



Determining the potential of informal savings groups as a model for formal commitment saving devices



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Background: Saving behaviour has attracted research attention over the past 20 years. Typically, individual and household saving rates among low-income groups are inadequate. Research suggests that informal savings groups are effective vehicles for encouraging saving among low-income individuals. Yet little is known about the drivers of positive saving behaviour among informal savings groups, which makes it difficult for formal providers to design interventions that promote higher levels of saving.

Aim: This study aimed to explore both the rational and non-rational drivers of saving behaviour among low-income members of informal savings groups, the attributes of informal savings groups that positively influence their collective saving behaviour, and to identify the valued features of savings groups that encourage the adoption of informal commitment saving devices (CSDs).

Methods: The study was informed by a literature review followed by field research in which semi-structured interviews were conducted with 10 savings groups and 10 individual members of savings groups. The participants' perspectives were analysed and compared within the context of behavioural economic theory.

Results: The study revealed seven characteristics of informal savings groups that potentially serve as interventions to explain non-rational saving behaviour. It also identified seven features valued by users of informal CSDs (including flexibility, restricted access to savings and no transaction fees) which could be salient to providers of formal CSDs.

Conclusion: On the basis of the findings, a behavioural design framework was proposed to inform the design features of formal CSDs that may ensure customer retention and improved saving outcomes.

Keywords: saving behaviour; savings group; behavioural economics; commitment saving device; saving promotion intervention.

Introduction

Informal savings groups, also referred to as 'stokvels' in South Africa (African Response 2012), were born out of the country's repressive, race-based policies that restricted the economic participation of the black population. These savings groups are unregulated societies aimed at individuals who are under-served by traditional banking and non-banking financial institutions (Burlando & Canidio 2017; Dupas & Robinson 2013).

With South Africa's transition to democracy in 1994, the rational expectation was that stokvels would lose their appeal as a viable savings vehicle. However, they have not only survived, but also flourished (African Response 2020). This suggests that there must be non-rational reasons for the resilience of these informal savings groups, despite the presence of world-class financial institutions in the country.

Bounded rationality, also described as 'approximate rationality' (Simon & Herbert 1955) means that decision-makers act purposefully, but not necessarily perfectly rationally due to limitations in time, information or the cognitive ability to evaluate available information (Gigerenzer & Goldstein 1996). Whereas rational decision-making is applying logic in the cause of action towards specific goals, and irrational decision-making is the opposite of rational, non-rationality involves more realistic decision-making with bounded rationality under conditions of uncertainty (Back 1961; Gigerenzer & Gaissmaier 2015). Non-rational decision-making, best described as 'intuitive judgement' and 'choice' in psychology literature, works alongside rational decision-making (Ireland & Miller 2004; Simon 1993) to expand the motivation for saving beyond economic factors

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(utility maximisation) to psychological drivers (intuition and emotion) as well (Kahneman 2003). How these economic and psychological motivators interact in decision-making falls within the ambit of behavioural economics. Therefore, this paper is concerned with how non-rational decision-making operates alongside, as opposed to an alternative for, rational decision-making.

An informal savings group is a self-selected group of individuals who periodically contribute to the shared goal of the group (Le Polain, Sterck & Nyssens 2018). The funds collected by the informal savings groups are generally kept aside in secure storage, or in bank accounts, and distributed to members (partially, or in full) on a rotational basis (James 2015). Commitment to the group and its common goal positively influences saving behaviour, with the result that there is a low incidence of default among savings group members (Ksoll et al. 2016). So as 'commitment saving devices' (CSDs), informal savings groups have been proven to increase individual and household saving rates (Le Polain et al. 2018; Steinert et al. 2018).

Participation in informal savings groups can lead to asset accumulation and wealth creation, and reduce individuals' and households' vulnerability to unexpected financial shocks or burdens, such as the devastating social and economic impact of the coronavirus disease 2019 (COVID-19) pandemic evidenced by lockdowns, business failures and increased unemployment levels in many countries (Brewer & Gardner 2020; Karlan, Ratan & Zinman 2014). Some scholars are of the view that participation in informal savings groups encourages greater economic activity and leads to improved household welfare (Ksoll et al. 2016) and higher levels of consumption (Le Polain et al. 2018; Martin & Hill 2015). It might also help people overcome their innate resistance to saving (Steinert et al. 2018).

The ability of savings groups to attract savings from resource-constrained, low-income individuals has fuelled scholarly interest in how their positive attributes could be modelled in formal saving devices (Dupas, Keats & Robinson 2019; Le Polain et al. 2018). Nevertheless, not all informal savings groups are without risks or shortcomings. Some offer loans to members at high interest rates, which expose vulnerable borrowers to high levels of indebtedness and the group's collective savings to an elevated risk of defaults on repayments (Le Polain et al. 2018), while savings stored in cash are also at risk from theft. Regulators have long prescribed mechanisms to mitigate the risks of saving in collective mechanisms, such as bank accounts, or mutual funds. However, such formal savings mechanisms have historically not addressed the needs of those who chose informal savings groups as informal savings mechanisms. It seems that it may be desirable for providers of formal savings mechanisms to mimic elements of informal savings groups, with a view to providing users of such mechanisms, who are typically vulnerable members of society, with the appropriate product features and risk mitigation protection provided by regulated mechanisms.

A stokvel is a particular informal group savings mechanism that is similar to a rotating savings and credit association (ROSCA) (Prina 2015), such as an accumulating savings and credit association (ASCA) (Le Polain et al. 2018) or a village savings and loan association (VSLA) – both found in Africa (Ksoll et al. 2016). Similar savings facilities in other parts of the world are the *bishi* in India, the *tanda* in Latin America, the *hui* in Asia and the *gam'eya* in the Middle East (Low 1995). Yet, as savings vehicles, the efficacy of stokvels is still not well understood by the providers of formal group savings mechanisms (African Response 2012) – partially because of the generally limited knowledge of what exactly drives behaviour in the informal saving sector (Cronqvist & Siegel 2015). This is exacerbated by the superficial knowledge of scholars and practitioners alike of saving products and the behavioural interventions that encourage saving among low-income individuals (Cronqvist & Siegel 2015; Dholakia et al. 2016).

