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Staying Afloat in the Milk Business

Borrowing and Selling on Credit among Informal Milk Vendors in Nairobi

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ABSTRACT

Studies on credit schemes for small-scale entrepreneurs have documented their potential to alleviate poverty and improve food security, nutrition, and health outcomes in low- and middle-income countries. Other studies find mixed impacts of credit schemes on reducing income inequality, empowering women, and enhancing children's education. Moreover, growing evidence finds that entrepreneurs offer credit to customers; little is known about what this practice means for entrepreneurs, and even less about gendered differences in this practice. Herein, we consider the case of final retailers in agricultural value chains and examine how male and female informal milk vendors from peri-urban Nairobi borrow and sell on credit, and how these experiences affect their businesses where there are few formal safeguards to ensure repayment. In 2017, we conducted 49 individual interviews, four key informant interviews, and six focus groups with men and women who were current or former milk vendors. A thematic analysis revealed that vendors sell on credit to appeal to customers, which may be advantageous when vendors need to rid themselves of milk before it spoils, regardless of gender. With few strategies to recoup costs from customers who fail to repay, however, failure to collect debt may cause default for vendors who acquired milk via informal borrowing. The consequences are likely more severe for women vendors, who generally have less capital to fall back on relative to men. Development organizations should identify gender-sensitive financial services that can help entrepreneurs maintain viable businesses despite the volatility of borrowing and selling on credit.

Keywords: credit, microenterprises, gender, agricultural value chains, informal sector, qualitative methods

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ACRONYMS

| | |
|----------|--|
| FGD | Focus group discussion |
| IFPRI | International Food Policy Research |
| ILRI | International Livestock Research Institute |
| KII | Key informant interview |
| Milk ATM | A colloquial term to refer to a machine that refrigerates and dispenses milk |
| SSII | Semi-structured in-depth interview |

1. INTRODUCTION

Microbusiness-focused interventions, many of which target small-scale actors in agricultural value chains, are intended to contribute to upward socio-economic mobility, gender equality, women's empowerment, and poverty reduction among the poor in low- and middle-income countries (Midgley 2008; Sattar, 2011). Microbusinesses typically require low start-up costs and less skilled labor, making them easy to start and maintain and therefore attractive to the poor (Agyapong 2010). Moreover, microbusinesses may have specific advantages for women, because they allow women to combine their domestic and income generation activities more easily given that day-to-day operations are flexible (Klapper and Parker 2011).

Small business owners often simultaneously borrow from their suppliers and sell on credit to customers, which may leave them in a precarious position, unable to earn a profit and at risk of losing their businesses and accumulating debts. As Guérin (2006; p. 555) said of women's informal financial practices in Senegal, "communities are embedded in a vast, interlocking configuration of debts and debt claims, which serve as guarantees for one's personal or professional future." However, few studies have examined the position of small business owners who both borrow and sell on credit. Additionally, no studies present contiguous discussions of how men and women make decisions about both accessing and granting credit, why they make those decisions, and the gender dynamics that underpin their experiences with borrowing from suppliers, community financial groups, and/or banks and simultaneously selling on credit. To address these overlapping gaps in the literature about borrowing, selling on credit, and gender, we examine simultaneous borrowing and selling on credit by drawing on qualitative findings from a study of women and men milk vendors, all of whom are owner-operators, in the informal dairy market of peri-urban Nairobi.

In the following sections, we first present select examples from the literature of how gender may moderate the viability of small businesses and summarize borrowing practices from various sources and selling on credit among small business owners. This section is followed by the study objectives and methods. Results of our gender analysis are organized as follows: (1) borrowing among microbusiness

owners; (2) selling on credit among microbusiness owners; and (3) simultaneous borrowing and selling on credit. The discussion section considers these findings in the context of previously reported gendered differences in borrowing and selling on credit among microbusiness owners and presents various recommendations to close the gendered gaps identified through our analysis. We also discuss potential strategies to reduce the volatility of borrowing and selling on credit simultaneously, regardless of gender.

1.1 Gender dynamics and small businesses

Gender roles and social norms shape how women and men pursue livelihood opportunities, including via small business (Bernier et al. 2015). For instance, regarding dairy production in Kenya, gender norms prioritize masculine control over commercial assets (e.g., livestock, milk) and related income and delegitimize women's full participation in the dairy sector (Tavener and Crane 2018). More broadly, women entrepreneurs report a higher fear of failure relative to men globally (Minniti 2010). A study of population-based surveys from 17 upper-middle and high income countries determined women's fear of failure to be one of the principal causes behind the existence of fewer women-owned businesses (Koellinger et al. 2013).

Efforts have been made to close such gender gaps among small business ownership and management, although they do not always function as intended. For instance, an evaluation of a financial literacy training program in Eswatini found that women's sales did not increase upon completion of the program (Brixiová et al. 2020). Further, although support from husbands may improve women's business success, particularly in low-resource settings, convincing men to support their spouses' businesses in the first place is often a challenge (Wolf and Frese 2018).

These select examples show how gender and social norms may moderate women's and men's livelihoods, including microbusiness owner-operators. Although a wealth of gender-sensitive research regarding small businesses exists, little information specifically examines small business owner-operators borrowing from banks and community-based organizations and selling on credit to customers. Further, existing evidence seldom compares women's and men's experiences with such financial activities, and instead focuses exclusively on one gender or disregards gender entirely. The following sections review

the existing literature around credit and small businesses, including gender-sensitive information when available.

1.2 Borrowing among small business owners

Borrowing—defined here as accessing money or goods with the expectation the debt will be repaid, with or without a legal agreement—is one method through which owner-operators may access the capital needed to invest in their small businesses. Borrowing includes loans from loan sharks¹, banks, community-based organizations, or, in the case of our study, milk producers and suppliers at earlier nodes of agricultural value chains. This section will focus on borrowing from banks and community-based organizations, as these loans are most typically used to enhance business outcomes for small businesses and have been thoroughly discussed in the literature.

Existing evidence suggests small business owners often prefer community-based lending institutions to loans from banks. Small business owners seeking credit from banks may encounter large collateral requirements and strict repayment procedures, and more generally, banks may be inaccessible—making their services difficult to obtain (Dupas et al. 2018; Legas 2015; Mokhtar et al. 2012). Additionally, collateralization processes are generally weak in low-resource settings; as such, banks are not encouraged to lend because they are disadvantaged in enforcing their contracts (Sacerdoti 2005; McDonald and Schumacher 2007; Lyons and Brown 2011). Slow titling procedures only exacerbate this issue, as prospective borrowers are unable to prove they have the collateral needed to take a loan from a bank (Sacerdoti 2005; Lyons and Brown 2011). Such market failures encourage community-based lending.

Further, women may have less access to capital and/or credit relative to men, due to gender disparities in educational attainment and property rights (Njuki et al. 2019). For example, lower educational attainment may mean that women lack the skills needed to navigate formal lending systems (Quisumbing et al. 2015). Or, patrilineal inheritance customs may exclude women from inheriting land; in

¹ A loan shark is an individual who offers loans at very high interest rates and usually operates outside the confines of the law.

Nepal, women generally have fewer assets (e.g., land) than men, meaning women often have difficulty providing collateral to take a loan from a bank (Pradhan et al. 2018).

