

Value Chain Surveys: What do they cover, and How Well?

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Background

While agricultural value chains are rapidly evolving (Reardon, 2015; Reardon et al., 2021; Barrett et al., 2022), research attention has increasingly taken notice of the important role played by actors in the agricultural midstream. The agricultural midstream consists of activities that take place after production but before final sale to consumers, with existing literature highlighting transportation, trading/wholesaling, processing/packaging, and storage as key activities (Reardon, 2015; Ambler et al., 2022a). However, even as research on the agricultural midstream has been growing, little is known about the potential financial needs or capabilities of midstream actors (Ambler et al., 2022a; Bellemare et al., 2021; Reardon and Minten, 2021). If midstream actors face meaningful financial constraints in growing their businesses, it can hinder employment opportunities, increase consumer food prices, depress agricultural producer prices, or constrain growth more broadly.

Perhaps not surprisingly, a primary factor contributing to this lack of knowledge is a lack of existing data. Widespread nationally representative surveys such as Living Standards Measurement Surveys (LSMS) or the World Bank Enterprise Surveys (WBES) have the strength of being (mostly) comparable across countries and offering rich data. But they are limited in their ability to capture household and SMEs operating in agriculture and in the midstream of agricultural value chains. LSMS surveys do tend to capture microenterprises managed by rural households, but they will underrepresent midstream firms that with more employees that may not be associated as strongly with household ownership. The WBES surveys, on the other hand, are concentrated in urban areas and tend towards more formal enterprises with at least 5 employees. And neither survey was designed to identify agricultural midstream businesses. As a result, both surveys may miss different sets of agricultural midstream businesses. While these surveys can be used for some limited description of agricultural midstream businesses, they are both flawed in different ways. And when appropriate firms can be identified, the information they capture on financial capabilities tends to be limited (Bellemare et al., 2021; Ambler et al., 2022b).

Another potential source of information about the financial needs of midstream actors are value chain specific surveys. While not necessarily representative of the value chain actors they study, such surveys explicitly target actors within the midstream, and so capture more types of agricultural midstream businesses than the nationally representative surveys. In this policy brief we review the data collected in a notable sample of such surveys, with an eye towards understanding what they cover, how they are collected, and whether and how much information they collect on the financial needs of these actors. The list of surveys studied are by no means exhaustive, but they do represent a sample of surveys that have surveyed exactly the type of midstream actors identified above.

Finally, we emphasize that while this brief aims to take stock of how these surveys do or do not capture information about midstream activities and financial capabilities, these surveys were not necessarily fielded to learn about financial capacities of midstream actors. As such, identifying a lack of finance-related information therein is not meant as a criticism of these surveys, but rather as an exercise in documenting what data already exists that may begin to help us understand whether and to what extent finance is a constraining factor for the agricultural midstream in low and middle income countries. We are grateful to all the researchers who made their resources either publicly or privately available to us as part of this review.

Methodology

To begin, we consulted with a wide number of researchers working on topics linked to agricultural value chains. Based on these discussions, we identified and then focused on a set of 29 relevant data sources targeting midstream actors in agricultural value chains, for which we were either able to obtain access to the original survey instruments and/or the summary statistics to infer the type of questions asked. These studies all used micro data on individuals or firms to inform behaviors of midstream actors. See Appendix Table A1 for the full list of projects, authors, and links to associated paper citations (if available). It should be emphasized that this is a convenience sample of data sources.

Next, we categorized each survey by its specific value chain, the value chain segment (transportation, storage etc.), country, and sample size (if known). We then examined the actual survey instruments to document whether questions were asked about a set of firm/owner characteristics and value-chain characteristics. For the purposes of understanding financial needs and capabilities of these midstream actors, we also noted if questions on a range of topics linked to credit, contracts/relationships, and digital financial services were included in the survey instrument.

