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BANGLADESH NETWORK ANALYSIS FINAL REPORT (LEARNING EDITION)

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LEARNING EDITION NOTATION

This “Learning Edition” of the Bangladesh Network Analysis Report is intended for external dissemination and learning. It is almost identical to the internal Final Report with the notable change being the anonymization of lead firm / ego names. While respondents (i.e. “lead firms”, or “egos”) were informed prior to being interviewed that there should be no expectation of privacy, our questions did include some potentially sensitive business information. Therefore, all respondent / lead firm names have been anonymized as “Firm 1”, “Firm 2”, “Firm 3”, “Firm 4”, “Firm 5”, and “Firm 6” respectively. We apologize for any difficulty this creates in reading maps.

EXECUTIVE SUMMARY

From May to October 2017, SPACES MERL assisted the Bangladesh Rice and Diversified Crops (RDC) project in utilizing network analysis to understand systems dynamics and change in the network of grantees assisted by the RDC project. This was a baseline ego network analysis, conducted with six prospective grantees (egos / lead firms) of the RDC project. This ego network analysis accompanies training and technical assistance delivered by SPACES throughout the Summer of 2017 to integrate network analysis into RDC's grantee MEL activities. We anticipate that this report will be utilized to inform RDC program strategy, provide a model and baseline for follow-up network analyses to be conducted by RDC, and inform broader learning on the efficacy of egonet analysis as a tool for program design and adaptation.

Utility of the egonet tool: The egonet tool was particularly useful in identifying *structural dynamics* and *social norms and biases* that appear to constrain either the egos' operational performance and/or that of the market system. Unlike other approaches that predominate in the market systems space, the egonet approach lends the capability of visualizing and quantifying structure and relationship strength. As opposed to a whole network survey, it is also manageable from both a time and resource perspective. Potential for integrating the tool into adaptive MEL processes is high, given some additional streamlining of data collection modalities with RDC going forward. Marrying quantitative and qualitative approaches is essential to providing ego analysis with insights on the overall framework and structure of the system.

Structural dynamics uncovered: The network analysis uncovered several key structural observations that may inform strategy and follow-up change measurement / adaptation, including:

- Gaps in relations with service providers – Only eight connections were revealed among all six of the egos surveyed. Notably absent are service providers for marketing and advertising, especially given the competitive pressures for promotions.
- Weak coordination between seed companies and research institutions – There are gaps in knowledge and communications, with no industry association currently positioned to streamline coordination and communications.
- Narrow distribution and supply channels – Lead firms generally rely on large numbers of small interconnected firms, relatively established relationships, and small exclusive territories. This poses challenges for scaling and value addition.

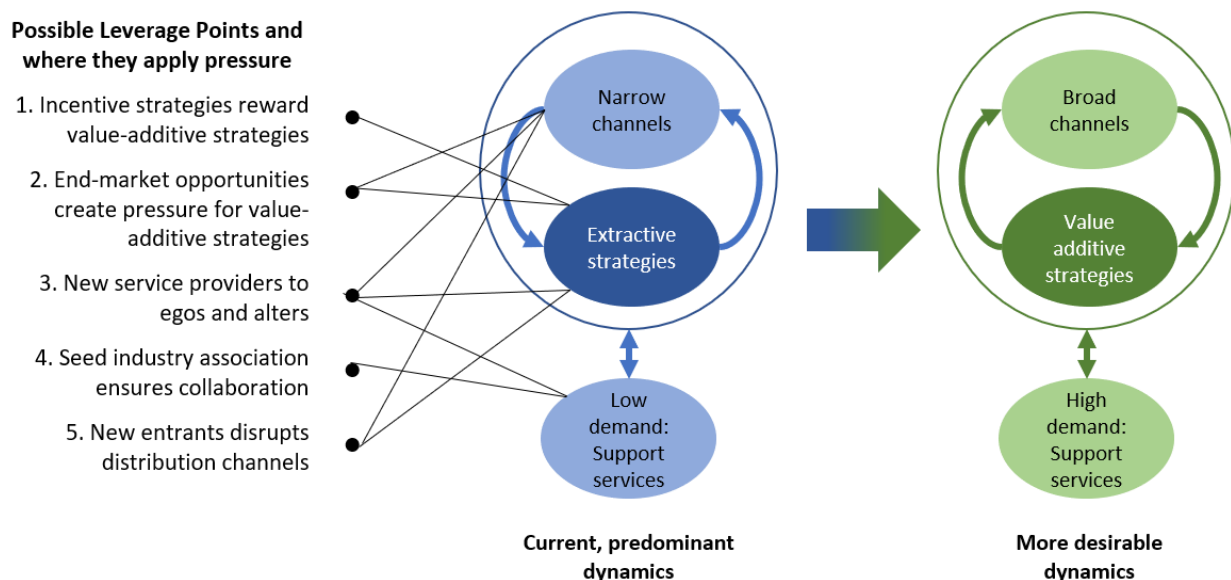
Social norms and biases uncovered: Overall observations suggest that all egos struggle in managing their supply or distribution channels, to shift the business strategies of their suppliers and distributors from traditional extractive ones to value-additive ones. Specifically, we see:

- Lack of growth among suppliers and distributors (alters), as seen in the narrow distribution channels and minimal investment in upgrading of business systems, infrastructure, or staffing despite strong volumes.
- Lead firms (egos) expressing desire for their trading partners to adopt more value-add strategies.
- Lead firms (egos) indicating that their relationships with *larger* suppliers and distributors are those that are best able to satisfy their most important values and preferences.

The primary challenge for most egos to shift performance practices of suppliers and distributors is balancing their own incentive structures and investments to reflect the dual priorities of volume and price, on the one hand, and growth and value-add on the other.