The lending constraints banks place on small business owners only serve to heighten the advantages of community-based financial services. Lower interest rates, enhanced social relationships, and, for women, greater independence and freedom of movement resulting from participation in microfinance schemes are among some of the reasons small business owners may prefer community-based lending schemes over banks (Ahmed 2008; Musinguzi 2016; Peters et al. 2016; Shetty 2010). For example, informal lending groups may build trust among members by charging nominal interest rates to discourage those without a serious commitment or purpose from borrowing, as documented by an ethnographic study of mixed-gender groups from the Congo (le Polain et al. 2018). Further, some community financial groups have provisions disallowing members from borrowing more than double their contribution, to guard against individuals who may ultimately fail to repay larger loans (ibid). These restrictions may reduce the need for collateral assets that an individual would otherwise need to borrow from a bank — the same assets that women are often less likely to own than men. Such provisions may facilitate business owners', particularly women's, access to financial groups in their communities. For instance, women, particularly in sub-Saharan Africa, take fewer bank loans but report greater access to community-based financial services than men (Njuki et al. 2019). Additionally, a systematic review of 19 qualitative studies found that, overall, women who participated in microfinance schemes enjoyed greater freedom of movement relative to those who did not participate (Peters et al. 2016).

Despite the global proliferation of community-based lending schemes, not all of their impacts are positive. Research on small businesses (owned by women or men) in Zambia found that more than one year after taking a microfinance loan, businesses experienced significant losses that offset any gains made in the first year, demonstrating that microfinance loans may not always provide long-term help to business owners (Copestake 2002). In some cases, lending schemes may even hinder progress toward gender equality. For example, in Malawi, households that took microcredit loans for their smallholder farms increased agricultural activities but were also associated with lower school attendance among

daughters relative to sons (Shimamura and Lastarria-Cornhiel 2010). Both these examples reveal long-term, unintended consequences stemming from microcredit schemes.

Selling on credit among small business owners

Selling on credit is defined as allowing customers to access goods and/or services with the mutual understanding (between seller and customer) that the customer will provide monetary compensation for the goods and/or services at a later time. Small business owners sell to customers on credit for a variety of reasons: enhancing competitiveness, offloading perishable goods, and maintaining personal relationships (Blanc et al. 2011; Christian 2014; Guérin 2006). Among women microentrepreneurs in townships in Senegal, they sell on credit—charging interest rates between 10 and 15 percent—to retain customers, remain competitive, and offload perishable items prior to expiration (Guérin 2006). Nevertheless, these women cited defaulting clients as a principal reason they close their businesses. In rural Mexico, small business owners sell on credit, because they recognize their customers face economic struggles of their own and small business owners may opt to sell their goods on credit to remain competitive, even at a loss (Blanc et al. 2011). To protect their businesses, they may restrict the amount of credit their customers may access or set up repayment plans (ibid). Similarly, in poor communities in rural Yemen, a study found that shopkeepers impose credit limits on their customers (Christian 2014).

As stated above, no studies examine the gender dynamics that shape women's and men's experiences with selling on credit. Guérin (2006), Blanc et al. (2011), and Christian (2014) do not comment on any potential differences or similarities between women and men business owners. Guérin (2006) only investigated women microentrepreneurs in Senegal, although both men and women are traders; in Christian's (2014) case, the gender of shopkeepers is not mentioned, although it is likely that the majority, if not all, are men. The dearth of gender-sensitive evidence about how small business owners sell on credit is a constraint in developing policies and programs that support small business owners and ultimately foster gender equality.

1.3 Study purpose

The objective of this study is to determine how women and men microbusiness owner-operators navigate borrowing and selling on credit and how their choices may affect their businesses. The informal milk sector in peri-urban Nairobi is an especially suitable context for this study, as milk consumption is high and milk is typically purchased fresh and consumed daily (Salasya et al. 2006). Additionally, low business start-up costs (i.e., milk and a container to store it in are the only requirements), makes informal milk vending an attractive livelihood pursuit for the urban poor. Given these circumstances, there is sufficient motivation to begin filling the knowledge gap around simultaneous borrowing from various sources and selling on credit to customers in informal sectors in this setting.

2. METHODS

The data analyzed herein come from an exploratory study of women's empowerment and gendered barriers and opportunities in milk trading, which was used to inform a milk trader intervention for MoreMilk, an agricultural research for development program, including gendered examinations of borrowing and selling on credit (See Heckert et al. in preparation and Gailè et al. in preparation for further detail). The research team conducted single-sex focus group discussions (FGDs) and semi-structured in-depth interviews (SSIIs) with both current and former milk vendors in the Dagoretti division of Nairobi, Kenya. We used emerging results from the FGDs and SSIIs to develop preliminary hypotheses, which we tested in key informant interviews (KIIs) with experienced, current milk vendors who are members of a large dairy trader association.

Participants were recruited for FGDs, SSIIs, and KIIs with the intention of maximizing variation among participants' backgrounds and milk vending experiences. Selection criteria included: had at least one government license related to milk trading; did not have a milk trading license; sold milk at a bar, shop, or milk ATM²; sold as a mobile vendor or at a fixed-point without infrastructure; sourced milk directly from farmers; and bought milk through an intermediary (i.e., processor or broker). The sampling strategy aimed to recruit eight to twelve individuals for each of the six planned FGDs: four with current

² A milk ATM is the colloquial term to refer to a machine that refrigerates and dispenses milk.

vendors (two each with men and women) and two with former vendors (one with men and one with women). Sampling planned for 49 participants for SSII interviews and aimed to include at least six men and six women not currently in the dairy business but who were former vendors. Of the four key informants, three were men and one was a woman. All key informants were current milk traders and members of a large dairy trader association.

We completed the number of FGDs planned and exceeded the planned number of SSII. The decision to conduct four KIIs was made during fieldwork. In total, 99 people participated in a SSII, KII, or FGD. **Tables 1, 2, and 3** include information about the age, education level, marital status, vending status (i.e., current or former vendor), and business type (i.e., shop, milk ATM, street vendor, etc.) from the three different data sources. **Table 1** presents the FGD participants by individual focus group; most importantly, we have a balance of focus groups of solely women and solely men, with a diverse representation of participants across business type, education level, and vending status. **Tables 2 and 3** present the SSII and KII participants, respectively. Both **Tables 2 and 3** denote the number of women and men who participated in each type of interview. Of the SSII described in **Table 2**, there is a diverse range of women and men represented regarding their business type, education, and marital status, though most participants (42) were current vendors while only 7 were former vendors. Regarding the KIIs presented in **Table 3**, it is of note that only one key informant was a woman. Also, though only four interviews were conducted, KII participants all had a secondary education or higher—making KIIs more educated than FGDs and SSII.

Table 1. Characteristics of focus group discussion participants

| | FGD ^a 1 | FGD 2 ^b | FGD 3 | FGD 4 | FGD 5 | FGD 6 | Total Women | Total Men ^b | Total ^b |
|------------------|--------------------|--------------------|-------|-------|-------|-------|-------------|------------------------|--------------------|
| Gender | Men | Men | Men | Women | Women | Women | 3 | 3 | 6 |
| Participants (#) | 4 | 7 | 9 | 4 | 10 | 8 | 22 | 20 | 42 |
| Age (mean) | 38.8 | - | 41.2 | 34.8 | 39.4 | 36.8 | 37.0 | 40.0 | 38.5 |
| Education | | | | | | | | | |
| No school | 0 | - | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Primary | 1 | - | 4 | 0 | 7 | 1 | 8 | 5 | 13 |
| Secondary | 0 | - | 3 | 4 | 1 | 7 | 12 | 3 | 15 |
| University + | 3 | - | 2 | 0 | 2 | 0 | 2 | 5 | 7 |
| Marital status | | | | | | | | | |
| Married | 4 | - | 8 | 2 | 8 | 8 | 18 | 12 | 30 |
| Single | 0 | - | 1 | 2 | 2 | 0 | 4 | 1 | 5 |
| Separated | 0 | - | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Vending status | | | | | | | | | |
| Current | 4 | 7 | 0 | 4 | 10 | 0 | 14 | 11 | 25 |
| Former | 0 | 0 | 9 | 0 | 0 | 8 | 8 | 9 | 17 |
| Business type | | | | | | | | | |
| Shop | 2 | - | 0 | 2 | 6 | 0 | 8 | 2 | 10 |
| Milk bar | 0 | - | 3 | 1 | 0 | 0 | 1 | 3 | 4 |
| Milk ATM | 1 | - | 0 | 1 | 1 | 0 | 2 | 1 | 3 |
| Home | 0 | - | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Mobile vendor | 1 | - | 6 | 0 | 2 | 0 | 2 | 7 | 9 |
| Street vendor | 0 | - | 0 | 0 | 0 | 4 | 4 | 0 | 4 |
| Farmer | 0 | - | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Supplier | 0 | - | 0 | 0 | 1 | 4 | 5 | 0 | 5 |

^a FGD = focus group discussions

^b Complete descriptive data from FGD 2 was missing and is not accounted for in the Total columns.