The aim of this study was to arrive at a better understanding of the rational and non-rational behavioural factors contributing to the resilience of informal savings groups, notably stokvels, as informal savings mechanisms in South Africa. The study followed a three-step approach. Firstly, it identified (from literature) the drivers of informal savings groups' rational and non-rational saving behaviour (Cronqvist & Siegel 2015). Secondly, it explored (using field research) the ability of informal savings groups to positively alter saving behaviour through various interventions (Steinert et al. 2018). Thirdly, it identified the valued features that make informal savings groups effective CSDs (Le Polain et al. 2018). According to Dupas et al. (2017), financial service providers could benefit from a better understanding of how formal CSDs might be improved to ensure a greater up-take and retention in informal savings groups, with attendant benefits. For this reason, we posit that the features of informal savings groups may inform formal CSD providers on how to provide appropriate features and protection to individuals that typically use stokvels.

Literature review

Saving behaviour in the context of behavioural economics

As indicated by Cronqvist and Siegel (2015), low saving rates can be addressed only when saving behaviour is properly understood. The concept of 'saving behaviour' encompasses more than just the financial dimensions of saving; it also includes psychological dimensions such as emotions, fear and risk perceptions, for example (ed. Ranyard 2017). Giné et al. (2018) highlight the importance of knowing what the drivers of behavioural change are, as they might affect the design of CSDs and their impact on individual and societal welfare.

Standard economic theory favours external perceptible mechanisms, underpinned by assumptions of rational economic behaviour. Friedman's (1957) well-known

permanent income hypothesis asserts that individual saving behaviour is driven by the need to balance current and anticipated future consumption. For example, individuals accumulate savings while earning an income, with the expectation of dissaving once retired. Ok, Ortoleva and Riella (2015) explain rational choice as the ability to rank alternatives according to preferences and then to choose the highest-ranking item in order to maximise utility. However, these standard economic models do not account for uncertainty when executing saving plans and only partially explain what drives individuals' saving propensities (Cronqvist & Siegel 2015; Hoff & Stiglitz 2016; Thaler 2016). In other words, under conditions of uncertainty, standard economic models of rationality will in general not suffice to explain low-income individuals' experience or their saving behaviour. The literature review therefore focused on understanding how non-rational decision-making extends rational decision-making in saving behaviour.

According to various scholars (see Table 1) concerned with non-rational decision-making explained by behavioural economics literature, the main behavioural economic concepts that influence saving behaviour are: loss aversion, mental accounting, commitment, peer pressure, present bias, lack of self-control, status quo bias, confirmation bias and social determinants. Table 1 presents conflicting scholarly evidence in respect of some of these concepts, suggesting that they can be a positive or a negative influence on saving behaviour, depending on the context. It is therefore advisable to disentangle the negative from the positive effects of behavioural economic concepts, especially to illuminate how non-rational factors better explain the propensity of low-income individuals to save in situations of elevated uncertainty.

TABLE 1: Saving behaviour in a behavioural economics context.

Concept	Saving behaviour		References
	Positive effect	Negative effect	
1 Loss aversion	X	X	Cronqvist and Siegel (2015); Gloede, Menkhoff and Waibel (2015); Imas, Sadoff and Samek (2016); Thaler and Benartzi (2004)
2 Mental accounting	X		Karlan et al. (2016); Steinert et al. (2018)
3 Commitment	X	X	Afzal et al. (2018); Bond and Sigurdsson (2018); Carvalho, Meier and Wang (2016); Galperti (2015); Laibson (2015); O'Donoghue and Rabin (2015)
4 Peer pressure	X	X	Beshears et al. (2015); Bursztyn et al. (2014); Jakiela and Ozier (2016); Kast, Meier and Pomeranz (2018); Laibson and List (2015)
5 Present bias		X	Dalton, Ghosal and Mani (2016); Jackson and Yariv (2014); Laibson and List (2015); O'Donoghue and Rabin (2015)
6 Lack of self-control		X	Bernheim, Ray and Yeltekin (2015); Galperti (2015); Giné et al. (2018)
7 Status quo bias		X	Dean, Kibris and Masatlioglu (2017); De Haan and Linde (2018)
8 Confirmation bias		X	Bénabou and Tirole (2016)
9 Social determinants	X	X	Hoff and Stiglitz (2016)

Loss aversion

According to Thaler (2015:34), 'losses hurt about twice as much as gains make you feel good'. On this basis, Thaler (2015) invoked the concept of loss aversion. Imas et al. (2016) assert that gains and losses are evaluated in relation to a reference point, which is usually the status quo. They demonstrated empirically that individuals anticipate loss aversion, basing their decisions on this expectation. In a positive sense, individuals who are extremely loss-averse will be encouraged to save more (Cronqvist & Siegel 2015) as a precautionary measure against future economic shocks.

Vulnerable, lower-income individuals and households are very aware of these adverse shocks, which prevent them from capitalising on opportunities with expected high but risky returns (Gloede et al. 2015). Conversely, loss aversion has a negative influence on savings, should a household become accustomed to a certain level of disposable income and regard anything less than that (due to saving) as a loss (Thaler & Benartzi 2004). However, this is mostly applicable to higher-income groups who are less dependent on precautionary savings and not typically reliant on CSDs.

Mental accounting

Mental accounting refers to the mental earmarking of money for a specific purpose, such as saving, to overcome a lack of self-control. It is a mechanism designed to overcome behavioural biases that inhibit saving behaviour. By mentally allocating money towards savings, the money is considered to be less available for other expenses. Karlan et al. (2016) describe mental accounting as the establishment of a strong connection between current saving behaviour and future saving goals. However, mental accounting is only possible if saving is top of mind. Therefore, reminders can serve as a useful intervention.

Commitment

Commitment is the act of binding oneself to a specific course of action. Laibson (2015) describes commitment as a restriction of one's choices. A commitment to save is a restriction of choice that follows on from mental accounting. According to Laibson (2015), commitment carries costs in the form of loss of flexibility and direct commitment product costs, which often exceed its benefits.

