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On operations and marketing in microfinance-backed enterprises: Structural embeddedness and enterprise viability

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Structural embeddedness and enterprise viability

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Abstract

Purpose – Financial inclusion remains one of the most promising avenues to bring about development for the poorest segments of society. A substantial body of work has looked into financial inclusion, especially in terms of microfinance, but much of it has been anecdotal and case-based. There is little scholarship that broadly investigates how microfinance-funded businesses choose to use the loans, especially given the ever-present competition for resources that such businesses face regarding which investment priority to pursue. In addition, the efficacy of these investments in terms of subsequent profitability remains unexplored, and so too does the influence of the entrepreneur's embeddedness in the local community. The paper aims to discuss these issues.
Design/methodology/approach – This study reports the results from a field investigation of 927 women entrepreneurs who received a microfinance loan from a leading Indian microfinance institution. Logit and OLS regression models are employed in a moderation analysis by way of hierarchical regression.
Findings – Results indicate that access to microfinance increases the likelihood that the enterprise invests in marketing infrastructure and operational scale. In addition, structural embeddedness has a weakening effect on this relationship for operational scale while having a strengthening effect on the relationship for marketing infrastructure. Finally, operational scale is related to enterprise profitability, while marketing infrastructure is not. These findings suggest that embeddedness in the community is associated with the entrepreneur making sub-optimal choices regarding microfinance utilization.
Originality/value – To our knowledge, this is the first study to investigate the simultaneous marketing and operational impacts of microfinance access. It is also the first study to relate these measures to the profitability of the enterprise, especially in the context of structural embeddedness in the network.

Keywords Marketing, Supply chains, Microfinance, Operations, Structural embeddedness, Bottom of pyramid, Small enterprises

Paper type Research paper

Introduction

For companies to create a supply chain that can distribute products cost-effectively to the poorest of the poor in developing and underdeveloped countries – a group often called the bottom of the pyramid (BOP) – has traditionally been a big challenge (Prahalad and Hart, 2002). The purchasing power available to this segment of society is often very low because of which individual transactions have historically represented too small an amount to generate the scale economies needed for the creation of efficient physical distribution systems (Karamchandani *et al.*, 2011). Living without access to goods and services has thus become the norm rather than the exception for this segment of the population (Prahalad, 2009). This lack of access creates a poverty and deprivation cycle – firms' reluctance to invest in creating distribution channels for this population leads to an underdeveloped distribution and retail sector. Therefore, a lack of corporate investment in distributing products to the BOP creates a cycle of poverty (limited wealth, limited access to goods and limited jobs) that is difficult to break (Rao *et al.*, 2018).

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Breaking this cycle, however, is imperative because societal economic growth is most valued not when it further enriches the few who are already relatively well off, but when it gives an opportunity to improve the standards of living for the majority, especially the poorest of the poor (Maipose, 2008). For a society truly to develop, poverty must be reduced, income levels must be improved and resources and opportunities must be distributed in a way that all segments of society see the benefit (World Bank, 2005). It has been suggested, therefore, that the focus of governmental policies, interventions and programs should be on promoting social development programs that help in addressing the concerns of the poorest of the poor (Kuriyan *et al.*, 2008).

Absent the focus on improving quality of life for those at the bottom, the economy may grow as a whole, but the extent to which this growth would positively affect the poorest may be limited. Indeed, research has demonstrated that the impact on individual standards of living based on the increase in the overall economy's well-being is stronger among the middle- and high-income populations as compared to the low-income populations of a country. Without special assistance, therefore, it is likely that as developing nations progress, their wealth, resource and access gaps are only likely to get worse. For example, Botswana over a 50-year period has increased its average per capita income from $70 to over $7,000. However, its trickle-down effect on societal quality of life indicators such as poverty and unemployment among its weakest sections, has been disappointing, and it is now considered one of the most unequal countries in the world (World Bank, 2015).

Because of such insights, various scholars have recently begun seriously investigating issues at the BOP with a specific focus on how to develop this segment of the society. The supply chain management (SCM) scholarly community has been very cognizant of these challenges, with special issues of leading journals being dedicated to this topic. Other influential bodies have also taken leadership roles in this area. For example, the United Nations adopted "Sustainable Development Goals" in 2015, one of the central aims of which is to end world poverty by 2030 by creating sustainable (i.e. broad-based) growth that directly impacts the poorest of the poor. One developmental route that has been highlighted as a path to these goals is financial inclusion through microfinance. The practice relies on offering very small loans to the poor through innovative reductions in transaction costs (Kolk *et al.*, 2014). Microfinance has been credited with helping promote entrepreneurship among the extremely poor (e.g. Prahalad, 2009; Akula, 2008). According to the Microfinance Information Exchange (MIX), as of 2017 over 1285 microfinance institutions (MFIs) in BOP markets worldwide were providing credit to nearly 210m users.

A major challenge with microfinance is that entrepreneurs would face competing priorities in running an enterprise on a daily basis (as is true with any business capital). Scholars who have investigated young, small entrepreneurial businesses have long suggested that the two leading business priorities for such enterprises are "obtaining customers" (i.e. marketing) and "economic production" (i.e. operations) (Scott and Bruce, 1987, p. 48). Given that microfinance-backed ventures often share many of the defining characteristics of such small businesses (i.e. small scale, unstructured organization, entrepreneurial culture) (Prahalad, 2009), it is quite likely that their priorities would be similar. Therefore, operational improvements (e.g. increasing productivity, quality of end products or throughput) and marketing improvements (e.g. advertising, improved signage, promotional material) are likely to be two of the leading priorities for such microfinance-backed businesses as well. However, it has not heretofore been investigated whether BOP entrepreneurs use the capital in order to engage in both of these activities or whether they tend to prioritize one over another. The role of the entrepreneur's social network in influencing priorities (if any) is also currently ambiguous.

This investigation has a strong supply chain implication for the microfinance business model. If increased networking is indeed always beneficial, then the role of the MFI

would best be relegated to providing a financial service and creating avenues for social networking. However, if the outcome of increased networking is likely to be sub-optimal, then the MFI may need to increase its responsibility not only by providing a loan, but also by providing business advice and operational planning for how to utilize the loan. Thus, for optimal outcomes, the role of the MFI would need to encompass more than just being an arms-length financial-service intermediary and would entail being a close advisor in business operations, creating a true supply chain partnership (e.g. Lambert, 2008). This philosophical motivation leads to our research question:

RQ1. Given the competing priorities for the BOP entrepreneur, does increased embeddedness in the community help the entrepreneur choose the business investment that provides the more favorable prospects of financial return?