The raw categorizations and attributions of each survey can be found in the first tab of the appendix excel table, titled “Midstream data sources”. The second tab, “Data gap map”, converts this raw documentation to frequencies of coverage, showing which survey features or targets were relatively more or less well covered. Figure 1 below shows a reduced version of the data gap map in the appendix excel table.

Themes and Content

Geographic coverage spans 16 countries with over two thirds of the surveys in Africa. Ethiopia was the most frequent setting among these surveys with six data collection efforts, India was second with four appearances, and Nigeria third with three different surveys.

Figure 1: Gaps map of midstream data sources

| | | NUMBER OF STUDIES | Firm/owner characteristics | | | | | | | | | | | | | Value chain characteristics | | | | | | Credit | | | | | Contracting | | | Digital financial services | | | | | | | | | | |
|---------------------|-------------------------------|-------------------|----------------------------|-----------|--------|------------|-------|---------|---------------------|-------------|---------------------|----------|-------------|-------------------|----------------|-----------------------------|-----------|--------|-------------|----------------------|--------------------|------------------------|--------------------------|------------------|-----------|--------|--------------------|----------------------------|-----------------------|----------------------------|------------------------|-----------------------|----------------|---------------|--------------------|------------------------|-------------------|--------------------------|--|---|
| | | | Firm's age | Employees | Prices | Quantities | Sales | Profits | Firm/owner's assets | Seasonality | Crop specialization | Location | Owner's age | Owner's education | Owner's gender | # of firms | Suppliers | Buyers | Competitors | Vertical integration | Spatial dispersion | Upstream relationships | Downstream relationships | Firm has credit? | Source(s) | Amount | Other credit terms | Reasons for/against credit | Value-chain financing | Credit constraints | Firm uses contract(s)? | Relational vs. formal | Contract terms | Mobile phones | Mobile money usage | Digital credit/savings | Digital insurance | Digital market platforms | | |
| All data sources | | 29 | 19 | 16 | 25 | 23 | 15 | 3 | 15 | 7 | 13 | 19 | 15 | 20 | 15 | 12 | 13 | 11 | 9 | 10 | 12 | 18 | 19 | 13 | 11 | 7 | 9 | 7 | 13 | 4 | 12 | 5 | 4 | 10 | 2 | | | 1 | | |
| Value-chain segment | Transportation | 2 | 1 | | 1 | 1 | | | | | | | | | | 1 | 1 | 1 | 1 | | | | | | | | | | | | | | | | | | | | | |
| | Trade/Wholesaling | 21 | 14 | 11 | 19 | 18 | 12 | 3 | 12 | 4 | 12 | 12 | 12 | 16 | 12 | 8 | 10 | 10 | 7 | 8 | 8 | 14 | 15 | 10 | 8 | 6 | 7 | 6 | 11 | 4 | 8 | 2 | 4 | 8 | 2 | | | 1 | | |
| | Processing/Packaging | 9 | 5 | 6 | 7 | 7 | 6 | 1 | 4 | 2 | 3 | 7 | 4 | 6 | 5 | 4 | 2 | 2 | 3 | 2 | 3 | 6 | 6 | 4 | 3 | 2 | 1 | 1 | 3 | 1 | 5 | 3 | | | | 3 | 1 | | | |
| | Storage | 2 | 2 | 1 | 2 | 2 | 1 | 1 | 2 | 2 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 1 | | 1 | 1 | 1 | | 1 | 1 | | | 1 | | 1 | 1 | | | | | | | | | |