Table 2. Characteristics of semi-structured interview participants

| | Women | Men ^a | Total ^a |
|------------------|-------|------------------|--------------------|
| Participants (#) | 27 | 22 | 49 |
| Age | | | |
| <20 years | 0 | 1 | 1 |
| 20 – 30 years | 13 | 7 | 20 |
| 31 – 40 years | 9 | 9 | 18 |
| 41 – 50 years | 1 | 3 | 4 |
| 51 or more years | 4 | 2 | 6 |
| Education | | | |
| No School | 1 | 2 | 3 |
| Primary | 8 | 5 | 13 |
| Secondary | 15 | 9 | 24 |
| University + | 3 | 5 | 8 |
| Marital status | | | |
| Married | 21 | 17 | 38 |
| Single | 5 | 5 | 10 |
| Separated | 1 | 0 | 1 |
| Vending status | | | |
| Current | 22 | 20 | 42 |
| Former | 5 | 2 | 7 |
| Business type | | | |
| Shop | 16 | 10 | 26 |
| Milk bar | 4 | 5 | 9 |
| Milk ATM | 1 | 0 | 1 |
| Home | 1 | 0 | 1 |
| Mobile vendor | 2 | 4 | 6 |
| Street vendor | 3 | 1 | 4 |
| Farmer | 0 | 1 | 1 |
| Supplier | 0 | 1 | 1 |

^a This column is incomplete due to missing education data for one man.

Table 3. Characteristics of key informant interview participants

| | Woman | Men | Total |
|------------------|-------|----------------|-------|
| Participants (#) | 1 | 3 | 4 |
| Age | | | |
| 31 – 40 years | 0 | 1 | 1 |
| 41 – 50 years | 1 | 1 | 2 |
| 51 or more years | 0 | 1 | 1 |
| Education | | | |
| Secondary | 1 | 1 | 2 |
| University + | 0 | 2 | 2 |
| Marital status | | | |
| Married | 1 | 3 | 4 |
| Vending status | | | |
| Current | 1 | 3 | 4 |
| Business type | | | |
| Milk bar | 0 | 2 | 2 |
| Milk ATM | 1 | 1 ^a | 2 |
| Supplier | 0 | 1 ^a | 1 |

^a One man owns a Milk ATM and works as a supplier, so he is presented twice.

A field team of six interviewers and notetakers with previous qualitative data collection experience and who were fluent in English and Swahili were trained on research ethics, gender concepts, dairy value chains, and interviewing and facilitation strategies. Each FGD or interview had a designated interviewer and a designated note taker. Oral consent, available in both English and Swahili, was obtained prior to the start of each FGD, SSII, and KII. Separate consent was also specifically sought to record. All FGDs, KIIs, and all but one SSII, for which consent to record was denied, were audio-recorded. The study was approved by the Institutional Review Board of the International Food Policy Research Institute (IFPRI) and the ethics review committee of the International Livestock Research Institute (ILRI).

The recordings were simultaneously translated and transcribed verbatim into English by a team of experienced transcriptionists. All transcripts and notes were uploaded to NVivo for analysis. Deductive codes were developed based on themes identified in the literature. Inductive codes were developed based on discussions among the research team during coding as new themes emerged (see **Appendix 1** for codebook). After each transcript had been coded by two members of the research team, the transcripts were compared for consistency, and divergent interpretations were resolved through discussion. After coding was completed, codes were queried to identify patterns in the data across gender, type of business, and education level. Thematic analysis informed the results presented below.

3. RESULTS

Herein we first report women's and men's perceptions around borrowing from various lenders and selling on credit to customers. Perceptions around borrowing are organized by lender type: banks, credit groups, and informal lenders (e.g., milk suppliers, family members). Perceptions around selling on credit are organized by why vendors sell on credit to customers, perceived advantages and disadvantages of selling on credit, and strategies used to collect debt from customers. Finally, we explore borrowing and selling on credit simultaneously, and how this practice may render owner-operators and their businesses and livelihoods vulnerable to economic shocks.

3.1 Borrowing among microbusiness owners

Borrowing is common among milk vendors, regardless of gender. Thirty-two participants (16 women and 16 men), from among SSII (29) and FGDs (3), shared experiences about attempting and/or successfully borrowing for any reason. Of these 32 individuals, 22 had a business with permanent infrastructure: shop, milk bar, or milk ATM—the remaining participants were mobile or street vendors. Overall, women and men seem to borrow—for any reason—relatively equally. However, the men used banks more than women (four men; two women), and participating women used credit groups more than men (six women; three men).

Regarding borrowing to invest in one's milk business specifically, 19 (ten women and nine men) of the 32 total borrowers stated they had attempted to do so (whether successfully or not). These 19 owner-operators sought financing from a variety of sources: loans from banks (one SSII participant), credit groups (six SSII participants; one FGD participant), or informal loans from their business contacts or family³ (nine SSII participants; two FGD participants). The analysis below reflects participants' perspectives on borrowing overall, regardless of whether they had sought credit from a particular lender or sought credit specifically for their milk businesses.

Of those that explained their motivation for the loan they sought, participants noted two main reasons: accessing capital to enhance their milk businesses and to sustain their day-to-day operations. Although few disclosed the size of the loan sought for their milk businesses, those that were disclosed ranged in size from 10,000 KSH⁴ for unspecified use to 250,000⁵ KSH for a car to transport milk.

3.1.1 Bank loans

Although many participants discussed bank loans, such loans are uncommon among milk vendors: only six of 49 SSII participants (four men and two women) attempted to take a loan from a bank. Only one SSII participant (a man currently operating a milk bar) sought a loan specifically for his milk business. Four other SSII participants (three men and one woman) had sought bank loans (and had taken

³ Only two SSII participants borrowed money from family members; all others – SSII and FGD participants – borrowed from business contacts informally.

⁴ Valued at approximately \$95 USD.

⁵ Valued at approximately \$2,350 USD.

them successfully) for reasons unrelated to their milk businesses. One woman, a former milk bar owner, had failed to take a loan, although that loan was also not intended for her milk business. Nonetheless, the results presented herein reflect all participants' opinions about bank loans, regardless of whether they have sought a bank loan.

Overall, women's perceptions of bank loans contrast with men's. Men emphasized the risk of losing collateral to a bank, while women emphasized the stress of taking a bank loan and the fear of failing to repay. Three men (one SSII; two FGD) brought up the risk of a bank seizing collateral when a borrower fails to repay. One man, who owns a milk ATM, posed a hypothetical scenario invoking land as collateral. He explained, "Some of the disadvantage is that when a man uses a collateral, like land, and the business fails, the land will be taken and the family will be left without land." Another man in a FGD, a milk bar owner, said, "You must use something to sign for the loan like a title deed or something precious, so that if you fail to pay the loan they can come and take it to clear the loan."