Literature review and background

Supply chain challenges at the BOP

Even the initial writings that brought the BOP concept into the mainstream, acknowledged that the most important barrier to doing business with this segment of the population was the complex physical distribution and logistics required to deliver products to them (Prahalad and Hart, 2002). Subsequent scholars have continued to argue that poor physical distribution infrastructure, bad roads, inadequate information technologies and extreme geographical dispersion of the communities combine to create a major challenge that is hard for most companies to meet using traditional physical distribution models (Karamchandani *et al.*, 2011). Companies that have tried to engage with the BOP and distribute products there have therefore often followed one of two competing distribution models – size rationing or partnering. In different ways, both of these approaches try to address the lack of purchasing power at the BOP by finding means to make the product's landed price more affordable to the buyer. The former may involve selling small packages in order to increase affordability (Prahalad, 2002). However, it has been pointed out that the challenges in simply distributing smaller pack sizes to make up for the purchasing power differential is unsustainable from financial, operational and environmental standpoints (Karnani, 2007).

In contrast, the latter involves some level of partnership (either public–private or private–private) (e.g. Kolk *et al.*, 2014; Rao *et al.*, 2018). The rationale behind this is that by pooling their resources in mutually beneficial partnerships, companies may be able to cut distribution costs and therefore create mutual value (Rao *et al.*, 2018). In cases of public–private partnerships (the most common kind of BOP-centric partnership), most often a subsidy of some sort is involved such that a price differential is embedded in the physical delivery of the product – it is sold to the BOP at a price that is below the open-market price. For example, under the Philippines rice subsidy program, private retailers sold subsidized rice to BOP consumers alongside market-priced alternatives (Mehta and Jha, 2014). This situation, however, creates other challenges because the price gap distorts the market, providing opportunities for arbitrage, supply-diversion and profiteering (Mundle, 2016). Such large-scale programs, therefore, often face challenges involving corruption and pilferage (i.e. leakage) (Mehta and Jha, 2014). For example, in the public distribution system of India (the world's largest such BOP-focused distribution program), it has been estimated that nearly 42 percent of the products in the supply chain are leaked and sold elsewhere at full price (Dreze and Khera, 2015). Similarly, almost half of subsidized fuel (kerosene) for BOP consumers in India is leaked out while under distribution (Shenoy, 2010). Studies indicate that in the Philippines rice subsidy program nearly 50 percent of subsidized rice was leaked while under distribution (Mehta and Jha, 2014).

Overall, then, there continue to be substantial distribution challenges at the BOP and researchers have argued that from a traditional point of view, such markets are "not likely to

be profitable customers" (Agarwal *et al.*, 2008, p. 87). Because of such challenges, alternate models to BOP-engagement are now being explored. Such new-age models of BOP development seek to view the BOP not just as consumers, but also as producers, distributors and co-participants in the value creation process. This is consistent with the suggestion of SCM scholars that in order to be successful at the BOP, one needs to do things differently and traditional business models may be insufficient (Fawcett and Waller, 2015).

Toward a viable BOP market through financial inclusion

The philosophy behind several of the alternate BOP models is that given the right environment, there are several individuals at the BOP who can turn into entrepreneurs and job creators. The availability of jobs and disposable income would in turn drive additional consumption, all of which would energize the local economy and result in companies finding this previously un-servable population lucrative enough to serve (Rao *et al.*, 2018). Such an approach could therefore be considered an attempt to move from a push-centric to a pull-centric one that places the customer at the center.

Given that access to reliable and trustworthy financial services is the leading driver of entrepreneurship, many of these new-age BOP development models seem to focus on financial inclusion at the BOP as a means of driving job creation and purchasing power. Therefore, such programs offer a financial solution to a supply chain problem (e.g. Rao *et al.*, 2018). Such programs (e.g. direct benefits transfers, mobile-only banking) have been tried out across the world, and the consensus in the literature appears to be that they provide a highly efficient response to various BOP supply chain challenges. For example, the Bolsa Familia program in Brazil, one of the largest such programs in the world, covers 11m poor households and has been praised as being extremely useful in lifting entire communities out of poverty and market exclusion (Soares *et al.*, 2010). Recently, India initiated what has been called the largest and most ambitious such program in the world (Jan-Dhan), aimed at helping over 200m of the poorest members of society become consumers and buyers through financial inclusion.

One financial inclusion model that has received much attention in the literature involves microfinance, i.e. offering very small loans to support BOP entrepreneurship and small scale enterprises (Kolk *et al.*, 2014). Often discussed in the literature as a popular initiative aimed at improving living standards at the BOP, microfinance has been credited with helping promote entrepreneurship in several low-income countries (e.g. Prahalad, 2009; Akula, 2008). Researchers are of the view that microfinance helps alleviate poverty by empowering the poor to participate in markets, generate income and create jobs for themselves and others (Siwale and Ritchie, 2012). The Consultative Group to Assist the Poor, an arm of the World Bank, has stated that microfinance is responsible for eradication of poverty and hunger, improved primary education, promotion of gender equality, reduction in child mortality and improvement in maternal health (Banerjee *et al.*, 2015).

The microfinance challenge – some dark clouds

While the previously discussed evidence presents encouraging signs for the potential of microfinance (and more broadly, financial inclusion as a solution to supply chain challenges of the BOP), there are also signs for concern regarding the industry's health. For example, the previously touted high repayment rates of microfinance loans – one of the hallmarks of the industry and the distinguishing factor that made the industry viable in the first place – seem now to be in question. According to the 2016–2017 annual report from the National Bank for Agriculture and Rural Development (NABARD) in India, the percent of non-performing microfinance loans in the country grew by 8.6 percent in the financial year 2016–2017, with some institutions showing rates as high as 10.25 percent. This report also stated that "high outstanding (loans) joined with low disbursement implies a situation

where repayment rate is low and many of the self-help groups are not eligible for subsequent doses of loans because of overdue loans" (NABARD, 2016, p. 27). Similar findings are reported in other studies as well. For example, Cull *et al.* (2016) report that out of 315 "for profit" MFIs that reported profitability statistics to the MIX, only 57 percent were actually profitable. A large reason of this lack of profitability is non-performing assets. Indeed, trade reports have begun suggesting that with microfinance growing in popularity, a bubble may be emerging (Gokhale, 2009).

