Social networks, the banking supply chain and financial inclusion in South Africa: A Framework

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Abstract

This paper describes an approach and framework to gain an understanding of how social networks can be utilised to improve financial inclusion. The nature of the financial inclusion problem requires an understanding of several areas in order for relevant frameworks to be developed and empirical studies to be conducted. Therefore a literature review of these areas was conducted to show linkages between them as well as the limited literature related to banking. The literature has been positioned within a banking supply chain framework to demonstrate relevance to possible solutions to the problem of financial inclusion.

Key words: banking, supply chain, social networks, financial inclusion, bottom of the pyramid

Introduction

Financial inclusion at the Bottom of the Pyramid (BOP) is a focus of governments and businesses in emerging economies. Chaia et al (2009) estimate the size and characteristics of the global population that are excluded from formal financial services: 50% of the global population do not use formal financial services to save or borrow; 88% of these are based in Sub-Saharan Africa, Asia and the Middle East; and of the 1.2 billion adults in these markets 67% live on less than $5 per day.

Developing economies in particular face challenges of, inter alia, poverty alleviation, education, healthcare and the provision of basic infrastructure (Ngwane et al, 2001). Many governments are thus increasing aid to the poor by paying social grants which reduces poverty. In South Africa, however, it can be argued that this is contributing to the creation of a welfare state, one in which the government will be expected to continue to provide for the largely rural poor. Given the limited number of economically active individuals contributing to the national tax base this is unsustainable in the long term.

Improving access to formal financial channels by fostering economic development will theoretically allow the poor to become (more) economically involved and ultimately self-sustainable, thereby reducing their reliance on a welfare state. Successful examples of this have been implemented in India and Bangladesh (e.g. Grameen Bank (Yunus, 1999)) using microfinance and group lending models. Improving financial access is thus one of four policy priorities of the South African National Treasury (2011).

The Mzansi "no frills" bank account aimed at the BOP has proved unprofitable due to the use of traditional costly bank channels. A reassessment of banks' supply chains to address affordability and accessibility issues inherent in serving the BOP is thus required.

Financial inclusion has been defined by the Rangarajan Committee Report (2008) as "the process of ensuring access to financial services and timely and adequate credit where needed by vulnerable groups such as weaker sections and low income groups at an affordable cost." Savings, insurance, and payment and remittance mechanisms are also relevant, and affordability and accessibility of these products are fundamental to their uptake by the poor. Futhermore, Friedman (2001) found that those on the margins of society, such as welfare recipients and those at the BOP tend to be "isolated and marginalised from the active life of the community … [and] … face obstacles in building the networks and relationships so critical to their survival and success".

Theoretical and empirical research that can be applied to the problem of improving access to formal financial services by the poor has been conducted in several areas. Areas pertinent to banking include research in the following areas: bottom of the pyramid; revenue management, with linkages to distribution, pricing and CRM; product positioning; supply chain; network theory including social, financial and economic networks, with intermediation and electronic payments; social engineering; financial engineering; financial intermediation; value chain, including the demand chain; balance sheet capacity and risk management; risk minimisation; microfinance; network optimisation using game theory; organisational models; and microeconomics, amongst others.

Supply chain in financial services

Supply chain theory and practice is generally focused on organisations and industries that manufacture and sell physical product. Some articles include the demand chain in the definition of supply chain; others deal with the concept of a value chain that incorporates both the supply and demand chain concepts (Walters et al, 2004). Definitions of supply chain also differ slightly across the literature. Value chain can be defined as "a tool to disaggregate a business into strategically relevant activities. This enables identification of the source of competitive advantage by performing these activities more cheaply or better than its competitors. Its value chain is part of a larger stream of activities carried out by other members of the channel – suppliers, distributors and customers" (Brown (1997) in Walters et al (2000)). The supply and demand chains are integral parts of the value chain, and the latter can be maximised by combining supply chain capabilities with demand chain effectiveness (Walters et al, 2004).