Systemic leverage points identified: Network analysis observations revealed that the supply and distribution channels of lead firms are predominantly narrow, and businesses largely engage in extractive strategies. In fact, it appears that these dynamics are mutually reinforcing. For example, where extractive businesses do not invest in growth or upgrades to operations, supply and distribution channels remain narrow. Furthermore, as a result, demand for support services is likely low and stagnant; businesses who are not growth-oriented have seemingly little need for expert services.

Ultimately, these patterns have negative implications for small-holder farmers who typically have difficulties accessing higher-value markets and improving productivity. Part of the RDC project's theory of change is to rectify these dynamics such that farmers instead are connected to broad supply and distribution channels where actors compete on value-additive strategies, providing farmers with input supply channels that can respond to their needs to improve productivity and output market channels that offer opportunities and incentives to improve production. Our analysis recommends five leverage points that the RDC project may address to promote this shift, indicated in the graphic below.



Informing RDC progress and adaptation: As the population of grantees participating in RDC's network analysis grows over time, we anticipate that results such as those presented here within will be increasingly robust and generalizable. As egos progress through the grant cycle, we anticipate that change data from follow-up analysis will inform adaptation, providing leads on what is and isn't working, identifying promising prospects for scale-up. The SPACES team is excited by these prospects, and eager to continue support as needed going forward.

1. BACKGROUND AND OBJECTIVES

The Bangladesh RDC Network Analysis study is part of the Strategic Program for Analyzing Complexity and Evaluating Systems (SPACES MERL) activity. SPACES is an activity funded by USAID's Global Development Lab which develops and tests tools and approaches for analyzing complex systems and, thereby, improved intervention performance. The SPACES MERL Consortium includes the GOPC at Johns Hopkins University (Prime), Global Knowledge Initiative (GKI), LINC, and Resilient Africa Network (RAN). This SPACES Bangladesh Network Analysis activity was conducted by LINC (www.linclocal.org). For more information about SPACES, please visit: <https://www.usaid.gov/GlobalDevLab/about/monitoring-evaluation-research-and-learning-innovations-program/spaces-merl>

From May to October 2017, LINC assisted the Bangladesh Rice and Diversified Crops (RDC) project in utilizing network analysis to understand systems dynamics and change in the network of grantees assisted by the RDC project. The engagement consisted of two components, a) An in-depth analysis of ego networks of lead firms to be engaged by the RDC project; and b) The integration of network analysis methods, mapping and metrics into RDC's MEL system, enabling the project to capture network change among its grantees throughout program implementation.

As SPACES is a research and development activity, this report is presented to enable the reader to not only learn about RDC grantees and strategy, but also the possibilities and limitations of the network analysis tool itself. The report presents the results of our baseline network analysis of six lead firms that the RDC project intends to engage and assist through its planned grant-making activities. The analysis combines both quantitative network analysis survey data and qualitative field research undertaken throughout the summer of 2017. Both quantitative and qualitative results are included in this report, informing strategy observations, baseline metrics for follow-up change measurement, and recommendations to assist RDC in operationalizing network analysis as a monitoring tool.

As a result of this report and our capacity-building activities, we anticipate that the RDC MEL team will be sufficiently equipped to carry-out both follow-up network analyses to assess change among the six firms covered in this study, and new grantees that they bring on in the future. We encourage the RDC team to utilize this report and the training and tools transferred to carry-out their own network analysis for MEL activities going forward.

1.1 Objectives

The SPACES Bangladesh Network Analysis activity included three main research objectives covered in this final report:

Objective 1: Determine the usefulness of an egonet tool and analytical lens for addressing development challenges with regards to intervening in complex systems: These challenges fall into three categories that relate to the practical applications of the tool in the intervention process:

- Systems analysis: The principle development challenge here concerns achieving an understanding of how complex system dynamics generate the behaviors and practices of

businesses, producers, and other stakeholders. This understanding of why things work the way they do is essential for identifying possible leverage points where interventions are most likely to catalyze change and shift system dynamics to ones that generate more desirable behaviors and practices.

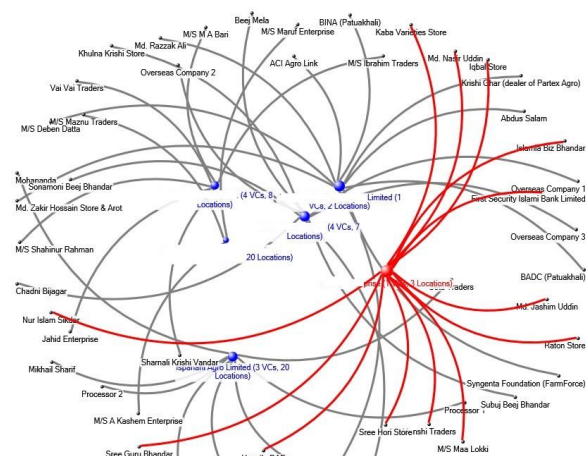
- Activity design and implementation: One development challenge relates to identifying useful partners for a project to work with whose new performance practices and behaviors will create pressure on other actors to perform in more desirable ways (e.g., more inclusive and competitive). Another challenge concerns finding the most suitable intervention tactics that will spur sustained change at leverage points without actors becoming dependent on project interventions.
- Learning and adaptation: The development challenges at a systems level are two-fold:
 - Gauging the efficacy of intervention strategies on shifting system dynamics such that new dynamics generate more desirable outcomes across the system
 - Accelerating and enhancing the project's learning processes so that it has robust feedback loops between strategies and tactics and outcomes to enable it to revise and refine its intervention approaches in the near to medium-terms

Objective 2: Develop, test, and recommend refinements to the egonet tool and analytical lens for continued application by the RDC Activity for analytical and assessment purposes.

Objective 3: Provide insights to the RDC Activity from the findings of the initial application of the egonet tool and analytical lens.

