, and 11.2% are female. This data now reveals a much worse rural household savings status. Some have closed their account, or the account was dormant with no savings and thus has been closed by the bank.

This has led to questions on what is happening in the rural areas where these households are now demonstrating this behavior. Some argue that it could be due to the new technological revolution with regard to money transfers. Rural families receive a significant amount of money from their relatives overseas. Some Fiji residents have migrated overseas permanently, play rugby in overseas clubs, serve in peacekeeping missions, or are engaged in seasonal work schemes in Australia and New Zealand. They remit substantial amounts of money. In 2015, the total remittances transferred to Fiji was F$494.2m (see Table 1). This money has been passed on to households primarily via bank or money transfer agents. A total of 63.1% were channeled via money transfer platforms, 36.4% via the recipients' banks, while an insignificant amount, 0.5%, were transferred via the mobile phone platform. Sending money through the banking system allows households to save and make productive investments. However, with the introduction of smartphones and mobile money transfer platforms, we now witness a significant change in household behavior.

Over the past seven years, the percentages for the three transfer platforms have changed substantially. We now witness a significant fall in money transferred via banks, from 36.4% in 2015 to 21.2% in 2023 (January–September), while money remitted via mobile network operators' platforms increased from 0.5% in 2015 to 37.1% in 2023 (January–September). While this certainly implies a very convenient and faster mode of money transfer, it could also push people away from savings in their bank. Money held in a mobile wallet can force people to spend more on consumption, given the ease of paying via the mobile wallet. Furthermore, as alluded to earlier in this paper, the banks can stand to lose a substantial amount of income since they now lose millions of dollars as service fees, which do not hit their accounts but pass directly from one mobile platform to another. Secondly, because this money does not pass through the banking system, the likelihood of some being retained as savings, thus giving the banks leverage to invest and earn interest income, is also lost.

3.4 Mobile money transfer

While money transfer via mobile phone is relatively new to Fiji, it is gaining momentum worldwide. It presents a cashless transactional method, cost-efficient service and traceable options that improve sustainability in payment services (Hopalı *et al.*, 2022). The move toward using mobile wallets is much faster in developing countries than in developed countries because few people in developing countries have bank accounts or debit or credit cards (To and Trinh, 2021). In China, the spread of mobile payment has seen two key benefits: firstly, it has contributed to the enhancement of consumption structure within rural households, and secondly, it has played a critical role in alleviating mobility constraints and optimization of the consumption environment (Liu *et al.*, 2023).

Thus, introducing this means of money storage and transfer is a revolution in their lives. This revolution will provide pleasure and fun and thus push them to use the technology more extensively (Lee, 2005; Li *et al.*, 2005; Nysveen *et al.*, 2005; Sun and Zhang, 2006). As such, a massive shift is witnessed in developing countries as mobile companies have been pushing

for the adoption of smartphones. For example, in Vietnam, mobile wallets used by consumers increased from 37% in 2018 to 61% in 2019 (To and Trinh, 2021). However, researchers note that India's population is currently the biggest user of mobile wallets. The latest estimate by Statista (2018) reveals that the estimated value of mobile wallet transactions across India in 2021 was over 1.5 trillion Indian rupees, rising from 800 billion Indian rupees in 2017. Given such a massive shift towards the use of mobile wallets, all research thus far has been focused on how to increase the adoption of this technology, and there is no study to examine any possible adverse effects arising from its use.

4. Methodology

4.1 Data source and survey period

This study will utilize the latest Fiji Agriculture Census (FAC) 2020 data. In 2019, the survey instrument, the survey questionnaire, was designed, pilot tested and enumerators selected and trained. The questionnaire had thirteen sections: Section 1: Household Composition; Section 2: Housing Particulars; Section 3: Land; Section 4. Crops on Farm Land; Section 5: Livestock; Section 6: Forestry; Section 7: Fishing; Section 8: Aquaculture; Section 9: Climate Change and Challenges; Section 10: Equipment; Section 11: Agriculture Services; Section 12: Food Security; and, Section 13: Labor.