Women—five total (four SSII participants; one FGD participant)—identified fear of failing to repay as a challenge to accessing a loan, indicating a dearth of self-confidence regarding their creditworthiness; no men shared such concerns. These women's education levels ranged from primary school to college, suggesting that fear of failure to repay is not a consequence of low educational attainment alone. As one woman, a FGD participant and a current shopkeeper, said, "The loan business is stressful. Yeah, especially in milk. If you apply for a loan and say the milk spoils today and spoils.... And you know in a week maybe you are supposed to pay 500 [KSH]. Where will you get that 500 to pay back?...It is risky." Another woman, also a current shopkeeper, shared that, "I have never applied for a loan, because paying [it] back is a headache and can make one spend sleepless nights." One man, a current vendor, mentioned fear of failing to repay, but mentioned it as a general concern anyone could have, not a concern he personally has. In examining women's and men's perceptions of bank loans, there is an obvious gendered division: while anyone of any gender would suffer an economic impact and likely experience stress from defaulting on a bank loan, men emphasize the risk of losing their tangible assets in default and women emphasize negative psychological consequences.

One key informant, who runs a milk bar, believes women specifically lack confidence in this area and are more fearful of defaulting on a loan in comparison to men. In his opinion:

I think men have some personal savings. Again, other men take the risks of going to the banks and SACCOs to take loans, and many ladies fear getting loans from banks...I think most women fear on how they repay their loans back, unlike men who get the bank loans without factoring in how they will repay back the loan. Women have small chamas, savings groups where they get money at lower interest rates. Unfortunately, those chamas savings group don't give large amounts...Access to loans from banks and SACCOs requires security, [in] which ladies are disadvantaged ... Men can easily risk their title deeds or even logbooks without the consent of the wife and secure loans.

In short, he perceived women as more risk-averse in comparison to men, while men have greater access to assets which they may use to repay a loan in comparison to women. If his opinion is correct, women's fewer assets may be why they fear defaulting on a loan more than men – women do not have the assets to leverage a loan, and if they defaulted, they would not have collateral to rely upon to repay their debts owed.

3.1.2 Credit groups

Some milk vendors access loans through financial groups, which may offer loans or use merry-go-round savings schemes (in which members take turns giving other members a pre-specified amount of cash). The present study only examines groups that offer loans (called a credit group for the purposes of this study). Four women (three SSII participants; one FGD participant) and three men (all SSII participants) had borrowed loans via credit group for their milk businesses.

Overall, men and women vendors perceived loans from credit groups as more favorable than those from banks, due to how groups handle repayment. In explaining her group, one woman, a current shopkeeper with a secondary education, stated that members, “Can borrow and repay back at a lower interest [compared to banks].” A man from a FGD shared a similar thought, although he had not explicitly stated whether he has borrowed from a group previously; he said, “They are usually good because when you need a loan, instead of going to the bank, the group can give [it to] you, and they give you ample time to pay back. And the interest that they ask for is fair.”

In some instances, milk vendors may leverage their participation in a credit group with a larger financial institution—another incentive to participate in such a group, although not as frequently discussed among participants. As one woman—a current shop owner and the only participant to share such an experience—explained in a FGD, “[Groups] can help, because...before I raise that money it will take a while, but if it's in the group they will have contributed for you, and then you can maybe also take the money to the bank so that they can give you a bigger loan so that you can afford to buy the ATM machine.” Her experience shows how milk vendors may navigate multiple spheres of credit simultaneously to advantage their businesses, by purchasing a valuable asset such as a milk ATM, or how they may wield credit groups to make credit from banks accessible.

Despite the overall appeal of credit groups, some participants discussed how they may harm members. As one woman from a FGD—a current shopkeeper—said, “The groups also have their disadvantages. There are these groups that can sign a loan for you. You take a loan, and they sign for you... but when it comes to paying they disappear and leave you—the guarantors—to pay the money.” No one mentioned any strategies used to prevent theft or mitigate negative consequences of participation in a credit group. However, some participants had experiences in merry-go-round savings groups, which may enable members to bypass the obligation of repaying a loan.

3.1.3 Informal lenders

Borrowing from informal lenders is defined as when vendors ultimately repay an individual, not an institution (e.g., bank or credit group). Vendors, including women and men, often borrow from their milk suppliers; seven SSII participants (four women and three men) and two FGD participants (a woman and a man) discussed informally borrowing from their suppliers. These nine individuals had a wide range of characteristics and included current and former vendors, a range of business types (i.e., shops, milk bars, street vendors, and a supplier), and education levels ranging from primary school to college.

Participant owner-operators typically borrow informally when they do not have enough cash to sustain their day-to-day business (e.g., purchase milk supply); they do not typically seek informal credit to make long-term investments in their businesses (e.g., buy an expensive commercial asset like a

refrigerator or milk ATM). Given that informal borrowing is used to sustain day-to-day operations, social relationships with other agents within the dairy value chain moderate such borrowing. Three study participants acknowledged this role. As one woman, a former shopkeeper with some high school education, explained, “We have had a good relationship with my milk supplier as he was understanding...[he] was selling milk to me on credit, and I paid later.” One of the men, who runs a shop and has a college education, likewise explained that, “I have cordial relationship with [my supplier]...Whenever I have a problem, I say I don’t have money to pay. I can be given credit even for a week...I don’t have to pay all that lump sum in one day. For instance, they can give me up to 50,000 KSH⁶ to be paid 2,000⁷ per week till I finish paying the amount.” In short, trusting relationships with their suppliers facilitates women’s and men’s access to informal borrowing.

3.2 Selling on credit among microbusiness owners

Selling on credit is defined as permitting a customer to take a good or service with the agreement—written or verbal—that they will repay a pre-determined amount in the future. In this study, we did not find any examples of milk vendors charging customers interest under such an agreement. The majority of study participants – 47 total (44 SII and three FGD participants; 26 women and 21 men) – explicitly stated they sell on credit or, among former vendors, did so regularly. These 47 participants represent milk businesses of all kinds, but none owned a milk ATM—which may be simply because milk ATMs are expensive and therefore few milk vendors invest in them.

3.2.1 Why sell on credit

Participants stated four reasons they sell (or sold) on credit: (1) to maintain social relationships (two women and two men); (2) to maintain customers (two men); (3) to wait for customers themselves to be paid (two men and one woman); and (4) to sell milk before it spoils (one man). The remaining SSII and FGD participants who stated they sell (or sold) on credit did not elaborate why.

⁶ Valued at approximately \$470 USD.

⁷ Valued at approximately \$19 USD.

Most explanations for selling on credit emphasized the social relationships vendors have (or had) with their customers as a factor considered when selling to customers on credit among both women and men. As stated above, four individuals (two men and two women) emphasized such relationships. A man who owns a milk bar and completed primary school explained, “I do [sell on credit], but only to those close and [if] we have made some arrangements, depending on the relationship we have with the customer.” Other vendors may find it difficult to refuse credit to a customer who frequently purchases milk. As a woman, who completed primary school and runs a shop said, “There are some people who are daily customers. They may come to you and ask you for something, but then they always pay the next day.” Such comments indicate that an ongoing relationship, in which a customer has developed a good reputation with a vendor, determines whether a vendor may sell on credit to a particular customer.

Some vendors weigh the tradeoffs between selling on credit—and potentially never being repaid—or ultimately losing (frequent) customers who cannot pay cash at the time of sale. As one man from a FGD explained, “If you are the person selling to them, for you to maintain customers even if they don’t have money, you will have to give them the milk today and tomorrow.” The decision to sell on credit is therefore, at least in part, motivated by the desire to build and maintain a regular customer base, despite the risk of never being repaid. In other words, milk vendors bet on earning more profit by offering customer-friendly credit policies than they might lose to customers who never repay.