1.2 Egonet Defined

An egonet is the network of interactions between a single entity, an ego, and all the other actors with whom it is connected. Visually, it is a single hub with numerous spokes. At the center of the hub is the ego, and at the end of each spoke is the ego's alters. Deciding which entity becomes the ego is an analytical choice representing the perspective and aims of the researchers. An egonet is limited, or bounded, by the direct relationships an ego has with other actors. It is generally part of a larger, more complex network of interrelationships as visualized in a whole network analysis. Like whole network analysis, an egonet is comprised of nodes representing its alters. It also includes edges, which is the connections between nodes. In market systems work, edges are oftentimes represented by arrows.



Illustrative Egonet: Firm 2 Highlighted in Red

analysis, an egonet is comprised of nodes representing individual entities, namely, the ego and its alters. It also includes edges, which is the connection, or relationship, between nodes. In market systems work, edges are oftentimes referred to as linkages.

2. METHOD

This network analysis tool, developed for use with the RDC Project in Bangladesh, employed a combination of quantitative and qualitative methods. The quantitative component provided baseline data on the structure and attributes of the egonet's actors and interrelationships. The qualitative component provided context for the egonet as a part of the complex dynamics of the market system. Each component was expected to complement the other and increase the utility of tool and lens to the user.

In the case of RDC, researchers developed and deployed the tool and analytical lenses to construct egonets of key firms who are anticipated to benefit directly from the project's grant support. Researchers worked with project staff throughout the process so staff will be able to refine the tools and continue to use them for future RDC grantees. The following outlines in greater detail the quantitative and qualitative components as they were developed and deployed in Bangladesh. See Annex B for survey instrument.

2.1 Quantitative Component

The quantitative component was developed to capture data for key attributes, or variables, for each ego, each ego's alters, and their relationships in a systematic way so it could be used for base and end-line comparisons.¹

Table: Key attributes analyzed in quantitative component

EGO (Lead Firm Grantee)	ALTERS	EDGES (Relationship)
<ul style="list-style-type: none">• Role or function in the market• Ag-products focused on• Location of activities• Annual revenues• Valued bus. relationship qualities• Retention rates of trade partners• Support levels to partners• Internal investment levels	<ul style="list-style-type: none">• Role or function in the market• No. of actors per role/function• Reliability/trustworthiness• Cost-competitiveness• Quality levels• Volumes supplied/bought	<ul style="list-style-type: none">• Type of relationship• Frequency of communications• Effectiveness of communications• Provision of credit• Average volumes traded per month

Researchers administered a tested survey instrument to senior staff of six key firms (egos) who could provide data relevant to the above attributes. Most attributes related only to a firm's business operations and relationships related to grant support it received from RDC. For example, if a firm received support to improve how it managed its rice supply chain, then the egonet was limited to operations and relationships related to the supply, processing, and distribution of rice in addition to relationships with alters like financial institutions, IT firms, public sector entities, or researchers who provide services to the firm's rice operations. Responses from key firms were also primarily limited to business operations and activities in three southwestern regions of Bangladesh where USAID expects the project to achieve impacts.² However, some attributes were collected from the firms' operations across

¹ From the initial tests, the quantitative component has additional uses that are discussed below.

² These regions are USAID's Feed the Future Zone of Influence in Bangladesh.

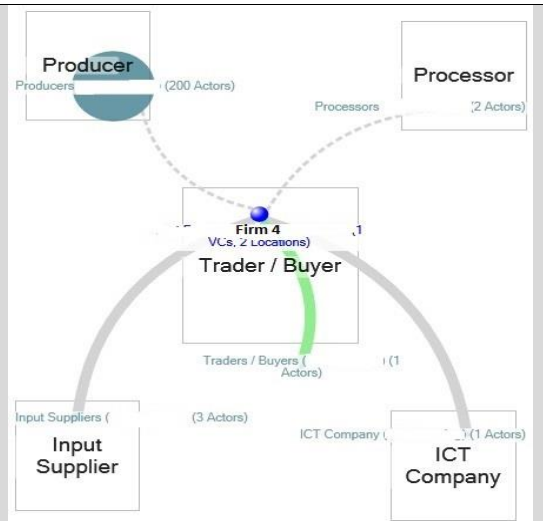
Bangladesh for comparison purposes (i.e. annual revenues, role and number of alters, and retention rates of trade partners).

Respondents identified alters by their role or function in the market system in relation to the respondent, such as service provider, distributor, processor, trader, government unit, etc. For each group of alters, respondents identified individual alters who were exemplars, or typical actors, based on their size (small, medium or large). These exemplars served as proxies for their cohort in terms of all edge attributes.

Map - Example egonet map from the quantitative data

The attributes, or variables, visualized in this map include:

- **Ego:** Firm 4
- **Role:** Trading/buying firm
- **Number and role of alters:** producers (n=200), processors (n=2), input suppliers (n=3), and ICT service provider (n=1)
- **Frequency of communication:** dotted line (low), solid line (med.), thick line (high)
- **Effectiveness of communication:** pink (low), grey (med.), green (high)



2.2 Qualitative Component

Conducted following quantitative data collection and preliminary analysis, the qualitative component was undertaken to provide:

- Context for the egonet as it exists within the dynamics of the wider market system;
- Insight as to the effects of market system drivers on findings from the quantitative component: To see, for example, if patterns in retention rates or the effectiveness of communications can be explained in terms of discernable drivers; and
- Identification of possible leverage points for interventions based on perceived dynamics and drivers in the market system.

In administering this component, focus groups were held with each of the six lead firms (egos) that most often included senior managers in charge of managing different sorts of external relationships. Discussion topics were generated from a combination of: a) Findings from the quantitative component as when, for example, there appeared consistent similarities and/or striking differences between egonets; and b) overlays of market system drivers and dynamics that could shed light on the findings.