It has been argued that voluntary non-payment is typically very low in microfinance (Morduch, 2013). Therefore, most cases of non-payment would be due to inability rather than unwillingness to repay, which leads to the question of why some microfinance borrowers develop an ability to repay their loans while others do not. Because of this ambiguity, scholars have called for research that investigates how and why some microcredit clients are able to create successful enterprises while others are not (Newman *et al.*, 2014). From a supply chain point of view, this is an important conundrum to try to address because if the BOP is to indeed be developed from a new inside-out mindset, entrepreneurship needs to be encouraged, which would mean that MFIs need to continue to be healthy.

Hypotheses development

Prior research in small enterprises has suggested that the two leading priorities of such businesses involve "obtaining customers" (i.e. Marketing), and "economic production" (i.e. Operations) (Scott and Bruce, 1987, p. 48). Given that microfinance-backed ventures often share many of the defining characteristics of such startup businesses (i.e. small scale, unstructured organization, entrepreneurial culture) (Prahalad, 2009), it is likely that their priorities would be similar. Therefore, operational scale and marketing infrastructure are likely to be two of the leading priorities for such microfinance-backed businesses as well. Therefore, these two form the functional building blocks of our research model.

Direct impact of length of access to microfinance on business investment

Most microfinance-backed enterprises are small entrepreneurial ventures and are often restricted to being operated entirely by a solo entrepreneur or by a family (Khavul, 2010). There is an exceedingly small chance that such a venture would have a formal organizational structure with multiple decision makers vying for resources, prestige, etc. (Morduch, 2013). Therefore, it is highly unlikely that major departmental conflict may exist, largely because such departmental compartmentalization may not be present in such ventures to begin with. This premise is supported by extant research in team dynamics that suggests that a company's top management team size is positively related to conflicting opinions and friction and negatively associated with unity of vision (Wiersema and Bantel, 1992). This is also consistent with the suggestions of Ruekert and Walker (1987) who have argued that departmental friction and conflict is highly likely to develop where there is a mix of collective goals coupled with managers' self-interest – all characteristics of larger teams.

Because of this, the borrower is likely to invest the loan in the aspect of the business viewed as most likely to generate value moving forward, with little (if any) consideration being given to internal conflicts, strife or special interests. Moreover, it has been argued that such borrowers "[are] particularly anxious to preserve their continued access to microcredit and other financial services [that] they might need to cope with shocks that might be coming," which results in their making every effort to try putting the loans to the most productive use (Morduch, 2013, p. 4). Indeed, it has been argued that one bad decision on the borrower's part can often cause an inability to repay the loan, resulting in getting cut off from the borrowing source in the future (Armendáriz and Morduch, 2000). This may also lead to the borrower having to take on an additional loan at higher cost to pay off the original loan, thus putting additional strain on the venture (Khavul, 2010) and

eventually risking losing the venture entirely, thereby risking the family's only source of sustenance (Morduch, 2013).

For these reasons, microfinance recipients are likely to choose such investments in the business that they feel would deliver them the best return on investment at that point in time with little influence from inter-departmental conflicts, priorities or agendas. Thus, both marketing and operations are likely to see investment based on which is currently more promising. This leads to the following hypotheses:

H1. Greater length of access to microfinance increases the probability that the enterprise invests in marketing infrastructure.

H2. Greater length of access to microfinance increases the probability that the enterprise invests in operational scale.

Interaction with the network – the role of structural embeddedness

Researchers have long argued that entrepreneurial actions should not be viewed as isolated incidents, but rather should be viewed as being embedded in the context of their social environment (Jones *et al.*, 2011). In this context, one construct that has received considerable attention is social capital, which is sometimes understood as the extent and quality of connections between individuals and their community (Granovetter, 2002). Glaeser *et al.* (2002) suggest that an individual's social capital enables a person to extract increased returns from interactions with others. Similar suggestions are also made by several other researchers who argue that those who are endowed with high social capital are usually in a stronger position to confront poverty and vulnerability, resolve disputes and take advantage of new opportunities (Woolcock, 2001; Adler and Kwon, 2002).

Prior research on microfinance and micro-enterprise development has incorporated embeddedness as a central variable in its models in order to explain market-behavior of borrowers (e.g. Panda, 2016). For example, Panda (2016) explored the effect of the social network on micro-enterprise development and found that in the formation (i.e. initial) stage borrowers/loan recipients did show increased reliance on and trust in the advice generated by their embedded relationships (i.e. local community authorities and peer groups), consistent with what may be seen in traditional ventures in non-BOP markets. However, those in the later stages showed decreased reliance and trust on the same – thereby suggesting that the reliance on the embedded relationships decreased as the entrepreneur gained experience – indicating a differing trust and reliance pattern emerging with experience. Additionally, Leys (2001) argued that the central operating principle of the new-wave microfinance model quite dramatically increases the likelihood of a reduction in local solidarity, interpersonal communication, volunteerism, trust-based interaction and goodwill. All of these are related to embeddedness in the community and to the broader notion of social capital. Therefore, what is clear is that the borrower's embeddedness in the community is likely to influence how the received funding is invested (i.e. either marketing or operations).

With respect to the direction of this influence, prior research has shown that when given choices, those with relatively low incomes and low education (both of which are common at the BOP) typically show a strong propensity to choose options that promise fast rewards and payoffs (Reimers *et al.*, 2009). Given that investing in marketing is generally perceived to have a quicker return on investment than investing in operations (Krasnikov and Jayachandran, 2008), it is therefore conceivable that the network will likely try to encourage the borrower to invest the funding in marketing, which in turn should have the collateral effect of discouraging investment in operations over time (given the limited funding to start with). This will likely enhance the effect of longer duration access to microfinance on

investment in marketing infrastructure and weaken the effect of longer duration access to microfinance on investment in operational scale. This leads to the following hypotheses:

H3. The borrower's structural embeddedness with the community synergizes (i.e. strengthens) the effect of length of access to microfinance on investment in marketing infrastructure.