While low-income individuals display a strong commitment to save (Galperti 2015; O'Donoghue & Rabin 2015), they also have a heightened preference for flexibility in the face of possible income uncertainty (Afzal et al. 2018). However, a preference for flexible access to savings to ensure liquidity in the short term (Bond & Sigurdsson 2018; Carvalho et al. 2016) could be an obstacle to the accumulation of wealth through savings over the long term (Prina 2015).

Peer pressure

Laibson and List (2015) describe peer pressure as a set of social preferences that respond to incentives. Humans are

not motivated solely by self-interest, as standard economic theory suggests; they also consider other people's intentions, behaviour and actions when making decisions (Laibson & List 2015). Conventional wisdom suggests that peer pressure moves behaviour towards the norm. Thus, the majority of people wish to conform and to adopt one or other pattern of behaviour. Bursztyn et al. (2014) identified two reasons for peer pressure positively influencing saving behaviour: social learning and social utility (Bursztyn et al. 2014). In short, individuals are motivated to save when they see peers saving and when the perceived value (utility) of savings products or assets depends on a peer's ownership thereof.

However, peer pressure does not always have a positive effect on saving behaviour. In a controlled laboratory experiment on the effects of peer pressure on sharing income in rural villages in Kenya, subjects were given the choice between a private, risk-free savings account and a profitable but risky public investment. From a pure economic perspective the results were surprising – women were willing to sacrifice the profitable returns or even pay a fee to keep their income a secret from neighbours and family (Jakiela & Ozier 2016). Transparency of income and investment returns resulted in these women saving an estimated 22% less than they would have if the returns had been hidden (Jakiela & Ozier 2016). This need for income privacy suggests that it could also be costly for an individual, should their higher returns signal that they have financial means to support the community. From a non-rational decision-making perspective, this saving behaviour is less surprising.

Present bias

According to standard economic theory, rational behaviour implies that there is no difference between people's intentions and their eventual actions. However, humans often plan to act in a certain way, but then change their minds at the last minute (Laibson & List 2015). Present bias helps to explain saving behaviour. Individuals may save less if money at hand in the present is considered to be certain, whereas the benefit from available funds in the future is viewed as uncertain. According to O'Donoghue and Rabin (2015), present bias is a discounting model that functions on the timing of utility; it involves a trade-off between immediate and future utility. Yet individuals differ in their time preferences and therefore discount the value of savings at significantly different rates (Jackson & Yariv 2014).

Lack of self-control

Berheim et al. (2015) explored whether difficult economic circumstances exacerbated self-control problems and found that self-control regarding saving can be limited by low initial assets to absorb income shocks. Poverty may therefore perpetuate itself as it impedes self-control, while high initial wealth, in contrast, allows for asset accumulation and decision-making with fewer constraints (Bernheim et al. 2015). In a field experiment conducted on farmers in rural Malawi, Giné et al. (2018) found that the commitment to

save was sometimes revised only because of a lack of self-control over present biases. Individuals are often aware that they lack the self-control to follow a saving plan, which can then create a demand for CSDs to limit their choices (Galperti 2015). Literature, therefore, suggests that a perceived lack of self-control in saving could be due to either internal (willpower) or external (limited income and asset buffers) factors, depending on the context in which the individual finds themselves.

Status quo bias

Status quo bias relates to decision-makers' propensity to select a default option (De Haan & Linde 2018). De Haan and Linde (2018) warn against unintended, negative consequences in which good default options are followed by inferior ones. Enrolling in a savings scheme at the default rate allows for at least some savings to be accumulated, but there is heterogeneity in how much people are supposed to save. Consequently, the default option can lead to under-saving in some instances. By settling for the default rate, people might forego opportunities that could potentially increase their savings for future consumption.

Confirmation bias

This phenomenon typically arises when external facts become known or events occur that are consistent with beliefs, thus reinforcing such beliefs. According to Bénabou and Tirole (2016), a confirmation of beliefs boosts confidence and creates an anticipatory utility that future events will not disturb, even in the presence of contradictory information. In the context of saving behaviour, confirmation bias may prompt an individual to disregard current risks in favour of embracing saving mechanisms that are perceived and proven to be effective.

Social determinants

Hoff and Stiglitz (2016) propose that two social determinants of behaviour – social context and culture – may also influence saving decisions. Interaction with others are at the centre of this theory, which explains how influences at the moment of decision-making (social context) and more constant influences (culture) impact economic decisions and behaviour (Hoff & Stiglitz 2016).

Saving promotion interventions

Interventions are based on the assumption that economic participants act non-rationally and need to be nudged to change their behaviour to achieve a desired outcome. Therefore, interventions to change saving behaviour are expected to increase saving rates and savings balances, without removing freedom of choice.

Possibly the most well-known example in the literature of a successful saving promotion intervention, which entails non-rational nudging, is the Save More Tomorrow™ (SMarT) plan by Thaler and Benartzi (2004). Workers in the USA were offered the option of increasing their retirement saving rate

sometime in the future, but ideally with their next salary increase (Thaler & Benartzi 2004). This plan was effective for a number of reasons: it addressed present biases by postponing increased savings into the future, it mitigated loss aversion by linking savings to salary increases, and it leveraged off status quo biases by using the default option in the plan (Thaler & Benartzi 2004).

Berg and Zia (2017) conducted an experiment to test the effects of financial educational messages relayed through a popular television soap opera in South Africa. Using this medium was found to have positive effects on the financial behaviour of the study's participants because of their emotional connection to and admiration for the actors delivering the messages.

Incentives can also serve as interventions to change saving behaviour. In this regard, the effectiveness of monetary versus 'social' (non-monetary) incentives has attracted growing attention in research. In an experiment conducted on savings groups in Chile, Kast et al. (2018) found that the monetary incentive of earning higher interest was less effective than receiving stickers in recognition of achieving saving goals. The possibility that interest rates did not play a significant role in saving decisions was offered as (at least part of) the reason for these somewhat surprising results from a standard economic theory perspective (Kast et al. 2018).