Fiji Agriculture Census was undertaken from 10 to 29 February 2020, covering 70,991 agricultural households in the rural sector and selected peri-urban boundary areas where agricultural activities are commonly practiced, which comprises 99.1% of the households. This was the first time that all four sub-sectors of agriculture: crop, livestock, fisheries and forestry were covered on a complete enumeration basis. For this survey, a household is defined as a small group of persons who share the same living accommodation, contribute their income and wealth to acquire certain goods and services, and share the same eating arrangement. An "agricultural household" is defined as a household where the main economic activity identified is farming, i.e. it practices any agricultural activity (such as crop, livestock, fisheries and forestry) during the reference period of the 2020 Fiji Agriculture Census (2020FAC).

4.2 Theoretical model

Determining the determinants of a household's decision to engage in savings requires modeling the farmer's and household-specific characteristics. Such quantitative relationship modeling would allow researchers to rigorously test and determine each factor's significance. Furthermore, quantitative modeling would enable decision-makers to measure the impact of individual policy responses on the direction and magnitude of change on the independent variable. To do so, the following theoretical model is specified:

$$y_i^* = Y_i = \beta' X_i + \varepsilon_i \quad \varepsilon_i \sim N(0,1)$$

$$y_i = \begin{cases} 1 & \text{if } y^* > 0, \\ 0 & \text{otherwise} \end{cases}$$

where yi* is the latent variable capturing the unobserved dependent variable. ε_i is the stochastic error term.

Noting that the dependent variable is binary, applying ordinary least squares (OLS) techniques to estimate the above model will result in inefficient estimates since the error term is heteroscedastic. Moreover, the parameter estimates will be inefficient (Goldberger, 1964; Pindyck and Rubenfeld, 1983). In addition, due to a non-normal error structure, classical hypothesis tests such as the *t*-test are no longer appropriate (Shakya and Flinn, 1985). Given

this problem, a commonly used approach in the econometrics literature is to transform the original model using a cumulative probability function in such a way that the predictions (P) will lie in the (0,1) interval for all X. Many studies exist in the literature which has utilized this model to explain the probability of adoption or acceptance by decision-makers (see Banda and Edriss, 2023; Reddy *et al.*, 1999; Yanagida and Reddy, 1998). This behavioral model accounts for a dichotomous dependent variable, such as adopting or not adopting a modern crop variety, deciding whether to open a bank account, or determining whether an individual is in poverty. There are two models that can be utilized for this type of estimation: the probit model, which follows the cumulative standard normal distribution function, and the logit model, which follows the logistic distribution. Both these models will provide the same results. This study adopts the probit probability model (which uses the cumulative normal probability function) for estimation. The probit model can be shown as follows:

$$\mathrm{Pi} = \mathrm{F(Zi)} = \mathrm{F}(\alpha + \beta \mathrm{Xi}) = \frac{1}{\sqrt{2\pi}} \int_{-\infty}^{\alpha+\beta \mathrm{xi}} e^{-x^2/2ds}$$

where P_i = probability that the event occurs;

e = base of natural logarithm;

s_i = random variable with mean zero and unit variance.

4.3 Empirical model: probit regression model (PRM)

As explained in the preceding section, the probit regression Model (PRM) was applied to determine the relationship and determinants of Savings by several explanatory variables.

$$\mathrm{Probit\,Sav_i} = \beta_0 + \beta_1 \mathrm{Eth_1} + \beta_2 \mathrm{Gen_2} + \beta_3 \mathrm{OfEmp_3} + \beta_4 \mathrm{MTMP_4} + \beta_5 \mathrm{Age_5} + \beta_6 \mathrm{Edu_6} + \beta_7 \mathrm{LA_7}$$

where:

Sav = Savings measured as 0 = not undertaking any savings; and 1 = undertaking savings.

Eth = Ethnicity measured as 0 = Indo-Fijians while 1 = Native Fijians.

Gen = Gender measured as 0 = Female, 1 = Male.

OfEmp = Number of household members employed off-farm on a full-time basis.