H4. The borrower's structural embeddedness with the community buffers (i.e. weakens) the effect of length of access to microfinance on investment in operational scale.

The link with financial performance

In a detailed meta-analysis, Krasnikov and Jayachandran (2008) demonstrated that indeed both (i.e. operations and marketing) are likely to result in improved performance for organizations for firms of nearly all sizes. This provides support for the belief that even in small, microfinance-backed enterprises at the BOP, there should be a positive effect on the capability created through marketing infrastructure and operational scale. This leads to the following hypotheses:

H5. Increased marketing infrastructure is positively related with increased financial performance.

H6. Increased operational scale is positively related with increased financial performance.

The research model is shown in Figure 1. In this figure, the solid lines represent the hypothesized relationships, while the dotted lines represent the controls.

Research design, data collection and measured items

We use primary data collected from Bandhan, a large MFI in India. Bandhan offers loans to adult women entrepreneurs to enable them to undertake income-generating activities. It is currently active in 22 states in India, with the largest number of centers being in the state of West Bengal and with headquarters in the capital city of Kolkata. Trade reports have ranked it as one of the largest MFIs in India with over 20 percent of the overall market-share (India Microfinance, 2013). At the time of data collection, Bandhan provided loans of up to Rs.15,000 (i.e. up to approximately $222) with one year duration to women entrepreneurs. Bandhan is widely considered one of the most successful MFIs in India, and because of its

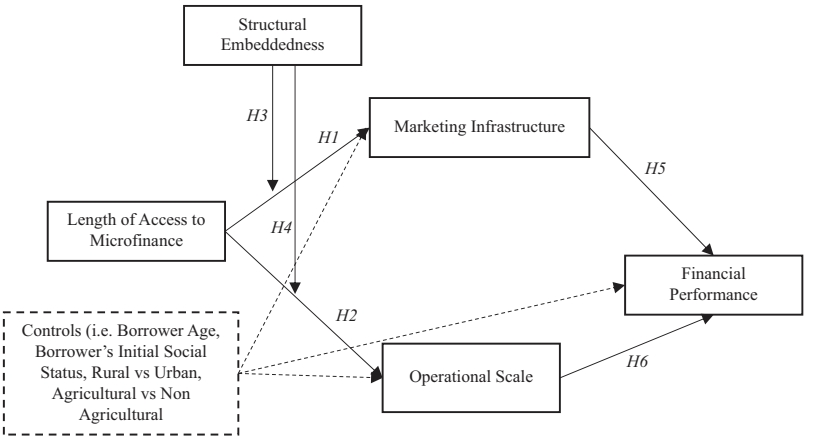

Figure 1.
Research model

success and scale, it is currently the only MFI allowed to move into the traditional banking business by the national banking regulator.

Borrowers were sampled from five clusters in the state of West Bengal, the largest state in terms of Bandhan's operations. These five clusters were chosen to represent the diversity of agro-climatic features as well as the geographic spread of Bandhan's network in the state. In addition, Bandhan's top management indicated that these clusters were highly representative of their national clientele. A total of 40 Joint Liability Groups (JLGs) were chosen at random in a probability proportional manner on the basis of the spread of JLGs across rural, semi-urban and urban areas inside each cluster. Each JLG consists of up to 30 women borrowers and is formed by Bandhan's local credit officers. Borrowers from these JLGs were sampled in a probability proportional manner based on the number of loan cycles (disbursement until repayment) they had completed.

Data were collected through a structured questionnaire that was administered to the respondents in face-to-face meetings. The data collection was designed on the basis of the "pipeline approach" (Leeuw and Vaessen, 2009). This approach is recommended to handle the problem of selection bias when a project/test may be ongoing and implemented in cycles (White and Bamberger, 2008). In such test conditions, a valid assessment of the effect of program participation on participants' outcomes requires comparison of the treated group (participants) with a valid control group of non-participants. Valid control groups should match the treated group on both observable and unobservable characteristics. Then, differences in post-treatment outcomes can be attributed to the effect of treatment rather than to pre-existing differences between the groups, thus avoiding selection bias.

In other words, suppose if D_i be a dummy variable taking the value 1 if individual i is treated, and 0 otherwise. Let Y_{1i} be the outcome of an individual if she is treated, and Y_{0i} be the outcome if she is not. For each individual, we observe $Y_i = Y_{0i} + D_i(Y_{1i} - Y_{0i})$. Denote E as the expectations operator. Then, the average causal effect of treatment on the treated, i.e. $\text{ATET} = E[Y_{1i}|D_i = 1] - E[Y_{0i}|D_i = 1]$. The first term is the average outcome of the treated group, which is observed by the analyst. The second term is the average outcome of the treated group if they had not been treated, a quantity which is not observable (an individual is either treated or not – if she is treated, there is no way to know what her outcome would have been if she was not treated). Assessing the treatment effect requires finding a suitable estimate of $E[Y_{0i}|D_i = 1]$.

A simple comparison of the treated group with those who are not treated may provide a biased estimate of the treatment effect. Such a comparison would yield the following equation:

$$E[Y_i|D_i = 1] - E[Y_i|D_i = 0] = E[Y_{1i}|D_i = 1] - E[Y_{0i}|D_i = 0]$$

$$= E[Y_{1i} - Y_{0i}|D_i = 1] + E[Y_{0i}|D_i = 1] - E[Y_{0i}|D_i = 0].$$

The first term on the right is the object of interest (ATET), while the second term is a measure of selection bias (the difference between the average outcomes of the non-treated, i.e. $E[Y_{0i}|D_i = 0]$, and those of the treated if they had not been treated, $E[Y_{0i}|D_i = 1]$).

The pipeline approach handles the problem of selection bias by using incoming borrowers/those in their first loan cycle, as controls for existing borrowers (i.e. those in the second and higher loan cycles) at time $t = 0$. In other words, while incoming borrowers have also been selected for access to microfinance, they have not yet had a chance to use their loan. Therefore, these incoming borrowers are a good control group for existing borrowers because they are also selected into the program in the same way as the existing borrowers, with the only difference being that they have not yet had a chance to use their loans. Thus, their average outcome should be the same as that of existing borrowers if they had not obtained loans, i.e. $E[Y_{0i}|D_i = 1] = E[Y_{0i}|D_i = 0]$. Selection bias is therefore controlled and the

resultant differences in outcomes between incoming and existing borrowers are attributable to the microfinance loan(s). The pipeline approach has been previously used in the microfinance impact evaluation literature to study microfinance impact on household welfare (Kono and Takahashi, 2010).