| | Exporters | 3 | 1 | | 3 | 3 | 1 | | 1 | | | 2 | 1 | 2 | 1 | 1 | 1 | | | 1 | 2 | 2 | | | | | | | | | 1 | 1 | | | | | | | | |
| | Other (e.g., retailers, 3PLS) | 2 | 1 | 2 | 2 | | | | 1 | 1 | 1 | 2 | 1 | 2 | 1 | 1 | | | | | | | | | 1 | 1 | | 1 | | | | | | | | | 1 | | | |
| Region: Asia | Bangladesh | 2 | 2 | 2 | 2 | 2 | 2 | 1 | 2 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 1 | 1 | 1 | 2 | 2 | 2 | 2 | 1 | 1 | 1 | 2 | | 1 | 1 | | | | 1 | | | | |
| | China | 2 | 1 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | | | | 1 | 1 | 1 | 1 | | | | 1 | | 2 | 2 | | | | | | | | |
| | India | 4 | 3 | 1 | 3 | 3 | 2 | 1 | 3 | 2 | 1 | 3 | 3 | 4 | 2 | 2 | 2 | 2 | | 1 | 1 | 4 | 4 | 2 | 2 | 1 | 1 | 1 | 2 | 1 | 1 | 1 | | | | | | | | |
| | Indonesia | 1 | | | 1 | 1 | | | | | 1 | | | | 1 | 1 | | | | | | 1 | 1 | | | | | | | | | 1 | | | | | | | | |
| | Myanmar | 1 | | 1 | 1 | | | | 1 | 1 | | 1 | | 1 | | | | | | | | | | | 1 | 1 | | 1 | | | | | | | | | | | | |
| Region: Africa | Ethiopia | 6 | 4 | 5 | 6 | 6 | 5 | 1 | 4 | 1 | 5 | 4 | 5 | 5 | 5 | 1 | 3 | 3 | 3 | 1 | 4 | 5 | 5 | 4 | 4 | 2 | 4 | 2 | 5 | 1 | 3 | | | 2 | 4 | | | | | |
| | Kenya | 2 | 2 | 1 | 2 | 2 | 1 | 1 | | 1 | | 2 | | 1 | | 1 | 2 | 1 | 1 | 2 | 1 | 2 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | | | | | | 1 |
| | Madagascar | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 | 1 | | | | | | | | |
| | Niger | 1 | 1 | 1 | 1 | | | | | | 1 | 1 | 1 | 1 | 1 | 1 | | | | | | | | | | | | | | | | | | | | | 1 | | | |
| | Nigeria | 3 | 2 | 1 | 2 | 2 | 2 | | 1 | | 1 | | 1 | 1 | 1 | 1 | 2 | 2 | 1 | 1 | | | 1 | 1 | | | | | 1 | | 1 | 1 | 1 | | | | | | | |
| | Rwanda | 1 | 1 | 1 | 1 | 1 | 1 | | | | | 1 | | | | 1 | | | 1 | | 1 | 1 | 1 | | | | | | 1 | | | | | | | | | | | |
| | Sierra Leone | 2 | 2 | 1 | 2 | 2 | 1 | | 2 | | 2 | 1 | 2 | 1 | 1 | 1 | 1 | 1 | | 2 | 2 | 1 | 2 | 2 | 1 | 1 | 1 | 1 | 2 | 2 | 1 | | 1 | | 1 | 2 | 1 | | | |
| | Tanzania | 1 | 1 | 1 | 1 | 1 | 1 | | 1 | 1 | | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | | | 1 | | | | | | 1 | | | | |
| | Uganda | 1 | 1 | 1 | 1 | 1 | 1 | | 1 | | 1 | 1 | | 1 | 1 | 1 | | | 1 | 1 | | 1 | 1 | 1 | 1 | | 1 | | | 1 | 1 | | | | | 1 | 1 | | | |
| Zambia | 1 | 1 | | 1 | 1 | | | 1 | 1 | | 1 | 1 | 1 | 1 | 1 | 1 | | | | 1 | | | | | | | | | | | | | | | | | | | | |
| Region: Other | Mexico | 2 | 2 | 2 | 2 | 2 | 2 | 1 | 2 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 1 | 1 | 1 | 2 | 2 | 2 | 2 | 1 | 1 | 1 | 2 | | 1 | 1 | | | | 1 | | | | |

Source: Authors

Sample sizes across the surveys vary widely when they were reported. The smallest had just 23 traders, as the structure of the interviews was more qualitative in nature. On the other extreme, some surveys had hundreds or even over a thousand participants. Relative to surveys with small scale producers, who tend to be readily identifiable by their homes or near their fields, and for whom there are typically thousands (if not millions) of similar/eligible participants, the challenges of interviewing midstream actors may be considerable given their greater mobility, higher pressure on their time, and difficulty in identifying suitable participants. More generally, best practices on sampling these mobile populations are not widely established, which implies that researchers currently use a large number of different approaches.