Savings groups as commitment saving devices

The main purpose of CSDs is to mitigate a lack of self-control, which may lead to inadequate savings or the early withdrawal of savings (Karlan et al. 2016). A formal CSD, such as a savings (bank) account, requires either a committed amount to be saved by a set deadline or regular deposits of a selected amount until the commitment ends (Karlan et al. 2016). According to Bernheim et al. (2015), these devices are effective because they require a savings goal, restrict access to funds until the goal is achieved and provide access to funds (liquidity) once the goal is achieved.

Giné et al. (2018) assert that CSDs provide opportunities to improve the lives of the poor as they are a potentially cost-effective means of driving saving behaviour. Flexible saving devices that allow small, frequent deposits in line with the periodicity of income are particularly appropriate for the poor in developing countries (Afzal et al. 2018). Small deposits seem more affordable when income is low, infrequent and variable. Unsophisticated, easily accessible saving devices, such as lockboxes, are well suited to such a market (Dupas & Robinson 2013).

Interestingly, Dupas et al. (2019) found that access to accounts in rural areas leads to positive spill over effects in their communities, where savings are kept and spent, thus confirming that greater financial access can improve community welfare. CSDs require financial responsibility

and, if observed by peers, the demand for these devices rises and savings increase (Exley & Naecker 2017).

The main constraint to the uptake of formal CSDs is the opposing needs for flexibility and liquidity. Therefore, the trade-off between the preference for flexibility and liquidity needs to be considered in the product design (Galperti 2015). Other constraints identified by Dupas et al. (2019) in a study conducted in rural Kenya were high transaction fees and a lack of trust in financial institutions.

Informal savings groups can be regarded as CSDs because they have similar features to formal, commercial savings products. However, an informal savings group is distinctive in that it is accessible and effective in mobilising savings among low-income groups in developing countries. Literature states that model CSDs should offer flexibility, liquidity and low transaction fees, and should be trustworthy places for storing funds. The popularity of savings groups (Le Polain et al. 2018) suggests that they possess some of these features, which could be replicated to increase up take and customer retention in alternative CSDs to benefit financial service providers (Dupas et al. 2017). The study probes this assumption by empirically investigating whether stokvels possess the requisite features of a model CSD, which might help to explain their large following in South Africa, alongside formal CSDs.

Methodology

Informal savings groups operate in the informal economy; thus comprehensive statistics on the total population of savings groups in South Africa are unavailable. An exploratory, qualitative study was therefore conducted, using semi-structured interviews on two levels. The study focused specifically on how behavioural biases influence the decision-making in saving groups and analysed the design and composition of savings groups from a behavioural perspective.

Level 1 interviews took place in focus groups (each group comprising about 14 participants) with 10 different informal savings groups (representing 296 members). They set out to answer the following research questions:

- Research question 1: What drives the saving behaviour in lower-income informal savings groups?
- Research question 2: What inherent characteristics of members in informal savings groups serve as natural saving promotion interventions?

Level 2 interviews were conducted with 10 individual members of different informal savings groups. They set out to answer the following research questions:

- Research question 2: What inherent characteristics of members in informal savings groups serve as natural saving promotion interventions?
- Research question 3: What features of the structure of informal savings groups are valued and should be replicated in formal CSDs?

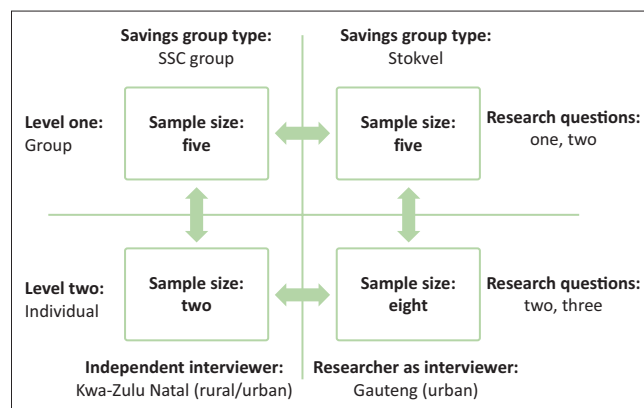
This multilevel approach to data collection was adopted to exploit benefits of each interview type and to compensate for its limitations (Brewer & Hunter 2006). The overlap in data collection for the second research question was intended to corroborate the data from two independent sources (Myers 2013) as a form of triangulation.

The selection of specific informal savings groups was purposive to ensure a diverse combination of views. According to Patton (2002:243), common themes emerging from a diverse sample 'cut through the noise of variation' and afford the researchers greater insight from the perspectives obtained. For this reason, each set of 10 interviews was divided into traditional stokvel savings groups and SaveAct savings and credit (SSC) groups. Interview participants had different cultures and home languages and resided in different provinces.

Level 2 participants were selected from the researchers' own contacts, from the latter's recommendations of other individuals and from the SSC database. Hence, a combination of purposive and snowball sampling was used. Mixed-methods sampling is a form of triangulation aimed at strengthening a study by obtaining different, information-rich perspectives (Patton 2002). The first eight interviews were conducted with individual members of stokvel savings groups and the last two were conducted with SSC group members.

According to Gaskell (2000), data should be gathered until no new patterns emerge from the data and thematic saturation is reached. In this study, the data collection from the savings group interviews approached thematic saturation after 10 interviews. The decision to extend the Level 2 interviews to include SSC groups was made when the researchers realised that data saturation was imminent. Despite the change in the type of informal savings group, few new insights were obtained in the ninth interview, with data saturation almost reached during the tenth interview. It was, therefore, apparent that the insights of individual participants from different types of savings groups did not differ significantly.

The interviews with the informal savings groups and individual members located in the province of Gauteng were conducted by one of the researchers in English, while the interviews with savings groups and individual members located in the province of KwaZulu-Natal were conducted by SaveAct's fieldworkers in isiZulu, one of South Africa's 11 official languages. This was to obtain rich data in the participants' home language and to reduce interviewer bias, thereby enhancing the trustworthiness of the data. As far as possible, interviews were conducted in a location close to the participants, such as a member's house or a community space, to ensure the neutrality of the interview environment. Figure 1 provides a matrix of the triangulation strategies adopted to ensure the data quality.