Dependent variables

Our dependent variables in *H1–H4* are intended to capture the enterprise's investments in marketing infrastructure and operational scale. We measure the former by the question, "Did the enterprise invest in marketing infrastructure in the last 12 months?" The latter is measured by the question, "Did the enterprise undertake operational expansion in the last 12 months?" In both cases, responses were recorded on a binary scale (i.e. 1 if Yes, 0 if No). This is because prior research in BOP markets has suggested that such an approach (i.e. soliciting binary responses) is much more reliable than asking respondents to answer questions involving percentages (e.g. percent expense on marketing infrastructure vs operational scale). Such percentage-type questions may be difficult to comprehend for the target respondents who often lack formal education, mathematical training and conceptual understanding of issues like percentages, fractions and probabilities (Delavande *et al.*, 2011). Finally, the financial performance measure, which forms the dependent variable for *H5* and *H6*, is captured by the actual average profitability of the enterprise, which the respondents were asked to report in the survey.

Hypothesized independent variables

Length of access to microfinance. For this study, our primary independent variable is the length of access to microfinance as measured by the number of loan cycles. A loan cycle is the period from disbursement of the loan to repayment, i.e. one year. The greater the number of loan cycles, the greater the duration of access the enterprise has had to microfinance.

Structural embeddedness. Embeddedness can be understood as a measure of the extent and quality of connections between individuals and their community (Granovetter, 2002). We measure embeddedness based on the number of important local organizations of which a borrower is a member. Local organizations covered in this study are the municipal council (1/0), the local cooperative society (1/0), the managing committee of the local school (1/0), any non-government organization (NGO) operating in the vicinity (1/0), a local forest protection or eco-development committee (1/0) or any other social (1/0) or political organization (1/0). The choice of these organizations was made based on extensive consultation with the MFI, local NGOs and other area experts. This results in a scale from 0 to 7, with higher scores indicating increased membership and therefore increased embeddedness in the community. This measure coheres with the sociological tradition of treating embeddedness as a property of the "structure of relations between persons and among persons" (Coleman, 1994).

Control variables

In addition to the hypothesized variables, we also control for several factors that may significantly influence our dependent variables because of socio-demographic circumstances.

Age. The borrower is typically the head of the microfinance loan-backed business, and her attributes are therefore likely to be correlated with business performance. Upper-echelon theory posits that top leaders' life experience affects their choices and therefore organizational performance (Hambrick, 2007). In this literature stream, age is often used as a proxy for a leader's experience (Wang *et al.*, 2016).

Initial social status of the borrower. Initial social status of the borrower is captured using a dummy variable depending on whether the borrower is from an "upper caste" (1) or

otherwise (0). The country where our data collection is anchored (i.e. India) is a caste-based society, and the caste that one is born into has been found to affect substantially the opportunity that an individual may enjoy (Nafziger and Terrell, 1996). In addition, caste is also a proxy for human capital: lower castes may reduce the magnitude of investment in human capital because of lower returns due to discrimination and imperfect labor mobility.

Rural vs urban location. Rural location of the borrower is captured by a dummy variable depending on if the borrower resides in a rural area (1) or otherwise (0). Rural businesses may face severe market and infrastructure constraints that affect business performance, business survival, growth prospects and even choice of business activity.

Non-agricultural enterprise. The nature of the enterprise is captured by a dummy variable depending on whether the enterprise is non-agricultural in nature (1) or otherwise (0). Non-agricultural enterprises in BOP settings are more lucrative because of faster growth in earnings and consumption (Barrett *et al.*, 2001). This is because microfinance can help overcome credit constraints and limited savings that hinder acquisition of costly and lumpy assets like machinery and warehouses, pre-requisites for remunerative non-agricultural enterprises such as manufacturing and commerce (Barrett, 1997).

Data analysis and results

Most direct data collection with those at the BOP such as the one that is reported in the current study is done in person (i.e. with an enumerator/field researcher visiting the home or workplace of the respondent) (Delavande *et al.*, 2011). This is because education and literacy levels among respondents may be a challenge, and self-filled surveys may yield unreliable responses. Therefore, a similar approach was adopted in this study wherein a field researcher met the respondents individually to elicit their responses face-to-face.

A total of 940 existing borrowers across five geographic clusters in the state of West Bengal were personally contacted for the purposes of this project. Given that the respondents were Bandhan's current borrowers (and in several cases this was their only source of business financing), high participation was achieved and nearly all of the contacted participants ($n = 927$) met with the field researcher for the purposes of the survey administration. Subsequent to the data collection, a few responses ($n = 15$) were found to have missing data or to have been marked in an ambiguous manner and were dropped from the analysis. This left us with 912 usable responses, which translates to an effective response rate of 97.02 percent. Out of these, 112 were in the first loan cycle, while the others (i.e. 800) were in the second loan cycle or more. The longest-duration participants were in their sixth loan cycle. Table I presents the descriptive statistics of the data, while the correlation matrix is in Table II.

As described earlier, we specified each dependent variable in *H1–H4* in a binary (i.e. Yes/No) format and therefore chose to use a logit regression to test the hypotheses (e.g. Garver *et al.*, 2012). In addition, because *H1–H4* propose a moderated model, we followed suggested best practices in the reporting of such models tested using hierarchical multiple regression (Aguinis *et al.*, 2013). Aguinis *et al.* (2013) propose that a multi-step procedure be applied to test such types of models. The researcher must first test a "controls only" model in which the dependent variable is regressed upon all control variables. Subsequently, one must build a direct effects model that includes the first-order paths linking all independent variables (including all control variables and moderators) with the dependent variable. Finally, one must build a model in which interaction variables are added as a function of the product of their first-order variables. The statistical significance of these interaction variables would indicate moderation in the overall model.