In addition, researchers interviewed 20 alters and four key informants, in Dhaka and in the target regions, from nearly all functional VC groups (e.g. suppliers, input suppliers, distributors,

etc). Interviews explored similarities and differences in the alters' relationship with the egos and other businesses with whom they had parallel relationships (e.g., comparing an agro-input distributor's relationship between multiple agro-input suppliers, one of whom is the ego or lead firm supported by RDC). Interviews also explored if and how market system drivers, from the perspective of the alters, affected business operations and relationships with their own buyers, suppliers, service providers, and other sorts of actors.

Focus groups and interviews were conversational with questions tailored to the situation, which were very diverse in terms of the background, operations, education levels, and circumstances of the respondents. The following table outlines the areas of interest and topics of discussion covered during semi-structured focus groups and interviews.

Table: Focus group and interview research topics

Qualitative research topics and areas of detailed interest	
Network structure of relationships	<ul style="list-style-type: none"> • Number of actors and their role/function (to validate quantitative data with egos and obtain broader perspective of market system with alters) • Approx. transaction volumes
Relationship dynamics	<ul style="list-style-type: none"> • Governance structures • Levels of cooperation and information flows • Incentive structures • Performance management practices
Market system drivers	<ul style="list-style-type: none"> • Commercial forces and opportunities • Social norms and biases • Policies and regulations • Disruptive technologies or innovations in business practices
Trends and changes	<ul style="list-style-type: none"> • Pattern of changes over time for the above • Previous major disruptions

3. UTILITY OF NETWORK ANALYSIS (WHAT WE LEARNED)

Section 3 illustrates the usefulness of the egonet tool toward addressing the development challenges of catalyzing a shift in the dynamics of a complex system to ones that generate more desirable outcomes and impacts. This section addresses the following specific challenges:

- Understanding system dynamics (3.1)
- Finding leverage points (3.2)
- Identifying useful partners (3.3)
- Designing effective intervention tactics (3.3)
- Gauging the efficacy of intervention strategies (3.4)
- Accelerating and enhancing learning and adaptation (3.5)

The findings below are based only on an initial deployment of the egonet tool with a limited population of six egos, intended to test and demonstrate the egonet tool's functionality and potential. While we are presenting the principal findings of the initial study, the overall picture is still likely incomplete. The limitations and chief lessons from deploying the egonet tool are discussed in Section 4.

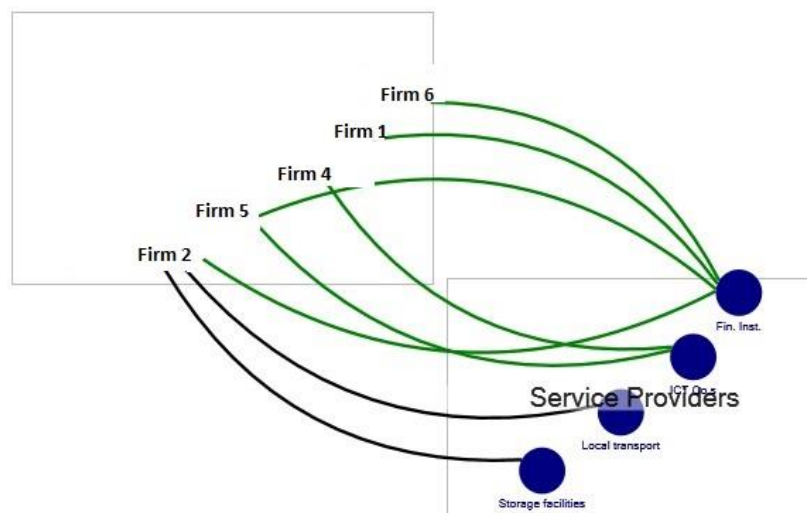
3.1 Understanding system dynamics

The egonet tool (both qualitative and quantitative) was particularly useful in identifying *structural dynamics* and *social norms and biases* that appear to constrain either the egos' operational performance and/or that of the market system.

Structural dynamics

Gaps in relations with service providers: For firms with operations the size of the six egos that were surveyed and interviewed, there appeared to be a lack of relationships with service providers. Mapped below, our network analysis revealed only 8 connections with 4 service providers. At present, however, the egos seem to rely mainly on financial institutions and, to a much lesser degree, IT companies for expert services. Notably absent are service providers for marketing, advertising, and promotions, especially as all egos discussed the competitive pressure to promote existing or new product brands for specific consumer segments. One of the six egos surveyed, Firm 3, had no relations with service providers.

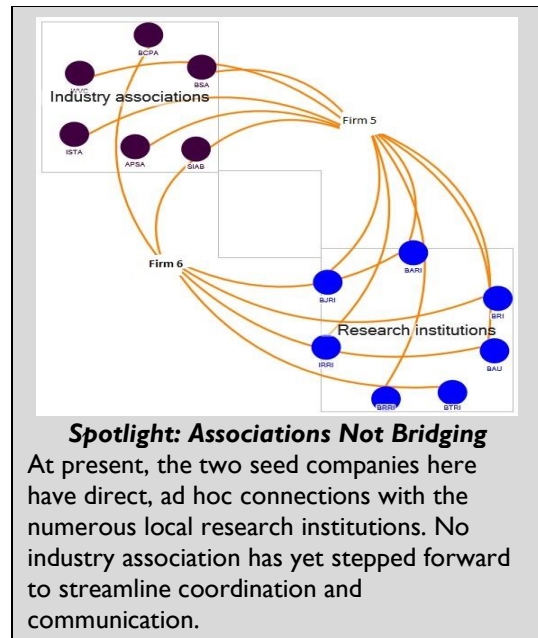
Map – All service providers used by lead firms (egos)



Gap in communications and collaboration between seed companies and research institutes: The two seed companies of the six egos are among 60 different seed companies in Bangladesh, although they are among the largest seed companies in terms of production capacity, market performance, and research and development. Most of the largest seed companies have at least ad hoc relations with seed research institutions (see call-out box for the connections between egos, seed industry associations and research institutions). However, according to a seed

industry informant, seed companies are seldom aware of research institutes' priorities or new findings due to the absence of mechanisms to ensure consistent collaboration and communication between companies and institutions.