MTMP= Money transfer mobile platform measure as 0 = not having the M-Paisa/My Cash money transfer platform on his/her mobile phone; and, 1 = have M-Paisa/My Cash money transfer platform on his/her mobile phone;

Age = Age of the respondent measured in years.

Edu = Education measured as 0 = No schooling; 1 = Pre School/Kindergarten; 2 = Year 1–4; 3 = Year 5–6; 4 = Year 7–8; 5 = Year 9–10; 6 = Year 11–12; 7 = Year 13; 8 = Vocational; 9 = Tertiary Diploma and 10 = Tertiary Degree.

LA = Land area under agriculture measured in hectares.

The descriptive statistics of the variables are provided in Table 2 below.

A priori, the variables are expected to have different signs. The ethnicity variable is expected to have a negative sign, implying that native Fijians are more likely to not save. They are

Variables	Mean	SD	Min	Max
Gen	0.902313	0.296894	0.0	1.0
LA	2.261473	55.28968	0.800000D-06	8,890.9
OfEmp	0.594245	0.971416	0.0	5.0
Eth	0.6818	0.46570.0	0.0	1.0
Sav	0.3958	0.4890	0.0	1.0
MTMP	0.8150	0.3882	0.0	1.0
Age	43.2778	14.4967	19.0	94.0
Edu	5.2512	1.5247	0.0	10.0

Table 2.
Descriptive statistics

Source(s): Author's own creation

known to have multiple obligations apart from family commitments; thus, savings are very unlikely. For the Gender variable, females do not save as they give most of their earnings to their husbands to manage household finances. The off-farm employment variable is likely to have a negative sign implying that if a member works outside the farm, then it is pretty likely that they will have a savings account. Therefore, their parents may not see a need to have their own savings account. The mobile money transfer platform variable is expected to have a negative sign, implying that those with a mobile money transfer platform on their mobile handset will use that to carry money and not save in the bank, thus not having a savings bank account. The age variable is likely to have a positive sign, implying that older people would want to save some money for their health and last days' expenses and thus see savings in a bank as a more secure place. The education variable is expected to have a positive sign, implying that educated people may better understand the importance of savings and thus engage in it compared to older people. The land area variable is expected to have a positive sign, implying that larger farmers are more likely to have savings accounts as higher earnings could be better saved in a bank.

5. Results and discussion

The savings probit model is presented in Table 3. The results confirm *a priori* expectations, and the model is quite robust, with most of the variables being highly significant. The negative coefficient of the ethnicity variable denotes that indigenous community households are likely not to save. The marginal effects estimate of −0.716 indicates that if you are an indigenous person, there is a 71.6% likelihood of not saving. The probable explanation for this is their robust social and cultural systems where they tend to live in communal settings,

Variable	Coefficient	Standard error	Marginal effects
Constant	3.99554***	0.06078	
Eth	−3.21238***	0.02001	−0.7162***
Gen	0.05966*	0.03106	0.0055*
OFEmp	−0.02527***	0.00973	−0.0023***
MTMP	−3.45197***	0.02909	−0.6509***
Age	0.01037***	0.00075	0.0009***
Edu	0.02265***	0.00639	0.0021***
LA	−0.0006	0.0005	−0.53165D-04

Table 3.
Estimates of savings probit model

Note(s): ***, **, * ==> Significance at 1%, 5%, 10% level. Estimation based on $N = 63{,}601$

Source(s): Author's own creation

with large households and have a strong obligation to contribute towards the welfare of their extended family, village chief, and church pastor. If one household receives money, then the money is spent on the entire village community. If another household receives money later, it will be spent on the entire village community. In this way, it provides social security for the entire community. The gender variable is positive but weakly significant, indicating that males are more likely to save than females. Due to a dominant patriarchal society, most females do not receive money and thus do not have savings accounts. If they receive any money, they pass it to their husband, as that is their culture. This again calls for taking the banking product to these households and getting them to acquire an account.