Three other milk vendors (two men and one woman) shared that they sell on credit to customers who work jobs that pay weekly or monthly, and therefore vendors cannot collect at the time of the sale. One man who currently owns a milk bar said that, “There are those who prefer to pay at the end of the month after they get their monthly salary, so you agree how the payments will be done.” The woman, who formerly operated a shop and had a secondary education, said “Some of my customers are working in casual jobs and were only getting money at the end of the week. Some used to come and explain to me when they did not have money. Yet, they have children, and they want to consume milk.”

Finally, milk vendors may sell on credit because their product is perishable. Although milk vendors may prefer immediate payments, they may feel compelled to sell on credit, because if the milk

spoils, they cannot sell it at all and must take it as a loss.⁸ Many participants described milk spoilage as a hindrance to their business, although only one man explicitly linked it to selling on credit. As he, a mobile vendor with a secondary education, explained, “Someone comes for milk, and he has no money. Milk can also not be kept, so you leave him the milk.” Milk that spoils largely represents a loss of money for the business; selling milk on credit is not a definitive loss, as there is a chance that the vendor will be repaid.

3.2.2 Advantages of selling on credit

In explaining perceived advantages of selling on credit, two themes emerge: gaining customers (one SSII participant) and planning for a lump sum upon repayment (seven SSII participants). One man—who currently owns a shop and has a university education—thought that selling on credit could bolster his customer base. As he said, “Once the customers have trust in you [after selling on credit], hence they are loyal, they even look for other customers to come and buy milk from you.” The explanation he offers overlaps with those who stated they sell on credit to maintain customers, but his was raised explicitly as an advantage for one’s business, not solely as discussion of why milk vendors may opt to sell on credit in their day-to-day operations. Nevertheless, his opinion that selling on credit is advantageous for this reason was not stated by others.

The most common explanation of how selling on credit may advantage milk vendors comes from five women and two men, who perceived it as advantageous because they may collect the debt as a lump sum and plan how to use the funds upon repayment. As one woman, a current mobile vendor, stated, “[Selling on credit] is benefiting the business, because when they pay me at the end of the week, I am able to plan for the money.” Another woman, a former milk bar owner, said that, “[Selling on credit] wasn’t ruining [the business; it] was like saving.”

3.2.3 Disadvantages of selling on credit

Evidence suggests that milk vendors—both men and women, current and former vendors—report more negative experiences with selling on credit than they do positive ones. As such, milk vendors largely

⁸ Some vendors may use spoiled milk to make mala, a fermented yogurt-like product. However, customer demand for mala is not as high as that for milk, and it also spoils eventually.

perceive selling on credit as disadvantageous, despite feeling compelled to do so, as discussed earlier. The primary perceived disadvantages are that owner-operators may not have the cash needed to restock their business after selling on credit and that some customers simply never repay.

Three vendors (two women; one man) explained how selling on credit limits their ability to restock their milk inventory. One woman, a current mobile vendor, said that, “[selling on credit] is hard...because I need the money to buy more stock, and if I sell on credit, it means I will either not get another supply or I reduce the supply.” When they sell on credit, vendors may not have the cash needed to restock for the next business day. Ultimately, their overhead costs remain the same, but they must balance expenditures with unpredictable revenue, which may affect financial plans—whether for their business, household, or personal use—for the anticipated revenue and profit.

Unfortunately for milk vendors, some customers simply never repay their debt. In total, 21 participants (18 SSII participants; three FGD participants), both women (10) and men (11), explicitly stated they had such experiences. Of these 21 individuals, 18 are current vendors. As a man who formerly operated a shop remarked that selling on credit was not beneficial to his business, “because there are people who never paid me.” Similarly, a woman, who sells from her home and has no formal education, said, “lack of capital and debts from customers [are a challenge] as some fail to pay for the milk.” Further, five vendors (one woman; four men) explained that some customers never repay, because they have moved away. As a current vendor, a man who owns a shop, explained, “[I have] lent to some people and the debt becomes big [and] the debtor moves away...They have broken my trust.”

In summary, several study participants articulated that selling on credit is detrimental to their businesses, partly because milk vendors may not have enough financial resources to continue operations the next day and/or because some customers completely fail to repay, meaning vendors lose revenue they would otherwise have. Offering credit limits the financial resources milk vendors have for their businesses and livelihoods. In fact, two participants, a woman and a man who both currently operate shops, said they sell on cash exclusively, possibly to avoid such outcomes.

3.2.4 Collecting debt from customers

To mitigate the threat of customers failing to repay, milk vendors—across gender and educational level—employ a variety of methods including recordkeeping, payment schedules, and customer reminders strategies to collect debt. To a lesser extent, vendors may request collateral to ensure repayment. Some vendors may also combine strategies to encourage repayment. Overall, none of the strategies for collecting debts are proactive.

One strategy was to keep records of how much customers owe; six SSII participants (four women and two men) of the 48 who have sold on credit used this strategy. A woman who was a former vendor stated that, “I used to write the name of the debtor and the amount he owes, and once they pay I just tick [it off].” Such recordkeeping allows vendors to keep evidence of debts owed so they do not lose earnings by forgetting individual credit agreements with customers.

Another strategy—that three men and one woman, all SSII participants, used—was to agree to a payment schedule with their customers. As a man who currently owns a shop explained, “We have arrangements with some who don’t get money daily. They come and pay maybe monthly...Some tell you they didn’t get money that day. So, they promise money the next day and if they fail to pay, they pay the day after that day.”

Another debt collection strategy mentioned—by women more than men—was to remind customers of debts owed. Six women and one man, all SSII participants and current vendors, stated they use this method. As the man said, “I usually remind my debtors...by word of mouth. Others I call via phone. It never gets [to having to call the police], because I never allow one to get so much milk [it] calls for the legal process.”

Finally, although less frequently, milk vendors may combine strategies. A woman, with no formal education and who sells from her home, combined a pay schedule with reminders, “We have an agreement on the day and time for the debts to be paid, and at times I follow up with my phone.” The man, a milk bar owner-operator with a primary education, restricts additional credit sales and reminds customers.

Unfortunately for vendors, the collection strategies outlined above do not always work, regardless of gender. As mentioned earlier, 21 vendors, including ten women and 11 men, had customers who never repaid their debts, despite the range of debt collection strategies (recordkeeping, payment schedules, reminders, and combinations thereof) they used.

3.3 Simultaneous borrowing and selling on credit

Simultaneous borrowing and selling on credit is common among milk vendors, both current and former. For instance, 27 total participants (24 SSII and three FGD participants) both borrowed and sold milk on credit at least once. **Table 4** summarizes all participants (from SSII and FGDs)⁹ who indicated they did so, including information on sex, current vending status (i.e., current or former), premises type (e.g., supplier, mobile vendor), from whom they borrowed (e.g., community credit group, their supplier), and whether their borrowing was specifically for their milk business¹⁰ for each participant. Of note, **Table 4** shows that 14 women and 13 men borrowed and sold on credit, though only nine women and eight men borrowed specifically for their businesses. As we described in the following paragraphs, such simultaneous activity leaves milk vendors in vulnerable financial positions; vendors may be unable to repay their banks, credit groups, or informal lenders, and in extreme cases, may be forced out of business entirely. Given the reasons behind why vendors feel compelled to sell on credit (maintain social relationships and customers; wait for customers to have cash; sell milk before spoiling), the precarity is often unavoidable.

⁹ Note that not all FGD participants explicitly shared whether they had borrowed or sold on credit, due to dynamics inherent in FGDs.

¹⁰ Note that only 17 participants (14 SSII and three FGDs) borrowed for their milk businesses (borrowing for something other than their milk businesses included borrowing to finance a shoe business, to purchase construction materials to build a house, to buy a vehicle, and more).