Narrow distribution and supply channels: Findings suggest that the distribution and supply channels of egos are generally narrow. For example, input suppliers rely on large numbers of small, inter-connected distributors and retailers to distribute products to farmers. Most of the distributors interviewed for this study were small businesses with few staff. They managed small distribution territories and sold to between 150 to 250 retailers each. As a result, for input suppliers to reach new customers (farmers) in underserved areas generally means increasing the number of distributors they work with as opposed to finding distributors able to serve a wider network of retail customers, which would likely be more efficient and cost-effective for suppliers to manage.



The narrowness of input suppliers' distribution channels is reinforced and made more rigid by suppliers' incentives that reward distributors who take product on credit and incentives that create seemingly small exclusive territories for their best distributors. Input suppliers seem to invest considerable effort cultivating relationships with distributors, making it less likely they will replace distributors without sufficient cause. This notion is supported by the quantitative results showing that more than 75% of suppliers' main trading partners are the same as last years'. The qualitative research suggests that retention rates are much higher, closer to 85% to 90%.

The retention rates for the two crop production buyers (Firm 2 and Firm 4) seem to support the finding that supply channels are also narrow, but perhaps they are not as rigid as input distribution ones. For instance, only around 50% of Firm 2's trading partners are the same as before. Furthermore, interviews with Firm 2 and three other crop buyers indicated how they were experimenting with different supply models. Firm 2, for example, was shifting from purchasing directly from each farmer to using farmer group leaders as intermediaries instead. Two other companies were testing ways of involving local intermediaries as buying agents who would ensure product quality, traceability, and reliable deliveries, functions they do not currently fill.

Social norms and biases

Overall observations suggest that all egos struggle, in managing their supply or distribution channels, to shift the business strategies of their supplies and distributors from traditional, extractive ones to value-additive ones. Extractive strategies tend to prioritize revenue generation over business growth, which is quickly withdrawn (extracted) by company owners. Value-additive strategies typically prioritize growth through the retention of customers and

suppliers due to enhancements in value propositions to buyers and suppliers and continual performance upgrades.

That suppliers and distributors' strategies are predominantly extractive is evidenced by their lack of growth and seeming disinterest in upgrading of operations. The lack of growth is seen in the narrowness of the distribution and supply channels noted above, which is largely a result of these actors' persistence as micro-enterprises or small businesses. In addition, most of the actors interviewed for this research claimed to have made little to no investment to upgrade their business systems, infrastructure, or staffing although the volumes of products they sell strongly indicate attractive overall revenues.

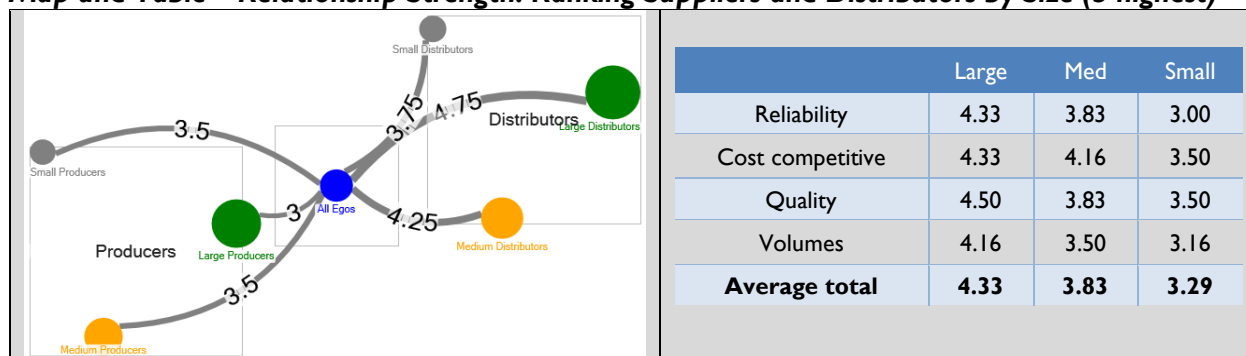
The egos, on the other hand, invariably expressed desires for their trading partners to adopt more value-additive strategies. Input suppliers, for example, noted they would prefer for distributors be more proactive in developing and managing their network of retailers and market-base of farmer-consumers. The trading firms expressed hopes of developing a loyal, reliable base of farmers who could supply them with agricultural products year-round. In addition, when ranking the qualities most valued in business relationships, the egos consistently ranked reliability and quality (characteristic values of value-additive strategies) over volumes supplied and cost-competitiveness (see table).

Table - Qualities valued most in business relationships (1 highest)

	Input Suppliers			Machinery	Crop Buyers		TOTAL
	Firm 1	Firm 6	Firm 5	Firm 3	Firm 2	Firm 4	
Quality Assurance	1	2	1	4	1	1	10
Reliability	2	3	2	1	2	4	14
Volume	3	1	3	2	5	3	17
Cost Competitiveness	4	5	4	5	3	2	23
Information and Communications	5	4	5	3	4	5	26

The quantitative findings also suggest that lead firms believe that their larger suppliers and distributors are the ones best able to satisfy their most important values and preferences (see map and table). Network data shows that egos surveyed demonstrate a distinct preference for working with larger producers and distributors. The preference is most distinct with distributors. In the below network map, the nodes are sized according to the egos' opinion of their partners' reliability, cost-competitiveness, quality and volumes. The largest nodes are green (large firms), whereas the smallest are grey (small firms). This trend also plays out among distributor relationships, where the quality of the actual relationships with large firms are ranked highest (see edge values). The trend is not so distinct with producer relationships however.