To test our hypotheses, we used a similar approach (Table III) by first entering the vector of control variables in the models for marketing infrastructure and operational scale

Table I.
Summary statistics

Variable	Definition	Overall sample Obs.	Mean	SD	Loan cycle = 1 Obs.	Mean	SD	Loan cycle > 1 Obs.	Mean	SD
Marketing Infrastructure	Did the enterprise spend on marketing infrastructure in the last 12 months?	912	0.56	0.50	112	0.48	0.50	800	0.58	0.49
Operational Scale	Did the enterprise expand its operational scale in the last 12 months?	912	0.16	0.37	112	0.09	0.29	800	0.17	0.37
Financial Performance	Annual profit from the enterprise	912	5,772.15	4,386.57	112	4,969.05	4,555.88	800	5,887.02	4,352.61
Length of Access to Microfinance	Number of loan cycles completed thus far[a]	912	3.91	1.80	112	1.00	0.00	800	4.33	1.52
Structural Embeddedness	Number of important local organizations of which a borrower is a member	912	0.40	0.76	112	0.39	0.80	800	0.41	0.76
Age	Age of the borrower in years	912	34.27	8.52	112	31.07	8.44	800	34.73	8.43
Initial Social Status of the Borrower	Whether household is upper caste	912	0.31	0.46	112	0.43	0.50	800	0.30	0.46
Rural vs Urban	Whether household located in a rural area	912	0.57	0.50	112	0.62	0.49	800	0.56	0.50
Non-Agricultural Enterprise	Whether business is non-agricultural	912	3.50	1.77	112	3.41	1.81	800	3.52	1.77

Note: [a]Each loan cycle is of one year duration, and each loan has to be repaid, i.e. loan cycle completed, before the next loan is disbursed (i.e. next loan cycle starts)

Variable	Marketing infra.	Operational scale	Financial perf.	Length of access to microfinance	Structural embeddedness	Age	Initial social status of borrower	Rural vs urban	Non-Ag enterprise
Marketing Infra.	1								
Operational scale	0.13*	1							
Financial perf.	0.09*	0.06	1						
Length of access to microfinance	0.07*	0.09*	0.05	1					
Structural embeddedness	0.09*	0.10*	0.17*	0.07*	1				
Age	−0.01	0.04	0.10*	0.18*	−0.03	1			
Initial social status of borrower	−0.08*	0.03	0.03	−0.05	−0.08*	0.05	1		
Rural vs urban	−0.04	−0.13*	0.09*	0.03	0.00	0.05	−0.11*	1	
Non Ag. enterprise	0.03	0.08*	−0.01	0.04	−0.01	−0.01	0.07*	−0.17*	1

Table II. Correlation matrix

Notes: *$p < 0.01$; **$p < 0.05$; ***$p < 0.10$

(Models 1 and 4, respectively). Subsequently, we added in the variables that account for the direct effects in *H1* and *H3* – length of access to microfinance, along with a direct effect by the moderator (i.e. structural embeddedness) (Models 2 and 5, respectively). Finally, we tested the model with the interaction effect proposed in *H2* and *H4* while keeping the direct effects of *H1* and *H3* along with the vector of controls (Models 3 and 6), respectively.

Results for H1 and H3

The results for the direct effect of length of access to microfinance on marketing infrastructure are presented in Columns 1–3 of Table III. As can be seen, the χ^2 value for the direct effects model indicates support at the 99% confidence level ($\chi^2(6) = 17.32, p < 0.01$). In addition, the χ^2 statistic for this model is significantly different from that for the controls-only model (χ^2 difference $= 8.44$, $p < 0.01$), thereby indicating that this model provides enhanced fit as compared to the controls-only model. An increase of one year in length of access to microfinance increases the log-odds of marketing infrastructure expansion by 0.09 ($p < 0.05$). The results therefore provide support for *H1*.

Following Aiken and West (1991), we centered the variables and created an interaction term between the independent variable of interest and the moderator variable. We then re-ran the analysis (Model 3 in Table III). A likelihood ratio test rejects the null hypothesis that the model without the interaction term is the true model ($\chi^2(1) = 3.85, p < 0.05$). Note that the interaction effect between length of access to microfinance and structural embeddedness is positive and significant ($p < 0.1$). These results are consistent with a positive moderating effect, i.e. a synergistic effect of structural embeddedness on the marketing infrastructure expansion effects of longer duration access to microfinance, therefore providing support for *H3*. This positive moderating effect indicates that borrowers with higher structural embeddedness are more likely to ramp up their marketing infrastructure investment with greater length of access to microfinance than those with lower structural embeddedness.

Variable	Model 1 Dependent variable: (marketing infra.) Coefficient (SE)	Model 2 Dependent variable: (marketing infra.) Coefficient (SE)	Model 3 Dependent variable: (marketing infra.) Coefficient (SE)	Model 4 Dependent variable: (operational scale) Coefficient (SE)	Model 5 Dependent variable: (operational scale) Coefficient (SE)	Model 6 Dependent variable: (operational scale) Coefficient (SE
Length of access to microfinance		0.09*	0.08		0.09**	0.09**
		(0.05)	0.05		0.04	(0.04)
Structural embeddedness		0.23**	0.16		0.30***	0.32***
		(0.11)	0.12		0.1	0.1
Interaction of length of access to microfinance and structural embeddedness		–	0.12*		–	−0.10**
			0.06			−0.05
Age	0	−0.01	−0.01	−0.01	0.01	0.01
	(0.01)	(−0.01)	−0.01	0	0.01	0.01
Initial social status	−0.55**	−0.50**	−0.50**	0.04	0.1	0.1
	(−0.22)	(−0.22)	−0.22	0.15	0.15	0.15
Rural vs urban	−0.25	−0.27	−0.27	−0.52***	−0.53***	−0.53***
	(−0.19)	(−0.19)	−0.19	−0.14	−0.14	−0.14
Non-agricultural enterprise	0.21	0.2	0.2	0.32*	0.31*	0.32*
	(0.27)	0.27	0.27	0.19	0.19	0.19
Constant	−1.47	−1.85***	−1.36***	−0.09	0.62	−0.03
	(−0.46)	−0.49	−0.48	−0.34	0.22	−0.35
No of obs.	912	912	912	912	912	912
χ^2 (df)	8.88* (4)	17.32*** (6)	21.16*** (7)	21.33*** (4)	37.88*** (6)	42.04*** (7)