Table 4. Participants who borrow from various lenders and sell on credit to customers

| Interview type ^a | Gender | Vendor status | Business type | Source of loan | Loan used for milk business? |
|-----------------------------|--------|---------------|---------------|---------------------------|------------------------------|
| SSII | Female | Current | Shop | Credit group | No |
| SSII | Female | Current | Mobile vendor | Credit group | No |
| SSII | Female | Current | Shop | Credit group | No |
| SSII | Female | Current | Shop | Credit group | No |
| SSII | Female | Current | Shop | Credit group and bank | No |
| SSII | Female | Current | Home | Credit group | Yes |
| SSII | Female | Current | Shop | Credit group | Yes |
| SSII | Female | Current | Shop | Credit group | Yes |
| SSII | Female | Current | Street vendor | Informal | Yes |
| SSII | Female | Current | Street vendor | Informal | Yes |
| SSII | Female | Current | Milk bar | Informal | Yes |
| SSII | Male | Current | Supplier | Bank | No |
| SSII | Male | Current | Milk bar | Bank | No |
| SSII | Male | Current | Mobile vendor | Credit group | No |
| SSII | Male | Current | Street vendor | Credit group | No |
| SSII | Male | Current | Milk bar | Other - car dealership | No |
| SSII | Male | Current | Milk bar | Bank | Yes |
| SSII | Male | Current | Farmer | Credit group | Yes |
| SSII | Male | Current | Mobile vendor | Credit group | Yes |
| SSII | Male | Current | Shop | Informal | Yes |
| SSII | Male | Current | Shop | Informal | Yes |
| SSII | Female | Former | Shop | Informal | Yes |
| SSII | Female | Former | Shop | Informal | Yes |
| SSII | Male | Former | Shop | Credit group and informal | Yes |
| FGD | Female | Former | Supplier | Credit group and informal | Yes |
| FGD | Male | Former | Mobile vendor | Informal | Yes |
| FGD | Male | Former | Mobile vendor | Informal | Yes |

^a SSII= semi-structured interview, FGD = focus group discussion

A current vendor—a man who works as a motorbike supplier—described how he was unable to repay his supplier on time due to simultaneous borrowing and selling on credit. In his words, “One customer failed to pay 700 KSH¹¹. So, I had to look for funds and pay the supplier of milk. For the debts I normally finance the milk I sell on credit, and then refund when I am paid for the milk.” In other words, when he sells on credit, he may also need to borrow from his milk supplier to restock milk and continue sales. More generally, once vendors are repaid, they may repay their suppliers, but the cycle of selling on credit and therefore borrowing from informal lenders (or having to delay repayment to banks or credit groups) may continue. Given that 27 participants have borrowed (for any reason) *and* sold milk on credit, such a situation is common among milk vendors.

In some instances, selling on credit and borrowing simultaneously may drive vendors to shutter their businesses, cutting them off from the livelihood opportunities offered by the informal dairy sector completely. Three former vendors from FGDs, one woman and two men, shared such experiences with closing their businesses in detail. As the woman, a former supplier with a secondary education, said, “I was a supplier [i.e., sold to milk businesses, which in turn sold milk to final consumers], but the challenge was the delays [and] late payments for milk payment from buyers who I was selling to on credit and pay at the end of the month. So, I was being forced to go borrow cash from the groups. I ended up incurring huge losses which I could not sustain the business because of other costs...Customers started buying on credit and delaying the payments, which made it hard to pay farmers. I had to stop the business.” One of the men, a former mobile vendor with a primary education, shared a near identical experience; in his words, “I was getting milk from farmers and selling to several customers. Some of them failed to pay for the milk, and so I could not be able to pay farmers for their milk which made me stop the milk business.”

Similarly, the second man, a former broker¹² and a mobile vendor, explained that he borrowed from farmers (his milk suppliers) and sold on credit to vendors. He said, “Some [farmers] used to put

¹¹ Valued at approximately \$7 USD.

¹² A dairy broker, although they still sell milk as a commercial good, occupies a slightly different node of the dairy value chain in comparison to a typical vendor. As a broker, this participant would transport milk from the farm source to vendors for sale to final consumers.

water and flour [in the milk], so the milk ends up spoilt. The one selling the milk in Nairobi fails to pay, claiming that the milk quality is bad, so the debts accumulate, and farmers start complaining. That made me stop the milk business.” The former broker’s story adds additional insights, as those who simultaneously borrow and sell on credit, regardless of their place in the dairy value chain, must absorb any economic shocks stemming from dubious milk quality.

To insulate their businesses from the volatility of simultaneous borrowing and selling on credit, some vendors have adopted protective strategies, such as holding additional funds until repayment by customers or restricting debt accumulation. Two women held other funds they already had until customers repaid them. As a woman who formerly operated a shop explained, “For every credit sale, I used to note it somewhere and take the money equivalent to the debts from the shop and return at the end of the week once they pay for the milk.” The other woman, a shopkeeper, uses a similar strategy. While this strategy may protect their businesses in the short term—and only if customers ultimately repay—it still reduces the capital vendors would otherwise have immediately available to invest in their businesses or to support their families.

Other vendors restrict how much or to whom they sell on credit to protect themselves from customers who may fail to repay. As one woman who currently owns a shop stated, “[I limit] the amount of credit sales to the customers,” although she was the only participant to share this strategy. Two others, a man and a woman both milk bar owners, do not sell to those with outstanding debts. The woman said, “Now I give people deadlines to pay milk. If within the first five days you have not paid, I stop delivering the milk. Because there are many people who went with my money.” As the man explained, “The one who is to pay after a week...if he passes that date before he pays, he is stopped from getting milk until he first clears the first debt.” Additionally, one woman, a current street vendor, was on the receiving end of this strategy: her supplier protects himself until she repays what she has borrowed from them. As she explained, “They [your supplier] cannot sell to you on credit if you already have a debt,” disallowing her from accumulating debt that could drive her or her supplier out of business. These quotes show that the strategy of restricting debt accumulation is used by actors at multiple nodes of the dairy value chain.

4. DISCUSSION

Small and microbusiness owner-operators, including those who serve as the final retailer in agricultural value chains, are typically thought of as credit recipients as they aim to develop their businesses. Our findings demonstrate how these retailers in fact operate in joint roles as credit recipients and credit granters within their communities, often to the detriment of their own businesses. The results of this study shed light on this unique role. To date, little has been written about how vendors in agricultural value chains may borrow to operate and upgrade one's business while simultaneously selling on credit to customers. Despite this study's specific focus on milk retailers in peri-urban Nairobi, this experience is likely widespread across agriculture value chains in low and middle-income countries due to low levels of capital and the perishability of products common to these value chains.

Our findings on the experiences of milk retailers as borrowers are consistent with previous findings in the literature and offer novel contributions. For example, retailers often perceive credit groups more favorably than bank loans (Ahmed 2008; Musinguzi 2016; Peters et al. 2016; Shetty 2010). A novel finding of our work is in detailing the experiences of women and men who sell milk to customers on credit. They do so partly out of a desire to maintain relationships with customers and to foster new ones with prospective clients, adding to the evidence of the importance of strong social networks among Africa's urban poor (Kebede and Butterfield 2009; Shimamura et al. 2017). Or, to restate Guérin (2006; p. 555), "communities are embedded in a vast, interlocking configuration of debts and debt claims, which serve as guarantees for one's personal or professional future." Our work contextualizes this assertion. Importantly, however, the benefits of these social networks are not guaranteed and may even have negative consequences. Selling on credit is overwhelmingly perceived negatively as vendors may then lack the cash needed to restock their businesses, forcing them to borrow informally from their suppliers.