There is limited research on supply chain in the financial services space, with most literature focusing on financial supply chain management i.e. the financial funding of a supply chain that involves physical product. A banking supply chain, however, includes both the supply side and demand side elements of the overall banking chain. It therefore involves the end to end process of sourcing funds, managing those funds, disbursement of funds to, and collection from, customers. These activities can be conducted directly by the bank or indirectly through its intermediaries or agents. Physical distribution of cash involves logistics and delivery mechanisms, and also includes the impacts of operating within a highly regulated industry. The banking supply chain includes balance sheet and risk, channel and distribution, customer, product, analytics, technology, people and process management.

The use of electronic channels lowers investments in infrastructure and hence transaction costs, which make these more affordable to the poor. Currently used e-channels include internet, card and other payment and remittance systems. The latter two are particularly relevant to developing economies, where cellular telephone penetration is significantly higher than that of financial services and can therefore be

used as a delivery channel for financial services. According to Eighty20 (2010) 82% of South Africans earning less than $3 per day have access to a cellular telephone. It has been shown that cellphones can be used to meet social, business and service needs (Jones, 2010).

Social networks in financial services

Social networks can be used on supply and demand sides of the banking supply chain for sourcing of funds and product development; for financial intermediaries acting between the supply and demand sides as part of the overall value chain, and for demand side requests for relevant products including credit. Mechanisms to achieve these objectives include the use of social media, the internet and other electronic channels. For the purposes of this paper, technology-enabled social networks have been restricted to the use of the internet for sourcing funding for onlending to customers. Technology availability and acceptance by customers at the BOP is generally limited and hence technology-enabled social networks will not be considered for the demand side of the banking supply chain.

Network theory literature has focused mainly on structures, relations and outcomes, while tending to overlook process issues (Parkhe et al, 2006). Artificial neural networks have been used to identify four categories of financial products on the supply side of financial inclusion, and five different sources of borrowings on the demand side (Nagadevara, 2009). In this study, factors influencing savings instruments are classified as supply side, and factors influencing borrowings are classified as demand side. This study therefore considers a subset of banking products in parts of the banking supply chain.

Granovetter (1985) and others (including, inter alia, Uzzi (1996), Gulati et al (2000), Ormerod et al (2001)) have explored the importance of personal relationships in business transactions. It has been empirically demonstrated that social networks can reduce transaction costs in a supply chain and also that relationships can reduce some risks, although risks such as fraud and collusion, however, cannot be reduced (Wakolbinger, 2007).

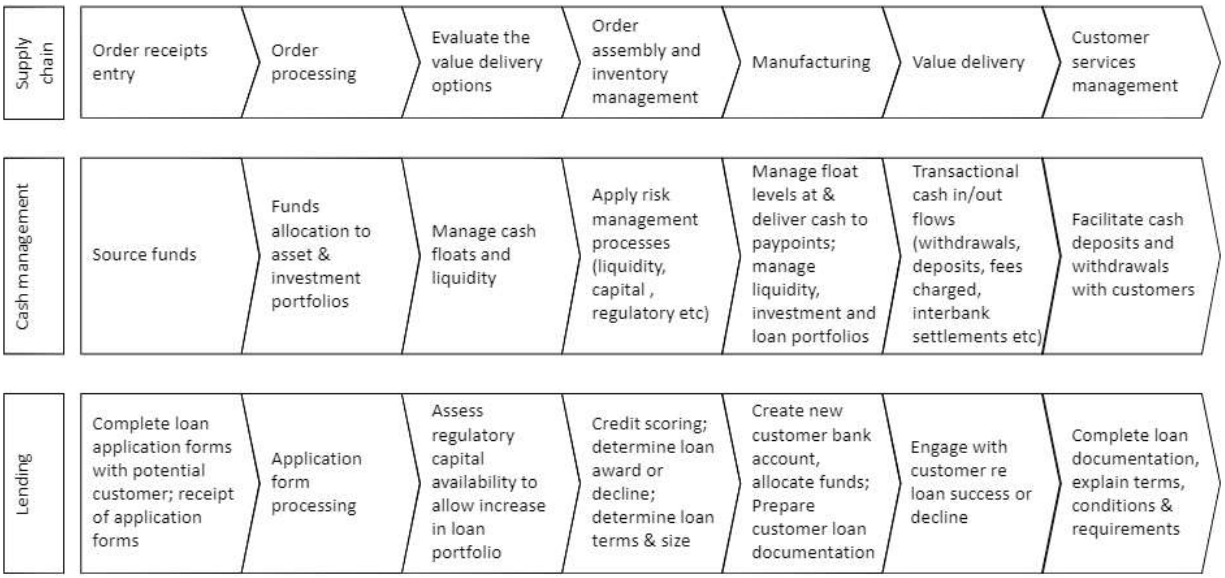
Social network analysis involves mapping and assessing relations between a group of actors, and can represent communication, the exchange of goods or services among actors representing individuals, organisations or countries (Scott, 2000). Social network analysis theoretically can be applied within and between actors in a supply chain, at an organisational and inter-organisational level. It can be used to manage relationships between participants in the banking supply chain, including those with intermediaries, with or without the use of technology.