Notes: *$p < 0.01$; **$p < 0.05$; ***$p < 0.10$

Table III. Hypotheses test results for *H1–H4*

Results for H2 and H4

The formal test for *H2* and *H4* proceeded similarly to the tests for *H1* and *H3*. These results are depicted in Table III (Models 4–6). The highly significant difference in χ^2 values between Models 4 and 5 (χ^2 difference = 16.55, $p < 0.01$) supports the assertion that Model 5, with the hypothesized direct effects, is a better fit for the data than the controls-only model. Similarly, the χ^2 difference between Models 5 and Model 6 is also highly significant (χ^2 difference = 4.16, $p < 0.05$), also suggesting that the moderated model is the best fit for the data among these three models. The highly significant parameter estimates for the length of access to microfinance variable in Model 5 and the interaction term in Model 6 provide support for *H2* and *H4*, respectively. In addition, the interaction effect between length of access to microfinance and structural embeddedness is negative and significant ($p < 0.5$). These results are consistent with a negative moderating effect, i.e. a buffering effect, of structural embeddedness on the relationship between length of access to microfinance and operational scale. This negative moderating effect suggests that borrowers with higher structural embeddedness are less likely to expand the operational scale of their enterprise with greater length of access to microfinance.

Results for H5 and H6

Overall then, the results indicate that structural embeddedness moderates the impact of microfinance differently for marketing infrastructure and operational scale. Specifically, structural embeddedness (measured through embeddedness in local peer organizations) has a synergistic effect (i.e. strengthening) on the relation between length of access to microfinance and marketing improvements, while it has a buffering effect (i.e. weakening)

on the relation between length of access to microfinance and operational improvements. The question then arises as to whether this is, in fact, beneficial to the enterprise. *H5* and *H6* investigate this issue.

Recall that *H5* and *H6* proposed that there would be a positive effect of marketing infrastructure and operational scale expansion on the enterprise's financial performance. We assess the profitability of these respective growth strategies in a linear regression of enterprise profit on dummies for marketing infrastructure, operational scale expansion, and the vector of covariates that we have used previously. The results (Table IV) indicate that while operational scale has a positive significant effect on the microfinance-backed enterprise's profit, marketing infrastructure does not. Therefore, *H5* is not supported, while *H6* is. This is a different result from what would have been expected in non-BOP entrepreneurship and appears to confirm the intuition of others in the SCM field who has indicated that the BOP is substantially different from the non-BOP (Fawcett and Waller, 2015).

Discussion and implications

Table V presents a summary of the hypotheses test results. We can see that while *prima-facie* the microfinance recipient with greater length of access to microfinance appears

Variable	(1) Dependent variable: enterprise profit Coefficient (SE)
Marketing Infrastructure (1 if Yes, 0 if No)	633.38 (395.51)
Operational Scale (1 if Yes, 0 if No)	589.41** (293.76)
Age of the borrower in years	40.94*** (16.82)
Whether household is upper caste (1 if Yes, 0 if No)	469.97 (313.06)
Whether household is located in a rural area (1 if Yes, 0 if No)	920.25*** (296.86)
Whether business is non-agricultural (1 if Yes, 0 if No)	−605.14 (404.34)
Constant	3870.93*** (735.63)
Number of Observations	912
F-value	4.50
p-value	0.0002
R^2	0.03

Notes: *$p < 0.01$; **$p < 0.05$; ***$p < 0.10$

Table IV. Hypotheses test results for *H5* and *H6*

Hypothesis No.	Stated hypothesis	Result
H1	Length of access to microfinance increases the probability that the enterprise invests in marketing infrastructure	Supported
H2	Length of access to microfinance increases the probability that the enterprise expands operational scale	Supported
H3	The borrower's structural embeddedness with the community synergizes (i.e. strengthens) the effect of length of access to microfinance on investment in marketing infrastructure	Supported
H4	The borrower's structural embeddedness with the community buffers (i.e. weakens) the effect of length of access to microfinance on investment in operational scale	Supported
H5	Increased marketing infrastructure is positively related to increased financial performance for the microfinance-backed enterprise	Not supported
H6	Increased operational scale is positively related to increased financial performance for the microfinance-backed enterprise	Supported

Table V. Summary of hypotheses and test results

inclined to invest in both marketing infrastructure and operational scale for the enterprise (i.e. *H1* and *H2*), structural embeddedness tends to influence this behavior (i.e. *H3* and *H4*). This is consistent with prior research that suggests that individuals may change their underlying behavior when they are a part of a network in order to fit with the network (Granovetter, 2002). Structural embeddedness has a synergistic effect (i.e. strengthening) on the relation between length of access to microfinance and marketing infrastructure, while it has a buffering effect (i.e. weakening) on the relation between length of access to microfinance and operational scale (i.e. *H3* and *H4*). Thus, as length of access to microfinance increases, borrowers with high levels of structural embeddedness are more likely to invest in marketing infrastructure and less likely to invest in operational scale than borrowers with low levels of structural embeddedness.

However, investment in operational scale seems to be related to increased financial performance, while investment in marketing infrastructure is not (i.e. *H6* and *H5*). If structural embeddedness was a driver of improved financial performance over time, it should have had a synergistic relationship with operational scale and a buffering relationship with marketing infrastructure, which is the opposite of what we see. Therefore, the answer to *RQ1* appears to be negative. Embeddedness appears to cause the BOP entrepreneur to make an inefficient choice in that it weakens action over time surrounding the relationship that is profitable and strengthens actions over time surrounding the relationship that is not profitable. This stands in direct contrast to prior research in developed markets, which has found that managerial networking is fundamental to business performance (e.g. Laanti *et al.*, 2007).