SSC, SaveAct savings and credit.

FIGURE 1: Triangulation strategy matrix.

The interview data retrieved from all the interviews were analysed in a similar fashion, using a 15-point checklist of criteria for the purpose of thematic analysis, as proposed by Braun and Clarke (2006). Themes emerging from the interview data were compared and contrasted, the findings interpreted and conclusions drawn (Yin 2016).

We acknowledge that the generalisability of this qualitative study's results cannot be assured by nature of the methodology and that additional limitations to the study exist. Despite the triangulation strategy, limitations such as researcher bias, time horizon of the study, cultural differences and lack of gender diversity in the sample groups remain. These limitations are discussed in more detail in the conclusion section.

Findings and discussion

Although not without shortcomings (Afzal et al. 2018; Greaney, Kaboski & Van Leemput 2016), informal savings groups are widely credited to be effective saving mechanisms (Burlando & Canidio 2017; Kast et al. 2018; Ksoll et al. 2016). In this regard, the findings from this study were illuminating.

Drivers of saving behaviour in savings groups

Any study on economic behaviour should start by considering the aspect of rationality, in line with standard economic theory. This study identified two key drivers of rationality in the context of informal savings groups: preferences and optimisation. All the savings groups revealed clear preferences in terms of their saving purpose, operational procedures, membership requirements and formal meeting proceedings, and these were well defined in their rules or constitutions.

The study's findings supported the notion of well-defined preferences driving rational decisions, according to standard economic theory (Thaler 2016). However, it was beyond the scope of this study to determine whether the highest-ranking preference (Carvalho et al. 2016), or the optimal preference in the best interests of the group, was always adopted. The informal savings groups also demonstrated rationality

through optimisation (Thaler 2016) by taking the initiative to save in the first place (Greaney et al. 2016; Ksoll et al. 2016; Le Polain et al. 2018) and, through bulk buying, to leverage off economies of scale. One of the groups explained:

‘The reason why we decided to form this group is that we can’t do things on our own as people, but if you team up with the others and put together our money, you are even able to borrow money for a sizeable amount and do big things that you would not have been able to do yourself.’ (We Are Doing group)

The informal savings groups earned interest on amounts accumulated in bank accounts (stokvel groups), or on loans offered to members (SSC groups), or they saved on bank charges (SSC groups) by not using bank accounts. However, the informal savings groups did not pursue the best available options in terms of interest rates, or safe places to store their funds, despite of being aware of and having access to them. Contrary to standard economic theory, grounded in rationality through optimisation (Thaler 2016), the informal savings groups nevertheless expressed a *belief* that they had chosen the best options in the circumstances. Therefore, savings groups try to achieve optimisation, but they do not necessarily succeed in the way that an objective, economically rational man or woman would.

Optimal choices are based on unbiased beliefs (Thaler 2016), which may partially explain why optimisation was not achieved in all the saving decisions made by the informal savings groups in this study. Biases identified in the savings groups’ saving decisions were: status quo bias, viewed as negative in the literature (Dean et al. 2017; De Haan & Linde 2018), confirmation bias, also viewed as negative in the literature (Bénabou & Tirole 2016), and loss aversion, primarily viewed as positive in the literature for low-income groups (Cronqvist & Siegel 2015; Imas et al. 2016; Thaler 2015).

Determining whether the identified biases, individually or collectively, had positive or negative effects on savings groups’ saving behaviour was beyond the scope of this study, and thus no empirical inferences can be made in this regard. However, the mere presence of these biases seems to indicate that they played a role in driving non-rational saving behaviour in the savings groups, as indicated in earlier scholarly works.

Present bias is associated with a lack of self-control and the need for instant gratification (Jackson & Yariv 2014; Laibson & List 2015; O’Donoghue & Rabin 2015), and is arguably the most frequently cited bias in saving behaviour analyses. This study set out to determine drivers of saving behaviour at the savings group level, although the results seem to indicate that present bias does not play a role at this level. However, individual members stated that their present bias or need for instant gratification on a personal level was mitigated by saving through a savings group. This was also given as the main reason for joining a savings group in the first place.

The fourth and final identified driver of saving behaviour in informal savings groups was social influences – more

specifically, relationships and culture. Savings group members met regularly and were in close contact with one another between meetings, contributing to their social capital. As the Ariel group explained:

‘We communicate with each other, we have a relationship. We console each other, we are together and we are helping each other. We are family.’

While Hoff and Stiglitz (2016) propose that social context and culture are two social determinants of behaviour, they add that there is a lack of evidence as to whether these behavioural determinants have a positive or negative influence on saving. This study found that relationships and culture seem to positively influence saving behaviour in the context of savings groups.

The findings in respect of Research question 1 suggest that informal savings groups’ saving decisions are driven by both rational and non-rational behaviours. Figure 2 provides a high-level overview of these findings.

Table 2 illustrates the coherence between the responses of the two types of groups (stokvels and SSC groups). It shows the number of groups (out of five) that responded positively in terms of the four drivers and their sub-categories.

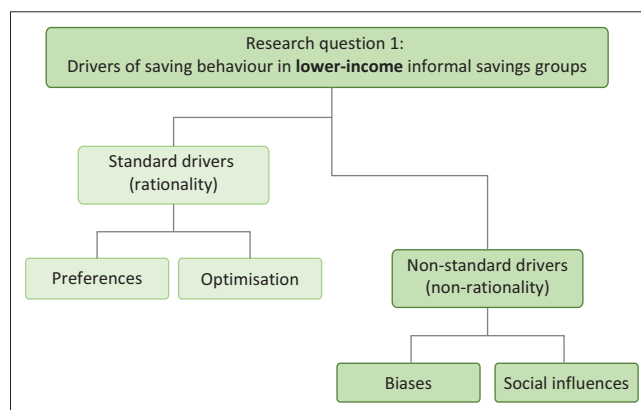


FIGURE 2: Overview of results: Research question 1.

TABLE 2: Overview of drivers of saving behaviour.