The appendix excel table provides a brief description of the sampling procedures used, where we were able to identify them. We see a wide range of approaches that differ by segment of the value chain. In some instances, the full set of processors for the value chain of a given country could be included. In others, targeting traders, a census of regional markets was conducted first, before listing and sampling traders. In others, referrals from farmers were used to identify transporters. In others still, a mix of approaches were used. Ultimately, sampling appears to generally be the result of a mix of researcher objectives and resource availability which, in many cases, can make it difficult to understand the extent to which resulting analyses and descriptive characterizations are representative of the underlying population.

We note that the surveys span a wide range of different value chains (documented in the appendix file). Different varieties of grains including maize and teff were the most frequent and the focus of nine of the included surveys. Coffee, dairy, and vegetables were all also included more than once. Looking at midstream value-chain segments, trade/wholesaling were the most frequently analyzed, the focus of 21 of the 29 studies, processing and packaging were next most frequent, in 9 of the studies, and storage (2), transportation (2), and exporters (3) focused on relatively less frequently.

A wide range of background firm and owner characteristics were frequently included in these studies including firm age, employees, profits, assets, location, and background demographics. Many of these studies also asked information about value chain structure in terms of the size of a given value chain node, suppliers, buyers, competitors, vertical integration, spatial dispersion, and vertical relationships. Explicit discussion of formal contracts was included in about half of studies, but details on relational contracting or terms of these arrangements were rarer.

Questions about access to credit were included less than half the time with documentation of source, amounts, and loan terms progressively less frequent. Value-chain financing was asked about in roughly a third of surveys in terms of credit from either upstream suppliers or downstream buyers. While existence of formal contracts was asked in 41% of the studies, details on relational contracts or terms of these contracts were much less common.

Finally, questions about other types of financial needs and capabilities were less common. Risk exposure or mitigation approaches, savings strategies, and transfer modalities were rarely covered. While ownership of a mobile phone was sometimes asked about, follow-up questions on mobile money, digital credit/savings, digital insurance, or access to digital markets were almost entirely absent. The excel sheet breaks these down further by either midstream segment or geographic region.

Conclusion

We find some common characteristics of value chain studies, despite the wide range of researchers, geographic settings, and value chains chosen for study. It is common for researchers to collect information on overall firm characteristics (firm age, employees, sales, owner characteristics) and most make an effort to document value chain structure. However, we find two other drawbacks. First, there is a distinct lack of consistency in the way sampling is approached by these surveys. As a result, each may represent a different cross-section of the value chains studied. Second, beyond access to credit, details about forms and terms of credit as well as other financial capabilities and needs are less commonly documented. Ultimately, surveys explicitly analyzing vertical relationships, formal and informal forms of credit, as well as access and barriers to other financial services are needed to better understand how they may be influencing and being influenced by value chain structures and activities in the agricultural midstream.

If you have other surveys that are suitable and could be included in this review, please contact us and let us know. Or, if you think we have missed or mischaracterized any of the surveys that are included, also please do not hesitate to contact us so that we can make the needed corrections and updates.