Social networks and relationships are important for financial intermediaries (Garmaise et al, 2004), microfinance (Ghatak (2002) and Anthony (1997)) and lending (Sharpe (1990)). Recent developments in network theory include the integration of social and financial networks, as well as social and supply chain networks which affect risk along the value chain as well as transaction costs (Wakolbinger, 2007).

Behaviours and optimality conditions of agents with sources of funds (the supply side of the banking value chain), intermediaries and consumers (at the demand side of the banking supply chain) have been modelled by Nagurney et al (2001). An extension of this model covers interactions between all parties in the financial network via physical or electronic channels (Nagurney et al, 2003). This framework covers an analysis of participant behaviour, disequilibrium dynamics, quantitative properties of equilibrium price

and financial flow patterns, and then applied an algorithm to determine equilibrium price and financial flows for several examples. Further extensions of these models include applications to international supply chain networks involving manufacturers and retailers, and electronic transactions (Nagurney et al (2002)) using game theory and quantitative analysis within the context of a supernetwork.

A banking supply chain framework
Typical supply chain activities are compared to cash management and lending banking activities below:



This analysis illustrates the relative complexity of the banking supply chain, which makes the definition of a comprehensive banking supply chain difficult.

For the purposes of this paper, the cash management supply chain will be explored in more detail as cash is the predominant tender utilised by the BOP in rural areas due to technology acceptance and infrastructure constraints. Cash management activities support the lending, deposit taking and investment components of the overall banking supply chain.

Literature applicable to the banking supply chain framework
Literature included below has been selected based on suitability and/or applicability to banking for financial inclusion and visually depicts key gaps. Core literature for each area has not specifically been included, except where directly relevant to the banking supply chain.

Supply chain component	**Area**	**Authors**
Source funds	Network theory	Gulati et al (2000), Parkhe et al (2006), Uzzi (1996)
	Social networks	Anthony (1997), Ghatak (2002), Ormerod et al (2001), Scott (2000)
	Economic theory	Granovetter (1985), Jones (2010)
	Network optimisation, game theory	Geunes et al (2003)
	Financial networks	Lavie (2006), Nagurney et al (2001, 2003)
	Social & economic networks, supply chain & financial networks	Wakolbinger (2007)
Allocate funds	Investment, balance sheet capacity &	

Supply chain component	Area	Authors
	capital management	
	Risk management & lending	Sharpe (1990)
	Microfinance	Barman et al (2009)
	Bottom of pyramid	Johnson (2005)
	Financial inclusion	Nagadevara (2009), Rangarajan (2008)
Manage cash float, liquidity and investments	Liquidity, investment & risk management	
	Value chain	Walters et al (2004), Walters et al (2000)
Apply risk management processes	Risk minimisation, Credit assessment, Capital adequacy	
Deliver cash	Logistics and distribution, Financial intermediation, Network optimisation, Social network analysis	
	Social networks and logistics	Carter et al (2007)
	Social networks, supply chain and risk	Cruz et al (2006)
Transaction cash in/outflows	Revenue management, Payment systems (interbank settlement), Loan repayments	
	Financial networks & electronic payments	Nagurney et al (2002)
Facilitate cash deposits & withdrawals with customers	Channel management	

Conclusion

The problem of financial inclusion requires innovative solutions to ensure delivery of appropriate, accessible and affordable products to customers at the BOP. Using social network theory together with a banking supply chain framework could provide the means to develop such a solution.

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