Drivers	Categories	Stokvels	SSC groups
Preferences	Saving purpose	5	5
	Operations	5	5
Optimisation	Saving	5	5
	Bulk buying	5	n/a
	Interest earnings	2	5
	Saving on charges	-	5
Biases	Status quo bias	4	5
	Confirmation bias	5	5
	Loss aversion	5	5
	Present bias	-	-
Social influences	Commitment to others	5	5
	Culture	5	5

SSC, SaveAct savings and credit; n/a, not applicable.

From an empirical point of view, the success of savings groups seems to indicate that behavioural change occurs through the mechanism of non-rational saving behaviour. The findings in respect of Research question 2 are discussed next.

Saving promotion interventions embedded in informal savings groups

As discussed, the ability of members of informal savings groups to change their behaviour was demonstrated in the findings on present bias in relation to Research question 1. Saving as part of a group also seemed to resolve individuals' lack of self-control when trying to save on their own. This is consistent with literature which indicates that awareness of present bias mitigates its effects (Kuchler & Pagel 2020).

Research question 2 was answered through the identification of seven possible saving promotion interventions embedded in the characteristics of informal savings groups: trust, discipline, peer pressure, mental accounting, commitment to others, emotion and incentives. Individually, none of these interventions may be considered a new contribution to literature, but the combination of interventions provides a means of bridging the theoretical gaps identified.

The range of interventions was identified by two independent sources: savings group participants (Level 1) and individual participants as members and consumers of informal savings groups (Level 2). However, the findings revealed that the two levels of participants attached different meanings to the interventions. These are compared and contrasted in Table 3.

Of interest is the coherence between the two levels of participants in terms of the discipline, peer pressure and commitment to others as interventions (shown as '*' in Table 3). For these three interventions, savings groups and individual members agreed on some aspects relating to how they operate. The discipline to save was achieved through rules and the strict enforcement thereof. Groups

TABLE 3: Comparison of levels 1 and 2 responses: Research question 2.

Intervention	Level 1: Savings groups	Level 2: Individual members
Trust	1. Rules and controls 2. Transparency	1. Proximity of members -
Discipline	1. Rules and controls 2. Enforcement† -	1. Rules and controls† 2. Enforcement† 3. Accountability
Peer pressure	1. Force/Push† 2. Group consensus	1. Force/Push† 2. Comparison to others
Mental accounting	1. Budgeting and planning -	1. Top-of-mind 2. Reminders
Commitment to others	1. 'Have to' mentality† 2. Communal obligation 3. Rules and controls	1. 'Have to' mentality† 2. Expense/Insurance -
Emotion	1. Love 2. Respect 3. Encouragement	1. Motivation 2. Excitement 3. Satisfaction
Incentives	1. Help in need 2. Women empowerment 3. Independence	1. Problem-solving 2. Emotional sharing 3. Advice

pushed members to save and an obligation or a 'have to' mentality was instilled in them.

A pattern of 'force' (as opposed to 'choice') emerged from these findings, which suggested two possible categories of interventions: 'hard' interventions (including discipline, peer pressure and commitment to others) and 'soft' interventions (including trust, mental accounting, emotion and incentives). Hard interventions seemed to require a certain level of force to instil positive saving behaviour, while soft interventions relied on a more indirect approach to bring about the same result. However, neither the relative importance of hard and soft interventions, nor the relationships between them, were established as part of this study.

While behavioural economic theory uses the term 'commitment' broadly in relation to saving behaviour (Laibson 2015; O'Donoghue & Rabin 2015), the findings from this study indicated that a more appropriate term in the context of savings groups might be 'commitment to others', meaning a member's obligation to fulfil their duties or promises to others. In other words, scholars should investigate how individual commitment to an informal savings group improves individual commitment to save. Such an understanding might illuminate features of informal CSDs that may be salient to providers of formal CSDs, with consequentially benefits for low-income individuals.

Features for replication in alternative commitment saving devices

Concerned with getting the best outcomes for themselves as consumers of saving devices, individual members of savings groups were considered to be in the best position to advise on the most valued features of such devices. Flexibility and effectivity (refer Table 4) emerged as the most valuable 'soft' features of informal savings groups, in line with the extant literature on requirements for CSDs (Afzal et al. 2018; Giné et al. 2018). Members viewed flexibility as freedom of choice in terms of their saving purpose, the use of funds saved and the affordability of periodic saving contributions. This freedom of choice is exercised at an individual level by switching between informal savings groups after a completed saving cycle. Individual participants also expressed the need for five 'hard' product features in CSDs: access to the savings device in the first place, restricted access to their savings, liquidity, low or no transaction fees and interest earnings during the saving cycle. These features are presented in Table 4.

TABLE 4: Overview of results: Research question 3.

Soft features	Hard features
<ul style="list-style-type: none"> • Flexibility <ul style="list-style-type: none"> ▪ Affordability ▪ Freedom of choice • Effectivity 	<ul style="list-style-type: none"> • Access to savings device • Restricted access to savings • Liquid funds • Low or no transaction fees <ul style="list-style-type: none"> ▪ Bank charges ▪ No costs of compliance • Interest

Note: Research questions 3: Valued features of informal savings groups to be replicated by formal commitment saving devices.

The desire for restricted access to savings (Bernheim et al. 2015) and also liquidity appear to be juxtaposed. However, this anomaly is a reality for consumers in low-income groups who have to balance the need for restricted access, in order to mitigate self-control problems, with the need for liquidity in case of emergencies (Galperti 2015). Participants seemed to value the ability of savings groups to get this balance right.

Responses also revealed that savings were restricted over the short term, long enough to build up a sizable lump sum, but not too far into the future for the restriction to be regarded as paternalistic. In emergencies, participants were assisted with either short-term loans from their savings group or one-on-one loan arrangements with other members.

Transaction fees can be a deterrent to saving through a formal CSD (Dupas et al. 2019). Both the informal savings groups and the individual members seemed to be strongly opposed to transaction fees and appreciated the fact that their informal savings groups did not charge any fees, except for avoidable fines. The findings on the value of interest earnings were somewhat ambiguous (Kast et al. 2018), with participants revealing a possible status quo bias in this regard. A pattern emerging from the responses was that participants valued the interest-free option that their savings groups offered them at the time of the interviews (status quo) and disregarded other potentially better options. For this reason, interest-free was considered a valued feature, but possibly less important than the other hard features in the context of CSDs.