Additionally, we find that despite the strategies vendors of any gender implement to encourage repayment and the social networks that encouraged selling on credit in the first place, some customers never repay. Owner-operators may then be thrust out of business because they cannot afford to restock their businesses nor repay their suppliers, credit groups, or banks. Moreover, as microbusiness owner-

operators lose their livelihoods, their communities may also suffer due to shuttered businesses. In theory, retailers could raise their milk prices to incorporate implicit lending charges to guard against customers who fail to repay and subsequent financial losses that drive them out of business. However, no respondents indicated they used such a strategy, possibly because raising prices would render their businesses less competitive, given their primary clientele are peri-urban Nairobi's working poor, risking the longevity of their businesses anyway.

4.1 Gendered differences among small business owner-operators

We also find important gender differences that begin to fill knowledge gaps around borrowing and selling on credit. For instance, men often explicitly expressed concern over losing their tangible assets as a risk of default, while women emphasized negative psychological consequences (e.g., stress, sleeplessness). These differences may be due to women's limited access to assets to use as collateral and/or differences in the types of loans that women and men are able to take – framing how women and men think about the risks of taking a loan. Or, these differences may simply stem from differences in how women and men express their concerns during interviews.

Regarding selling on credit, women owner-operators may find it more difficult to seek repayment and be especially burdened by the failure of customers to repay and may be more likely to go out of business. In seeking repayment, women must navigate gender norms that hold them to more stringent standards of “polite” behavior, while expecting them not to be perceived as “too friendly” for fear of being considered promiscuous (Seguino 2007; Heckert et al. in preparation). Moreover, the failure of repayment is risky, especially, for women microbusiness owner-operators who have fewer assets, limited credit options, and smaller profit margins (Galiè et al. in preparation; Njuki et al. 2019).

4.2 Implications for strengthening the livelihoods of the small business owner-operators

The findings presented herein also offer insights into the development programming approaches that may improve the livelihoods of small business owner-operators. First, considering the provision of credit through microfinance groups, one of the more common sources of credit for milk vendors, many individuals reported the negative experiences of themselves or acquaintances. Looking forward to

mitigate such negative experiences, microfinance groups with democratically selected leadership are found to be most cohesive and effective at achieving their groups' goals (Chan 2010; Gurtoo and Singh 2014). Similarly, group models that use symmetric loans, foster social ties, and contain members with similar risk tolerance may be most secure (Bond and Rai 2008; Guttman 2008; Thorp et al. 2005). This recommendation is important in light of our findings around lending and borrowing as a way to reinforce existing or build new social networks.

Financial technologies, also called fintech, offer additional opportunities for microbusiness owner-operators to strengthen their ability to repay their own loans, as well as seek repayment from their debtors. One such example comes from Kenya and Tanzania, where small business owners are already successfully using fintech innovations to conduct transactions, purchase stock, and receive payments (Bångens and Söderberg 2011; Chale and Mbamba 2015; Kirui and Onyuma 2015; Ngaruiya et al. 2014; Wanyonyi and Bwisa 2013). Additionally, some microcredit programs already collect debts via mobile money platforms (Francis et al. 2017; Njuki et al. 2019). Extending and tweaking these services for informal vendors' needs may mitigate their risk of never being repaid, and potentially losing their livelihood because of it. For instance, developing a phone-based application that automatically sends customers reminders to repay may reduce the need for formal bookkeeping—an attractive option for microbusiness owners with limited training in this area—and reduce the burden to be polite that disproportionately falls to women vendors. Overall, fintech innovations tailored to small business owners, especially those operating in informal sectors, may bolster owner-operators' ability to maintain their relationships with lenders and customers and ultimately facilitate the flow of goods and services in their communities.

Also, fintech is recognized for addressing some barriers to financial services women face (e.g., proximity to financial institutions, affordability, and know-your-client requirements), making it an attractive innovation to enhance women's ability to function as simultaneous debtors and creditors (Njuki et al. 2019). While a complementary quantitative study of milk retailers in peri-urban Nairboi found all retailers had mobile phones, women's mobile phone use lags behind men's globally, so programs aiming

to increase use of fintech solutions will need to be gender-sensitive and aim to increase women's access to and use of mobile phones as well (Galiè et al. in preparation; Rowntree 2019; Silver et al. 2019).

5. CONCLUSION

This study examines how women and men microbusiness owner-operators navigate borrowing money and selling on credit, and the consequences for their businesses, while drawing on the case of the informal milk sector in peri-urban Nairobi. Overall, we find that microbusiness owners function as debtors and creditors simultaneously, and these actions are heavily embedded in their existing social networks—given that they largely sell on credit to maintain relationships with existing customers and to foster new ones with prospective clients. These findings have important implications for development interventions, which have not previously acknowledged the role of microbusiness owner-operators in selling on credit. Providing credit comes with risks to retailers, and more so for women vendors, who often have fewer assets and operate with smaller profit margins. Our discussion highlights how future development projects might aim to benefit owner-operators, and how to ensure that these benefits extend to women owner-operators. Importantly, fintech interventions may hold considerable potential in this area.

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APPENDIX 1: Codebook

| First level code | Second level code | Code definition |
|-----------------------------|----------------------------------|--|
| A. Type of business | | Respondents clarify the type of milk business they have (including ROLE broker/retailer; INFRASTRUCTURE bar, shop, street vendor; TYPE OF MILK UHT/ pasteurized/boiled/raw milk; ENTERPRISE SIZE with employees etc) |
| B. Reasons for milk trading | | Overall story: why respondents wanted to become milk traders |
| C. Opportunities of MT | | Overall opportunities respondents see in milk trading |
| | C.a. Milk better commodity | What makes trading milk better than trading other commodities |
| | C. b. Milk trading vs other jobs | Milk trading is better than other jobs and why |
| | C.c. Gendered chances | Women and men having similar or different chances of being successful in milk trading or failing |
| | C.d. Best placed people | Which types of people beyond women and men are in a better position to become milk traders (e.g., youth, ethnicity, location) |
| D. Constraints of MT | | Overall constraints respondents see in milk trading |
| | D.a. Cons of milk trading | What is bad about milk trading vs. other types of business or jobs (including salaried and formal sector work) |
| | D.b. Milk worse commodity | Trading milk is worse than trading other commodities |
| E. Status of milk traders | | How milk trading as a job is regarded by the community and why, how respondents are treated when and because of selling milk (vs other commodities) and why |
| | E.a. Gendered status | Are women milk traders and man milk traders treated and regarded similarly? |
| | E.b. Determinants of status | Individual social markers (age, ethnicity etc.); |

| First level code | Second level code | Code definition |
|---|--|---|
| F. Capital/materials/funds/resources/human resources needed | | Types of capital/materials (included rented/borrowed items) needed to become or stay milk traders, whether they had them or not, how they acquired them, and trouble acquiring them |
| | F.a. Gendered capital | Are the capital resources needed to become milk traders the same for women and men? |
| | F.b. Accessing capital | Information related to accessing infrastructures and machinery (shop, bar, motorbike and other means of transportation) |
| | F.c. Human resources | People who work for traders, either as paid employees or those who receive in-kind payments (e.g. school fees) |
| | F.d. Human capital | Personal attributes that are considered important for milk trading business |
| | F.e. Knowledge | Respondents talk about their knowledge related to milk trading (whether lack of, being taught etc.) |
| G. Process to become a MT | | Overall story: What respondents did to become milk traders including when, how, etc. |
| H. Obstacles to becoming | | Obstacles/ problems encountered in establishing themselves as milk traders |
| | H.a. Gendered obstacles to becoming | If women and men face the same obstacles when wanting to become milk traders |
| I. Milk suppliers and sources | | Who milk is sourced from (e.g., farmer, broker); How is milk sourced (e.g., brought to premise, retrieved from source) |
| | I.a. Relationships with milk suppliers | Quality of relationship with milk suppliers (e.g., farmers, retailers); Interactions with suppliers (especially when problems related to milk exist) |
| J.A. Milk shelf life | | Comments related to short shelf life of milk |
| J.B. Milk quality | | Comments related to milk quality (e.g., thick, adulterated, good, bad) |
| J.C. Milk prices | | Comments related to milk prices |
| J.D. Milk type | | Comments related to dealing with raw/fresh, boiled, pasteurized milk, mala/sour milk. |