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APPENDIX

Appendix Table A2: List of midstream data sources

| # | Study/Data source | Location(s) | Crop(s) | Source link |
|----|----------------------------------|--------------|------------------|-------------------------|
| 1 | Aker (2010) | Niger | Grains | Link 1 |
| 2 | Belton et al. (2018) | Myanmar | Multiple | Link 2 |
| 3 | Berdegue et al. (2008) | Mexico | Strawberries | Link 3 |
| 4 | Bergquist and Dinerstein (2020) | Kenya | Grains | Link 4 |
| 5 | Bergquist and Startz (2019) | Ethiopia | Honey | - |
| 6 | Casaburi (2011) | Sierra Leone | Rice | - |
| 7 | Casaburi and Reed (2017) | Sierra Leone | Coffee | - |
| 8 | Echanove and Reardon (2006) | Mexico | Multiple | Link 8 |
| 9 | Fafchamps et al. (2008) | India | Multiple | Link 9 |
| 10 | Gona et al. (2018) | Nigeria | Fish | Link 10 |
| 11 | Hernandez et al. (2018) | Bangladesh | Fish | Link 11 |
| 12 | Liverpool-Tasie et al. (2017) | Nigeria | Grains | Link 12 |
| 13 | Macchiavello and Morjaria (2015) | Kenya | Flowers | Link 13 |
| 14 | Macchiavello and Morjaria (2021) | Rwanda | Coffee | Link 14 |
| 15 | IFPRI and EDRI (2012) | Ethiopia | Grains | Link 15 |
| 16 | IFPRI and EDRI (2018a) | Ethiopia | Butter | - |
| 17 | IFPRI and EDRI (2018b) | Ethiopia | Dairy | - |
| 18 | Minten et al. (2009) | Madagascar | Vegetables | Link 20 |
| 19 | Minten et al. (2013) | India | Makhana | Link 21 |
| 20 | Minten et al. (2014) | Ethiopia | Grains | Link 17 |
| 21 | Minten et al. (2019) | Ethiopia | Coffee | Link 16 |
| 22 | Neven et al. (2017) | Zambia | Dairy | Link 22 |
| 23 | Rao et al. (2011) | India | Chili and grains | Link 23 |
| 24 | Reardon et al. (2012) | Multiple | Potato and rice | Link 24 |
| 25 | Sanou et al. (2019) | Nigeria | Grains | Link 25 |
| 26 | Snyder (2018) | Tanzania | Grains | Link 26 |
| 27 | Stringer et al. (2009) | China | Vegetables | Link 27 |
| 28 | Van Campenhout et al. (2021) | Uganda | Dairy | Link 28 |
| 29 | Yi and Reardon (2015) | Indonesia | Shrimp | Link 29 |

Source: Authors

Appendix Table A2: Examples of questions in midstream surveys used for categorization