The off-farm employment variable indicates that if any household member works off-farm, then it is unlikely that the Head of the household will save. The marginal effects result shows that it is 0.23% likely that if a household has members working off the farm, the Head of the household will not save. This could indicate that due to difficulty in accessing financial services in rural areas if any household member works outside the farm in the formal sector, their parents may use that channel if banking services are required. The Age and Education variable demonstrates that older and more educated people are more likely to save. The education variables can be used to justify financial literacy training on the importance of savings for family and household growth and development. The single most crucial variable of interest, the Mobile money transfer platform variable, has a negative sign and is highly significant. This implies that those households with mobile money transfer platforms are 65.1% less likely to save. They receive money via this platform, can keep it on it and incur expenses. As alluded to earlier, keeping money on this platform increases the propensity for households to spend, given the ease of payment. This leads to money changing hands more frequently, thus increasing money multipliers and contributing to economic growth. Individuals can even pay to informal sector operators. This result concerns the native community as their cultural systems, social bonding, obligation to the community, church pastor and chiefly system make saving money on mobile wallets difficult. If the money is saved in the bank, it prevents impulsive and instantaneous spending, and thus, the probability of calling upon personal savings during an external shock is quite high.

6. Summary and conclusion

This paper, noting the low savings rate of rural households, examines the determinants of the changing household savings behavior. Despite a massive rural banking drive, rural household's savings have remained low. The results point out that education makes a difference in savings and, thus, calls for launching financial literacy programs throughout the country to highlight the importance of savings to their growth and development and provide economic security during external shocks such as cyclones and floods. Furthermore, using the above results, we can argue that, should there be resource constraints, these trainings should be tilted towards females and indigenous Fijians as they tend to save less relative to males and non-native communities, respectively. The most crucial finding in this study is that with new technology, the mobile phone electronic money transfer system, households migrated from receiving money via the banking system to using this mobile platform, thus a high likelihood of not saving. As the results demonstrate, those individuals with mobile money transfer apps are less likely to save. This is concerning for both the policymakers and the bankers.

This is a cause of concern for policymakers as low or no savings in rural households make them vulnerable to cyclones, floods and pandemics. While the mobile money transfer system is very convenient, it also provides a very tempting behavior to spend rather than save. As explained earlier, the robust cultural and social system of the rural households of the indigenous communities, based on sharing and communal living systems, makes it very difficult for them to save on a mobile wallet. It is time now to explore policy options on how to

push people towards savings, perhaps linking the mobile wallet to a bank savings system with the possibility of money transfer from the mobile wallet to a bank savings account as well rather than the one-way transfer as is currently, bank to mobile wallet only. While technology has greatly helped in improving the ease of money transfer and accessibility, it has heightened another severe problem that policymakers were trying hard to solve, which is low levels of household savings. We now need to improve further the technology to address the vulnerable areas caused by the earlier development.

For the banking sector, it means a substantial revenue loss due to transferring money to recipients via mobile plants. Secondly, as they can carry money in their mobile wallets, the banks are also losing these households to save with them and engage in transactions, which is another revenue loss point. The bankers must vigorously argue why transferring money via their platform is cheaper and safer vis-à-vis the mobile wallet platform. The banking sector should also vigorously promote its mobile banking app and Internet banking platform, arguing that transferring more significant sums of money is much safer via these platforms than the mobile wallet platform. This issue is too big and can be very costly for bankers to discuss in-house. The entire banking industry needs to organize a global symposium to discuss how this can be addressed for the benefit of all stakeholders. Further research also needs to be undertaken in a number of areas to deal with the issue of increasing savings by households. Firstly, research needs to be undertaken to identify ways to reduce the cost of remittance via the banking system. Secondly, mobile wallet providers argue for greater money multiplier and, thus, more economic activity, given the ease of payments via the mobile platform. How can the banking sector change its infrastructure and mobile app to improve payments in rural and informal areas to raise the multiplier effect? Lastly, the current mobile money wallet does not allow for the transfer of money from the wallet to the bank savings account. The current IT infrastructure does not have this capability. More research and IT development needs to be undertaken to facilitate this, which can allow households to undertake savings by transferring money to their bank rather than keeping it in their wallet.

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