This study clearly supports the literature on the desired features of CSDs in general. With all these features considered to be present in savings groups, it is suggested that stokvels can be regarded as model CSDs. With the research questions having been answered, the findings in respect of these groups' saving behaviour, specific interventions and valued features as informal CSDs were combined to create a proposed behavioural design framework. This is discussed now.

Proposed behavioural design framework

The research findings revealed that there are lessons to be learnt by both informal and formal CSD providers about the viability of savings groups acting as effective saving devices. For both informal providers and formal providers alike, the key insight is that incorporating elements of soft and hard features has different effects on behaviour as indicated in the behavioural design framework for CSDs (see Figure 3).

Figure 3 illustrates the following design dimensions for CSDs, based on the research findings:

- **Quadrant I:** Participants identified five valuable features of CSDs that should be incorporated into the product design to attract customers. It was noted that the 'interest' feature generally refers to 'interest free', except in exceptional circumstance relating to deviations from group norms by individual members. These features are also expected to enhance saving behaviour once product interventions have been successfully applied.

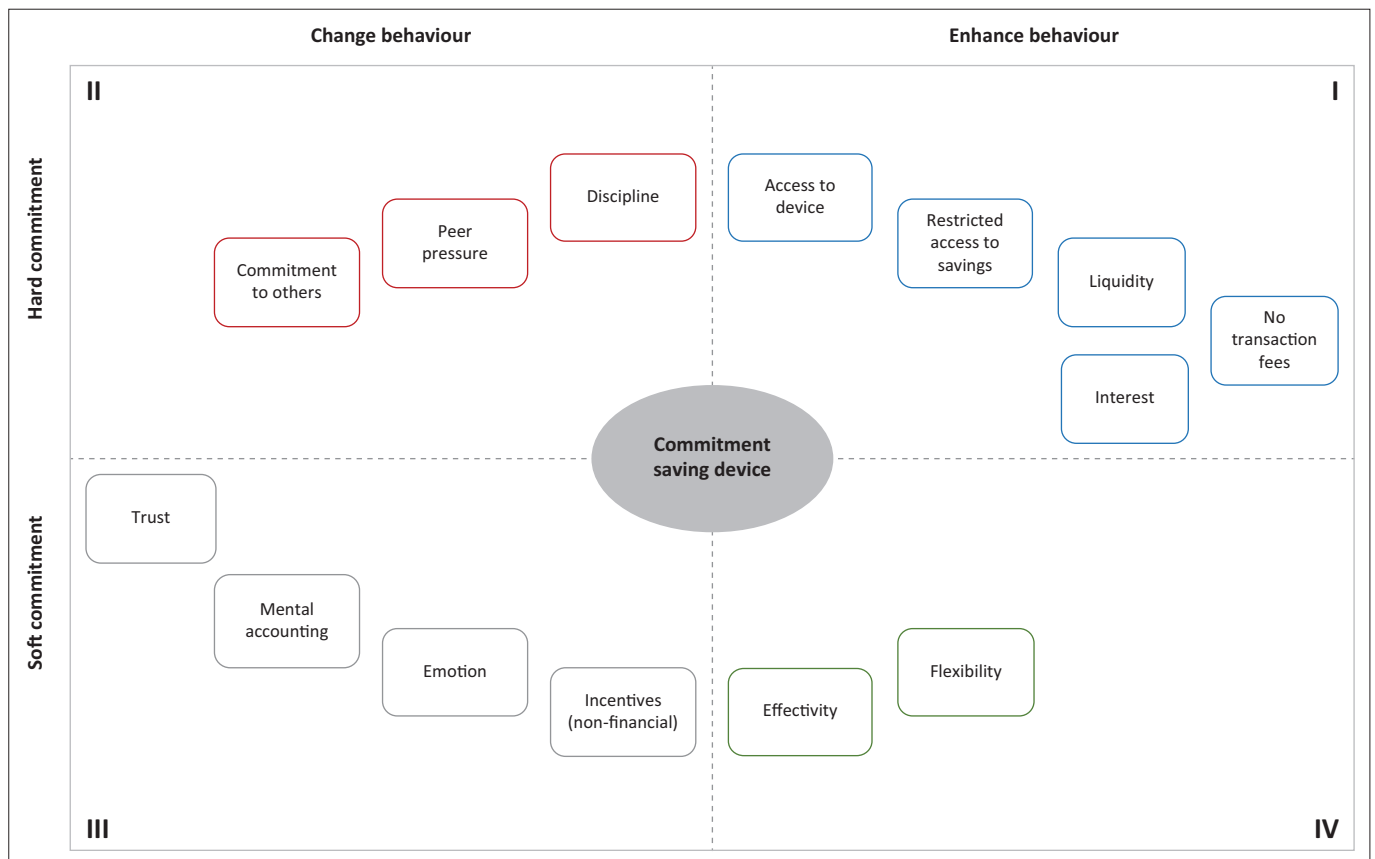


FIGURE 3: Behavioural design framework for commitment saving devices.

- Quadrant II: Three interventions were found to be the most powerful drivers of change in saving behaviour. Participants acknowledged their non-rational decision-making from time to time and required these features in order to save consistently. All are regarded as hard commitment features because they rely on force, rules, penalties or terms and conditions (T&Cs) to function effectively.
- Quadrant III: Soft commitment interventions use an indirect approach to changing saving behaviour by focusing on customers' mind sets and perceptions.
- Quadrant IV: The qualities of flexibility and effectivity in CSDs are often only perceived once a customer has used a product for some time. These qualities are therefore important for retaining customers.

Even though this behavioural framework is meant for general application, it is based on the informal savings group model. Therefore, its effectiveness will be enhanced if consumers have access to a savings network or savings support group. Ultimately, the framework suggests ways to make the uptake of formal CSDs and saving decisions easier, while making withdrawals of savings more difficult.