| Firm/owner characteristics | |
|-----------------------------------|--|
| Firm's age | <ul style="list-style-type: none"> • "In what year did you start this trading business?" • "When did this business begin operations?" |
| Employees | <ul style="list-style-type: none"> • "Number of permanent employees" • "How many people on average work here for a fee during an average day?" |
| Prices | <ul style="list-style-type: none"> • "Price per kg paid for the purchased load" • "Can you please estimate the total amount you paid for the honey you bought?" |
| Quantities | <ul style="list-style-type: none"> • "Quantity of yellow maize units bought or moved on commission on average day in the average week" • "Quantity-wise, how much butter did you trade last month (in total)?" |
| Sales | <ul style="list-style-type: none"> • "Can you please estimate the total revenue you received for your products?" • "Average sale price per bag of maize sold (in local currency)" • "How often do you sell at the market _____?" |
| Profits | <ul style="list-style-type: none"> • "For the last three years what was your annual profit from maize trading? By profit, I mean your revenue from maize trading minus all your costs from maize trading" |
| Firm/owner's Assets | <ul style="list-style-type: none"> • "Number of trucks owned" • "Does any member of the HH own a _____?" • "How many _____ are owned by the HH?" |
| Seasonality | <ul style="list-style-type: none"> • "Do any of your transport costs change from the dry season to the rainy season?" |
| Crop specialization | <ul style="list-style-type: none"> • (For dairy traders) "Do you also trade in any non-dairy products?" • "(Besides trading fish), do you trade rice or other agricultural products?" • "Which other goods do you trade besides honey?" |
| Location | <ul style="list-style-type: none"> • "Location/name of the nearest place" • "What is the location of your store or place of business?" |
| Owner's age | <ul style="list-style-type: none"> • "Age of the owner" |
| Owner's education | <ul style="list-style-type: none"> • "Education of the owner" |
| Owner's gender | <ul style="list-style-type: none"> • "Gender of the owner" |
| Value-chain features | |
| # of firms | <ul style="list-style-type: none"> • "How many other traders buy from [this kebele] generally? NOTE: Estimate, if necessary" • "How many registered members supply milk to this MCC on an average day?" |
| Competitors | <ul style="list-style-type: none"> • "In your opinion, how many traders have similar butter activities as yours in this woreda?" • "Do you share purchasing information with fellow traders?" • "How many other traders buy from [this kebele] generally? NOTE: Estimate, if necessary" |
| Spatial dispersion | <ul style="list-style-type: none"> • "How many km away from your store is this kebele?" • "How many kilometers is it to travel from one market to the other (one-way)? (Ask for the best estimate based on the route the FR most commonly uses)" |
| Suppliers | <ul style="list-style-type: none"> • "How many different sellers did you buy from over the past 12 months?" • "In this season, how many different times did you buy from _____?" |
| Buyers | <ul style="list-style-type: none"> • "What was the typically price you charge to your buyers?" |
| Upstream/downstream relationships | <ul style="list-style-type: none"> • "What methods do you frequently use to communicate with beekeepers?" • "Does the price you charge to consumers vary, or is it always the same? If it varies, what does it depend on?" • "Do you have agreements with other traders?" |

Credit

| | |
|----------------------------|---|
| Firm has credit? | <ul style="list-style-type: none">“In the past year, have you taken out a loan from a bank?” |
| Source(s) | <ul style="list-style-type: none">“From which bank(s) did you take this loan?” |
| Amount | <ul style="list-style-type: none">“Total amount borrowed for credit # ____?” |
| Other credit terms | <ul style="list-style-type: none">“On average, what interest rate did you pay on this loan”“Duration of the loan”“Did the loan involve any other collateral?” |
| Reasons for/against credit | <ul style="list-style-type: none">“Why have you not taken out a loan?”“Why didn’t you ask a loan from this source?” |
| Value chain financing | <ul style="list-style-type: none">“Did you pay the supplier an “advance” before the load was received?”“Do you typically provide beekeepers any loan or cash advance before the purchase?” |
| Credit constraints | <ul style="list-style-type: none">“What are the most important constraints/challenges that prevent you from expanding the amount of maize you rotate?” (credit included as an answer choice) |

Contracting

| | |
|------------------------|---|
| Firm uses contract(s)? | <ul style="list-style-type: none">“Before the harvest, did you have any agreement with a buyer about the honey they would purchase from you? This agreement could be verbal or written” |
| Relational vs. formal | <ul style="list-style-type: none">“What type of contract used for farmers in the north?” (verbal and written as answer choices) |
| Contract terms | <ul style="list-style-type: none">“In this agreement, did the buyer commit to a specific price?” |

Digital financial services

| | |
|--------------------------|---|
| Mobile phones | <ul style="list-style-type: none">“Do you own a mobile phone?”“Because of mobile phones, I know now the market price before I sell” |
| Mobile money usage | <ul style="list-style-type: none">“Have you ever used a mobile phone to send money, using a company such as Splash?” |
| Digital market platforms | <ul style="list-style-type: none">“Do you think traders like you would be willing to pay for information (on markets that you may want to sell in)?“We are considering offering a service in which we SMS you information on markets. What type of information would you like for us to SMS to you?” |

Source: Authors

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