Researchers who have been investigating microfinance and social networks have found an interesting phenomenon present itself in the field: over time the microfinance-funded entrepreneurs change whom they turn to for business insights and advice. For example, Panda (2016) observes that recipients of microfinance demonstrate high "peer trust" for business-related advice during the formative stage, but their trust in this group decreases over loan cycles. Instead the level of "intermediation trust" is higher than "peer trust" during later loan cycles. In other words, the borrowers start out by trusting their peers and their network for advice, but then as they gain experience they seem to move away from this group and instead seek out other intermediaries for insights. However, there is a lack of scholarly investigation into why this change in mindset occurs. As Panda (2016, p. 1245) argues, "the present body of literature […] is devoid of inquiries concerning how intermediation factors, especially in the psychological and sociological dimensions […] are […] associated with enterprise creation and development." It is our contention that the results presented in this paper offer one possible explanation as to why the vigilant microfinance-backed entrepreneur may move away from peer trust and toward intermediation trust over time. It may be because the network may provide sub-optimal advice. As our data suggests, as length of access to microfinance increases, borrowers with higher levels of structural embeddedness appear more likely to invest in conspicuous activities such as Marketing, which in the current context, may not be related to financial performance. In addition, they appear less likely to invest in inconspicuous activities, such as operations, which in the current context, may actually be related to financial performance. This is in line with the findings of some other scholars who have looked at expenditure patterns at the BOP and found that often individuals at the BOP may exercise limited self-control over finances and engage in unnecessary displays, especially when under the influence of others, i.e. a "go with the flow" mentality (Karnani *et al.*, 2007).

Moav and Neeman (2012) call this the BOP "poverty trap," which arises because the poor end up trying to signal their well-being to others by engaging in highly visible and noticeable displays of success. For example, Banerjee *et al.* (2004) argue that if BOP

consumers were to eliminate the amount they unnecessarily spent on festivals in order to impress neighbors and the community, they could afford to spend nearly 30 percent more on food. Supporting this thought, Karnani (2007, p. 98) argues that "the poor often make choices that are not in their own self-interest." An extreme example of this is presented in a popular press article (Yardley, 2010) that reported on a previously poor Indian farmer who sold all of his land to a developer for a windfall of about $109,000. He subsequently rented a helicopter to transport his son to his wedding two miles away, in the process spending nearly 10 percent of his entire proceeds (i.e. his entire net worth) from the sale. At the wedding, the son wore a wreath made of high-value currency notes in order to impress friends and family.

The high percentage of available financial resources that get allocated to conspicuous choices intended to impress others is one major difference between those who are at the BOP and those who are not, and could possibly explain why increased embeddedness may make the microfinance recipient make sub-optimal choices which is the opposite of what one may see in traditional (i.e. non-BOP) entrepreneurship (Moav and Neeman, 2012). It is also likely that with experience, the vigilant microfinance-backed entrepreneurs begin to recognize the futility of staying highly engaged with the network when they begin seeing the conspicuous consumption patterns that the network motivates them to indulge in. This would explain why with experience, they reduce the value they place on "peer trust" (Panda, 2016).

Implications for SCM

These findings have strong implications for SCM theory and practice, especially in a BOP context. Traditional supply chain scholarship has tried to look for solutions to supply chain problems within the field itself. However, researchers have argued that solutions for many supply chain problems may instead be more readily found if one were to look at cross-functional collaboration/integration (e.g. Ellinger, 2000). Additionally, Carter *et al.* (2015) have proposed that that the field of SCM not only involves the physical supply chain, but also encompasses the support supply chain. They propose that the support supply chain "consists of nodes through which a product (relative to the focal agents) does not flow, but which supports the physical supply chain of that product" (Carter *et al.*, 2015, p. 91). This would often include information-flow partners, financial services partners, etc. Bals and Tate (2018) also propose that moving forward, supply chain scholarship needs to consider not only the physical chain as it traditionally has, but also the support chain and their role.

The current study falls in this literature stream and views the MFI as a part of the support supply chain. The predominant model used by MFIs has long been that the entrepreneurs and their networks know best, and the only thing lacking is access to finance. Therefore, the approach has been to provide financial services in a structure and format similar to traditional financial institutions (Brau and Woller, 2004). From a supply chain standpoint, this implies an arms-length/transactional relationship with minimal amounts of close collaboration.

Given that our results indicate that the traditional model of increased embeddedness may not always be a good thing, the role of the MFI at the BOP would likely need to go beyond merely providing a financial service. Instead, in order to achieve the desired goals of mutual benefit, the MFI may need to increase its responsibility by also providing business advice and planning assistance on how to utilize the loan. This would imply that for optimal outcomes, the role of the MFI would need to encompass more than just that of financial-service intermediary and would entail being a close advisor in business decisions like a true supply chain partner (e.g. Lambert, 2008). Researchers have argued that such partnerships often involve increased synergy between the entities, improved exchange of

information, better planning and support and joint problem solving (Stank *et al.*, 1999). Such close two-way engagements have been shown to be related to the creation of competitive advantage for both partners (Mentzer, 1999).

There are a few cases in the trade literature of such close engagements between MFIs and borrowers at the BOP that may serve as guiding exemplars for the microfinance industry. For example, the Kudumbashree program in India covers nearly 5m women in rural parts of the country, and along with providing microfinance, the program also provides entrepreneurial advice along with job training for loan recipients (Williams *et al.*, 2011). The result is a highly vibrant entrepreneurial community that has been praised for successfully bringing several borrowers out of poverty while maintaining strong financial viability (Devika and Thampi, 2011). We contend that more MFIs need to start adopting similar models in order to achieve the desired goals of sustainable growth for all.

Limitations and future research

As with most research, this study has certain limitations, the first of which is that it has only investigated recipients of one MFI. This focus on customers of one organization is not unusual in the SCM literature, but we do acknowledge it as a limitation. In the context of the current study, the focus on one MFI was based on the requirement to control for exogenous elements that may bias the outcome (e.g. MFI-specific lending priorities). However, by collecting similar data across several such MFIs, one may be able to capture MFI-level selection effects, which may make the results even more robust. A second limitation is that this study operationalizes the data collection as a cross-section rather than as a true longitudinal panel. Panel data have distinct advantages in terms of being able to capture treatment effects over time, but we leave this highly desirable endeavor to future research. Another limitation is that in the current study our sampling frame exclusively consists of female borrowers. While this is not uncommon in microfinance, where MFIs selectively lend to females (Akula, 2008), it is likely that as MFIs become more broad in their reach, some may start lending to males as well. The extent to which male borrowers may show a similar "go with the flow" mentality that we see in the current case, is not immediately obvious. Similarly, one can imagine situations of where the borrower (in this case, female) may merely "front" the loan in order to satisfy the MFI, while the actual entrepreneurial venture may actually be managed by the male(s) in the household (i.e. an ethical breach). Future research needs to investigate the extent to which such lending to males or male capture of the business impacts decision making and performance.

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