Map and Table – Relationship Strength: Ranking Suppliers and Distributors by Size (5 highest)



The primary challenge for most egos to shift performance practices of suppliers and distributors is balancing their own incentive structures and investments to reflect the dual priorities of volume and price, on the one hand, and growth and value-add on the other. Presently, most egos do much better at managing for volume and price. Firm 4's initial contracts with suppliers, for example, focused entirely on volume requirements and price parameters. Next season, they expect to modify the contract to reflect quality requirements and other value-additive performance expectations. The input supplier situation is even more complicated. All their performance incentives for distributors only reward increases in sales volumes and are silent about growth expectations and customer retention. Such incentives, especially for distributors who come from a tradition of extractive strategies, likely reinforce such strategies and make change that much harder.

3.2 Finding leverage points

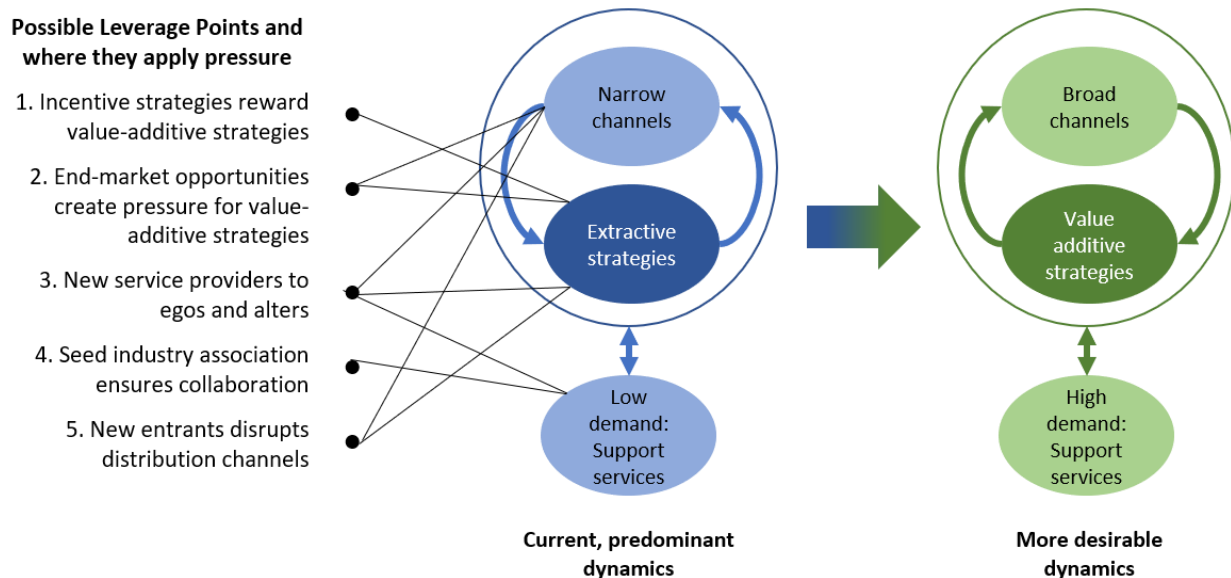
The above observations on system dynamics revealed that, in general, the supply and distribution channels of lead firms are predominantly narrow with businesses largely engaging in extractive strategies. In fact, it appears that these dynamics are mutually reinforcing. For example, where extractive businesses do not invest in growth or upgrades to operations, supply and distribution channels remain narrow. Furthermore, as a result, demand for support services is likely low and stagnant; businesses who are not growth-oriented have seemingly little need for expert services.

Ultimately, these patterns have negative implications for small-holder farmers who typically have difficulties accessing higher-value markets and improving productivity. Part of the RDC project's theory of change is to rectify these dynamics such that farmers instead are connected to broad supply and distribution channels where actors compete on value-additive strategies, providing farmers with input supply channels that can respond to their needs to improve productivity and output market channels that offer opportunities and incentives to improve production.

This section illustrates how well the ego-net tool serves as a means of identifying leverage points, namely, opportunities where implementers can potentially catalyze systemic change from one dynamic to another that generates more desirable outcomes. The figure below depicts this shift in systemic dynamics and indicates where the leverage points discussed below are expected to apply pressure. As these leverage points only surfaced as part of the initial

application of the ego-net tool, the findings are tentative although they may be interesting areas for additional exploration.

Figure - Expected shift in systemic dynamics and potential leverage points



Our five leverage points include:

1. New incentives from egos reward trading partners who employ more value-add strategies: To assist input suppliers and crop production buyers in their efforts to shift distributors and suppliers to value-additive strategies, they could offer a combination of financial and non-financial incentives that reward trading partners who, for example, make ongoing performance improvements, increase productivity, expand the organization.
2. End-market opportunities for quality products creates pressure for value-add strategies in supply channels: Several emerging end-market opportunities appear to provide the commercial incentives for actors to take up more value-additive strategies. Such opportunities are generally for higher quality products to middle and upper-class consumers. All RDC's crop buying, lead firms are responding to such opportunities whether for pure varieties of rice, quality sunflower oil, pesticide "safe" mung beans, or just color-sorted and well packaged lentils. The quality requirements and tastes of consumers in these segments pressures supply chain actors to shift to more value-additive strategies such as ensuring farmers have access to and use agro-inputs correctly, applying and tying incentives to grades and standards, and increasing productivity and operational size of all actors along the chain.
3. New service providers serve egos, their trading partners, and/or others in the market system: The structural gaps in egos' use of a variety of service providers, outlined in the section above, represent opportunities for lead firms (and their alters) to enhance their performance—accentuating value-additive strategies—and strengthen their supply and/or

distribution channels. The following support services could accelerate such performance improvements and catalyze wider system change:

- Many egos already use IT services to, for example, manage traceability in supply channels, track distribution of their input products, or ensure consumers of product authenticity (as opposed to counterfeits). However, other opportunities exist to build upon these uses such as customer management systems that track customer preferences and feedback or ordering, inventory, and logistics management systems that utilize bar-codes and scanning technology. According to one IT firm (iCom), actors in both the construction materials and agro-inputs sectors have expressed strong interest in deploying such technology but are having difficulty locating affordable bar-coding equipment suitable to the scale of their respective operations.
 - A marketing firm, Asiatic Marketing and Communications, has already helped Firm I develop an awareness raising campaign for its Integrated Pest Management product line. Other opportunities exist for marketing firms to assist lead firms such as raising farmers' awareness of new input technologies or developing end-markets for high-value products that require more coordination and cooperation in supply channels.
 - Most lead firms use financial services. However, there exist new, under-developed financial services like Asia Bank's A-Card, which provide users with small working capital amounts. If used by farmers, this financial service could positively disrupt the credit-based system between input suppliers, distributors, and retailers. In supply channels, it could also lessen working capital burdens of crop buyers, allowing them to expand operations.
4. Seed industry association ensures communication between companies and research institutions: Presently, the Seed Industry Association of Bangladesh is a nascent organization that focuses mainly on seed policy and regulation on behalf of the industry. However, it could be a possible candidate to provide mechanisms for research institutes and seed companies to share information, discuss research priorities, and identify opportunities for collaboration.
5. New entrants disrupt distribution channels: This leverage point is more speculative. It is not grounded in any observable nascent trends but in two arguments. First, there seems to be a business case where an agro-inputs marketing and distribution company, with distribution depots, sales outlets, and service centers could be profitable. This assumption is based on the current profitability of existing small-scale distributors and that they are generally inefficient and not growth oriented. As such, new, more organized entrants to the distribution channel could potentially achieve enormous efficiency gains over their small-sized competitors and could better attract and retain customers with more customer-oriented service. In essence, better business models exist than those that currently dominate the inputs distribution channel. The question is why have they not emerged.

Second, presumably, if new actors with such business models were to enter the inputs distribution channel, their presence could be extremely disruptive in positive ways. For example, depending on how well the new actors introduce and manage their value-additive

strategies, farmers could benefit from input sellers who are more efficient, accessible, knowledgeable, and service-oriented. In addition, if such new entrants were successful, existing distributors and retailers would experience considerable pressure to join, adjust their own strategies, and/or find alternative revenue streams. Furthermore, input suppliers would experience pressure, and opportunities, to align inventory and ordering systems with the new actors, reduce field staff currently shepherding existing distributors, and focus more on raising farmers' awareness of their brand products.

Getting answers to why such business models have yet emerged may be a useful starting point for exploring this leverage point. As Bangladesh boasts numerous entrepreneurs with successful businesses, these may be the right key informants with whom to test these assumptions and discover a path forward.

3.3 Identifying useful partners and designing effective intervention tactics

During focus group sessions with egos / lead firms, constructing egonet maps with participants proved useful in ways that suggest it could also be useful as a mechanism for designing and/or reviewing progress of intervention tactics. In focus groups, co-constructing an egonet map enabled researchers and participants to identify and explore forces behind interesting patterns in, for example, similarities and differences in network structure and relationship dynamics.

Co-constructing an egonet map also helped researchers, and lead firms, see the larger implications of and business rationale for new distribution or supply chain management models. From this it was easy to see how the partnerships between egos and RDC were expected to generate anticipated outcomes for the businesses and the actors in the network. Therefore, it seems likely that an egonet map could prove a useful mechanism for implementers like RDC to explore and assess collaborations, intervention support, roles and responsibilities, and expected outcomes of activities.³

3.4 Gauging efficacy of intervention strategies

Ascertaining the usefulness of the egonet tool in this regard must wait until a later stage when baseline – follow-up comparisons can be made. At that time, any changes in egonet attributes will need to be assessed to learn the following:

- Are there correlations between project interventions and discernable changes in egonet attributes?
- Do discernable changes reflect wider changes in the market system? If so, to what extent?
- Do discernable changes and/or wider changes in the market system result in more desirable outcomes? (e.g., more inclusiveness, greater competitive performance, positive impacts on smallholders)

³ It may be interesting to pair a lead firm's egonet map with the Business Model Canvas (Strategyzer) as a means of looking at the completeness and coherency of a proposed new business model and whether there are any gaps in a firm's external network of relations.

3.5 Accelerating and enhancing learning and adaptation

As above, there are no present findings to assess the usefulness of the egonet tool here. However, during the initial deployment, researchers recognized several ways in which the egonet tool could enhance an internal learning process, such as:

- A means of visualizing expected changes in the egonets of lead firms benefiting from project support: Such a visualization could be a common reference among project staff and with the lead firms, used to align thinking and discussions about progress. It could also be used to compare the potential value of project partnerships with different lead firms. The visualization could also help communicate project objectives and strategies to donors and other stakeholders.
- Facilitating short-term feedback about the effects of project interventions: With a clear visual of expected changes in egonets and, even, the wider market system, project staff can assess discernible changes against an expected trajectory and determine whether course corrections are necessary and/or if expectations need modifying.
- Updating perceptions of market system dynamics and theories of change: Typically, learning is ongoing as dynamics evolve, unforeseen outcomes occur, and project staff make new observations. The egonet tool and map can provide a useful framework for assessing new information against current assumptions and expectations about future changes (see above).

4. LIMITATIONS OF THE EGONET TOOL

The following perceived limitations of the tool may change over time as the tool is refined, ego population grows, baselines are followed-up with change data, and application becomes streamlined. The following limitations are nonetheless noteworthy:

Capturing the whole network: With a graph or network map of all actors in the market system being analyzed, it would be easier to see in the quantitative data how any one egonet fits within a wider context—how it influences and is influenced by the larger system. The egonet tool is limited in that it relies on qualitative assessments to stitch together assumptions about how an egonet fits within a wider context, which are more prone to confirmation bias. Despite this limitation, this tool does attempt to resolve the often insurmountable logistical and cost difficulties of conducting a census of all actors in a given system or value chain, which in this case would have numbered in multiple thousands of actors.