Conclusions and recommendations

Using stokvels as a referent, this study has provided revealing insights into the saving behaviour in informal savings groups and their role as model CSDs. In probing the specific drivers of saving behaviour (Research question 1), the study revealed both standard (rational) and non-standard (non-rational) drivers. Rational drivers were preferences and optimisation, while non-rational drivers were biases (e.g. status quo bias and loss aversion) and social influences (e.g. relationships and culture).

The study also revealed a number of saving promotion interventions embedded in the characteristics of informal savings groups (Research question 2), including trust, discipline, peer pressure, emotion and incentives, which could potentially change saving behaviour for the better. One of the general themes emerging from the responses was that being part of a group instilled a sense of discipline that would not necessarily have been present, had participants not been forced (even in a subtle way through the concept of group commitment) to abide by the rules of the group. In appraising the most valued features of informal savings groups (Research question 3) which may warrant replication in formal CSDs, the study identified both 'soft' and 'hard' features. Hard features included access to the savings device in question, restricted access to savings, liquidity and no transaction fees. Soft features comprised flexibility and effectivity.

In several respects, the study's findings support the behavioural economics literature, while also adding new insights into the behavioural aspects of informal savings groups as model CSDs that expand on existing theories and studies. Within the context of savings groups, the findings

revealed drivers of positive saving behaviour, seven possible interventions to change saving behaviour for the better, and seven valuable features of effective CSDs. Moreover, the collective research findings were combined to create a proposed behavioural design framework for CSDs, incorporating these elements to help product developers design new saving devices or enhance existing ones.

The recommendations flowing from the insights obtained during the study are two fold.

Firstly, low-income customers should not be underestimated. Participants in this study were assertive and expressed their wants and needs clearly and without hesitation. Their respective saving purposes were clearly defined, they ran household budgets, and were creative and resourceful when it came to stretching their income. Business practitioners would therefore be well advised to conduct in-depth research to better understand the lived experiences of customers in the low-income bracket (Martin & Hill 2015).

Secondly, products and services need to strike a comfortable balance between affordability and effectivity – in other words, value for money. Low-income groups are very sensitive to income shocks and need to allocate their limited income carefully to 'make ends meet' (Le Polain et al. 2018; Martin & Hill 2015). This is evident from the rising popularity in zero-fee bank options offered by digital banks such as TymeBank in South Africa. Businesses are therefore advised not to plan marketing campaigns that rely mainly on push strategies without understanding the market. Such campaigns are generally not well received and could even damage the brand.

Any successful formal CSD offered to the market will be a compromise between what consumers want and what the product developer can offer, given its resource constraints. To serve low-income markets well, businesses need to be resourceful in their design thinking so that they can deliver affordable and effective savings products. Applied behavioural economics has demonstrated that having a significant impact is not necessarily dependent on a substantial (administrative) investment in product design or financial incentives (Tantia, White & Wright 2015).

Limitations of the study and future research

As this was an exploratory, qualitative research study, the generalisability of the results cannot be assured. Other limitations of the study, in terms of its particular methodology and scope, are as follows:

- Researcher bias: One of the main risks associated with qualitative research is the potential for bias on the part of the researcher(s), which may affect the results. In this study, the researchers recognised this possibility and steps were taken to mitigate this risk by introducing external interviewers into the data collection process.

However, the possibility of some bias in the areas of data collection and analysis cannot be ignored.

- **Time horizon:** This study was cross-sectional in nature, as interviews were conducted at only one point in time during 2018. However, human behaviour is subject to change and thus no inferences can be made about the transferability of identified behaviour into future periods (Williams 2007).
- **Cultural and language differences:** Since most interviews in the study were conducted in English, certain meanings and nuances might have been lost or misinterpreted due to the cultural and language diversity among participants.
- **Limited diversity of the sample group:** Data collection in the informal market presents unique challenges as connections need to be established and relationships built in order to gain access to participants. For this reason, the researchers had to rely on external assistance to arrange focus group interviews which, to some extent, limited the diversity of the sample selected.

The study highlighted a number of areas that would benefit from further research:

- It should be empirically determined whether identified biases have positive or negative effects on saving behaviour in CSDs.
- The relative importance of hard and soft interventions, as well as the relationship between them, should be investigated.
- In the absence of any immediate plan at policy level to bring about a step change in the lives of the poor (especially in the wake of COVID-19), informal savings groups will continue to play an important role in South Africa. Participation in informal savings groups does, however, span all income groups, although the saving purpose seems to change as income grows (African Response 2012). For example, those in a reasonably healthy financial situation might see an opportunity to create longer-term wealth, without the costs typically associated with more formal financial services. Future research should therefore explore the point on the income growth scale where members no longer regard informal savings groups as effective and decide to leave permanently.
- The proposed behavioural design framework (see Figure 3) should be tested in a series of experiments to determine the optimal combination of interventions and features that may increase the effectiveness of formal CSDs. The importance of each intervention and feature relative to the others should also be tested under different scenarios.

These additional areas of research will generate important new insights into the saving behaviour of low-income groups, which will help to inform the optimal design of CSDs for this particular market. Catering to this particular market calls for sensitivity to people's varied needs and constraints, as well as an appreciation of the pivotal role that savings groups, notably stokvels, currently play and will continue to do in helping many people in South Africa to manage their finances in a responsible and confident manner.

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Competing interests

The authors have declared that no competing interest exists.

Authors' contributions

The first author produced an MBA research report under the supervision of the second author. In producing the research report, the first author was guided through the entire research process and was assisted to gain access to respondents otherwise difficult to reach. The second author contributed to the drafting of the manuscript including co-developing the main conceptual framework titled 'Behavioural design framework for CSDs'. While the authors conceptualised the manuscript together, the second author took the lead in the drafting and finalisation of the manuscript. This entailed paring down a broader research report with several research strands into a more targeted argument. This also involved the final copy edit for this publication.

Ethical considerations

This article followed all ethical standards for research without direct contact with human or animal subjects.

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Data availability

The researched was informed by qualitative research interviews. The interview transcript is available on request from the authors, but such transcripts will be provided without identifiers.

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