| First level code | Second level code | Code definition |
|-------------------------------|---------------------|--|
| J.E. Milk to sell commodities | | Selling milk attracts customers to buy other products |
| J.F. Flexible time table | | Trader can set own schedule |
| J.G. Milk demand | | Information about the demand for milk (by customers) and what drives demand |
| J.H. Milk availability | | Information about the availability of milk, what drives availability, how traders and customers respond to the changing availability of milk |
| J.I. Others can sell milk | | Milk can be easily sold by others |
| K. Authorities | | Comments related to general interactions with authorities (e.g. Kenya Dairy Board, demands made by authorities, frequency of visits) |
| | K.a. Harassment | Experiences of harassment by authorities (e.g., specific circumstances, if someone helped, if they think authorities were justified to target them) |
| L. Licenses | | Comments related to licenses needed for MT, accessing them, who can access them in general, pros and cons of licenses, people's perceptions about licenses |
| M. Certification and training | | Knowledge of, participation in, perceptions of certification and training programs related to milk handling and the milk business |
| N. Customers | | Comments related to finding, relating to, keeping customers |
| O. Services | | Comments related to accessing services (e.g. loans, saving schemes) |
| P. Norms | | Cultural norms restricting respondents' performance of milk trading (including restrictions of movement; of frequenting some spaces) |
| | P.a. Gendered norms | How gender of individual affects these norms (whether for those who enforce or follow the norms); if women generally follow these norms |

| First level code | Second level code | Code definition |
|--|------------------------------------|---|
| | P.b. Determinants of norms | What factors (e.g. age, ethnicity, having children) affect norms |
| | P.c. Breaking norms | Who breaks norms, what happens when someone breaks these rules/norms/conventions and severity of consequence |
| | P.d. Not a norm | Does not believe that this norm exists (can be cross-coded with "gendered norm) |
| Q. Gender stereotypes/ biological characteristics | | Mentions of actual and perceived differences related to physical, social, and cognitive characteristics and how these are related to milk trading |
| R. Obstacles to staying in business | | Obstacles milk traders face that affect their capacity to maintain their business or be successful - but not necessarily improve their business |
| | R.a. Gendered obstacles to staying | Women and men face the same/different obstacles as milk traders - that affect their ability to stay in business or be successful (including if women and men are differently targeted by authorities); also if it is easier for women and men and why |
| S. Done to stay | | What respondents did to overcome the problems/obstacles encountered and why (including facing authorities that targeted them) |
| | S.a. Gendered done | Women and men doing different things to overcome problems |
| T. Needs for staying | | What respondents would have needed to stay in business (but did not do) and why (including facing authorities that targeted them) |
| | T.a. Gendered needs | Women and men having different needs to stay in business |
| U. Successful MT | | Overall story: whether respondents consider themselves to be successful milk traders and why |
| | U.a. Future prospects | Expectations for staying in business over long run |
| V. Opportunities for improvement | | Overall opportunities respondents see for improving/upgrading their business (if needed, couple with 'opportunities for MT') |

| First level code | Second level code | Code definition |
|------------------------------|--|--|
| W. Obstacles to improvements | | Overall obstacles encountered when wanting to improve the business (couple with details under 'obstacles to becoming') |
| | W.a. Gendered obstacles to improvement | Obstacles encountered by women and men when wanting to improve/upgrade |
| X. Solutions to improvements | | Overall solutions to obstacles (both things done and needed but not done to stay) |
| | X.a. Gendered solutions | Solutions women and men can adopt to solve obstacles to improvements (both things done and needed but not done to stay) |
| Y. Groups | Y.a. Milk trading groups | Details about milk trading groups? Who joins them typically or does not join, problems with joining groups, experiences with groups, ability to talk in groups, Are groups a solution to solve problems? How and why? |
| | Y.b. Other groups | Details about other groups that milk traders may belong to (e.g. functions of savings groups, membership in groups that may support sales) |
| ZA. Empowerment | | Overall stories/comments/examples about empowerment that do not fit a second-level code |
| | ZA.a. Meaning | Overall understanding of empowerment |
| | ZA.b. Man characteristics | Characteristics of an empowered man |
| | ZA.c. Man MT characteristics | Characteristics of an empowered man milk trader |
| | ZA.d. Woman characteristics | Characteristics of an empowered woman |
| | ZA.e. Woman MT characteristics | Characteristics of an empowered woman milk trader |
| | ZA.f. Factors | Factors affecting empowerment |
| | ZA.g. MT empowers woman | How milk trading can empower a woman |
| | ZA.h. MT empowers man | How milk trading can empower a man |
| | ZA.i. Others' opinion | What others think about a given empowered person |

| First level code | Second level code | Code definition |
|---------------------|---------------------------------------|---|
| | ZA.j. Relationships | Characteristics of empowerment related to relationships: to support/ be good with other people |
| | ZA.k. Business related | Characteristics of empowerment related to business: do well in work or business |
| | ZA.l. Appearance | Characteristics of empowerment related to appearance: well-dressed, fat, healthy |
| | ZA.m. Financial resources | Characteristics of empowerment related to financial resources: has a car, owns house, rich |
| | ZA.n. Human characteristics/ capital | Characteristics of empowerment related to personal characteristics: Patient, knowledgeable, strong, healthy, educated etc. |
| | ZA.o. Milk characteristics, no gender | Empowered milk trader, not gender specific |
| | ZA.p. Milk empowers either gender | Comments about how milk trading can empower someone, but does not specify whether they are a man or a woman |
| ZB. Decision-making | ZB.a. Starting the business | What decisions were made about starting the business, with whom, and how much influence these people had |
| | ZB.b. Day to day activities | Key decisions related to day-to-day work in milk trading; who is consulted |
| | ZB.c. Autonomy | What happens when not following the advice of consulted people (and severity of response) |
| | ZB.d. Other commodities | Decision-making process related to commodities other than milk |
| | ZB.e. Others' economic activities | Decision-making processes related to other hh members' economic activities, how much influence other people have on these decisions and respondent's own role |
| | ZB.f. Other activities | Important decision-making processes in the household not related to milk business |
| | ZB.g. Desired | Areas the respondent desires to be consulted more or less |

| First level code | Second level code | Code definition |
|--------------------------|--|--|
| | ZB.h. Disagreement | What are disagreements in the hh about? what you can do in case of disagreement (e.g. if someone else uses your earnings in ways you do not agree about) |
| | ZB.i. Over income | What generally happens when you earn money through MT (who keeps it, who decides about it), whether control over other income is different from control over MT income and why |
| ZC. HH sources of income | | What other hh members have done in the past years to earn money |
| ZD. Laws | | What respondents know about rules/regulations related to being a milk trader |
| | ZD.a. Breaking laws | Who usually breaks laws, what are the consequences of breaking laws |
| ZE. Credit | ZE.a. Selling on credit | Whether customers every buy on credit, why, how often, is it good for business or bad, seeking repayment |
| | ZE.b. Getting credit/loan | Overall on respondent's experience trying to get a loan; how much, whom from, what for etc |
| ZF. Savings | | Experiences with saving money (done it or not, how much, where it was saved, is it a secret, did someone try use it, who can access the savings) |
| | ZF.a. Savings account or savings group | Respondents having one, problems in access, ease of use, access by others |
| | ZF.b. Use of savings | Description of how savings has been used or how respondent anticipates using it |

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