Differences among egos: As this tool is used in the RDC project, there are important differences in the functions, business models, organizational structure, and key activities of the lead firms. Analysts must take care when making comparisons between egonets to make sure there is sufficient bases for such comparisons.

Mapping desired change: Associated with the above, the desired changes brought about by RDC grantmaking activities may differ from ego to ego. That is, while growth of an ego network may be desirable for one grantee as a result of RDC assistance, another grantee may prefer to emphasize less, but more strategic, partnerships. In this respect, ideally each baseline egonet

report would be analyzed prior to undertaking grant activities, to determine desired change. Follow-up network analysis would then measure actual versus desired change targets.

Small ego population at present: While this report demonstrates the ability of ego analysis to inform strategy and establish a baseline, we have relied heavily on qualitative network analysis techniques to characterize larger systems dynamics and generalize our observations. As new grantees come online we anticipate the sample size to grow, providing RDC with more reliable, generalizable data points.

5. RECOMMENDATIONS FOR FUTURE APPLICATION

In the context of the RDC Project, the egonet tool was initially designed to capture base and end-line data as a means of gauging change in system dynamics and outcomes over the life of the project. However, the tool appears to have additional usefulness outside of this limited scope (as noted above). Going forward, the tool may be increasingly adapted to RDC's project management processes, specifically: a) streamlining administration and integrating the tool into grantee management and reporting processes; b) ongoing training and support to conduct analysis; and c) incorporation of the tool into project learning processes. Suggestions for customizing and streamlining the tool include:

1. Focus the quantitative component on fewer node and edge attributes particularly as they relate to the structural aspects of the egonet such as, for example, volumes traded with trading partners, and frequency of interactions across alters. In this vein we suggest re-visiting the questionnaire (Annex B) prior to project-wide roll-out.
2. Utilize the online survey administration capabilities of the Egoweb survey platform so that the instrument can be self-administered. This would reduce the burden for both RDC and lead firms' staff.
3. Address difficulties encountered with getting all grantees to participate in the survey. This might include a requirement for grantees to participate in periodic network analyses as a condition of the grant.
4. Consider expanding the flexibility of the quantitative component to account for alters that may be unique to lead firms: The qualitative research found that lead firms often had richer egonets than were revealed by the quantitative survey, which had limited categories of alters for respondents to choose from.

The qualitative component could be administered more often with greater ease if RDC staff were sufficiently trained to apply the analytical lenses on an ongoing basis. For one, during activity implementation and engagements with lead firms, staff could observe and probe for detail that would illuminate current dynamics in the market system, which could inform project strategic decisions. In addition, a stronger understanding of the analytical lenses would enable staff to design and administer large or small investigative studies to make sense of, for example, shifts or points of interest in the quantitative data.

Lastly, the project could explore mechanisms to incorporate the tool's utility in its learning processes. Some examples include:

- Using the tool to model current and future, more desirable system dynamics as a hypothetical theory of change, which would frame strategic decision making and learning.
- Periodic reflections by staff on the evolution of market system dynamics and ego-net structure and their implication on project activities and achieving targeted impacts.
- Quarterly and annual portfolio reviews that utilize the tool's framework to, for example, gauge progress and efficacy of activities, identify unexpected outcomes, target alternative leverage points, and revise project strategy.

ANNEX A: BASELINE QUANTITATIVE NETWORK ANALYSIS RESULTS

Presented below are the results of our baseline quantitative network analysis administered in July and August 2017 to six lead firms prior to RDC grantmaking: Firm 1, Firm 2, Firm 3, Firm 4, Firm 5 and Firm 6. This is a pre-engagement baseline analysis, intended to be repeated post-intervention to assess change and be incorporated into project reporting documentation. As of the conclusion of this report, the RDC team has been provided with all accompanying data and information which is intended to be used for entry of follow-up (endline) data for the six already-surveyed actors, and any new firms to be engaged under the project's grant-making activities.

This document is organized roughly in the same order as the questionnaire instrument administered to each of the six participating firms (See Annex B). Sections include:

- **Baseline Ego Attributes (All Actors)** – Rolls up the basic characteristics / attributes of each of the six lead firms (i.e. egos) participating in this network analysis, offering the opportunity for us to compare and contrast results among different types of firms. Includes information about each ego's grant, business operations, values and ways of doing business.
- **Baseline Relationship Metrics (All Actors)** – Rolls up relationship data for each of the six lead firms (i.e. egos) participating in the network analysis. This is the data upon which maps are generated, providing an understanding of the breadth of relationships that each ego has with other VC actors (i.e. alters) and capturing information about the strength of those relationships.
- **Ego Reports** – Provides maps, metrics and observations of each individual ego participating in the survey. RDC plans to insert endline maps and metrics post-intervention to update each ego report and assess change.

I. Baseline Ego Attributes

Each of the six firms participating in the analysis were asked a series of questions to characterize their business grant, business operations, values and ways of doing business. All questions were answered in relation to the RDC grant. Respondents were asked about not only the nature of their firm / grant, but also their orientation toward working with partners, scale, churn, and typical ways of doing business. Summary observations include:

- 3 of the 6 egos are Input Suppliers, with the remaining three being Processors, Machinery Company, and Trader / Buyers. The Input Suppliers also have high average revenue numbers compared to the others, both in Bangladesh and the FTF zone.
- Input suppliers work in the most crop areas.
- 2 of the 6 egos only work in the FTF zone.
- For those 4 egos that work in the FTF zone and elsewhere in Bangladesh, the percentage of revenues coming from the FTF zone is approximately 20% for all of them.
- Quality and Reliability to two traits valued strongly in business relationships by all surveyed firms. Cost competitiveness much less so.
- All egos indicated that they invest most heavily in commercial business functions.
- Across the board, egos had low relative levels of investment in advocacy and socio-political issues.

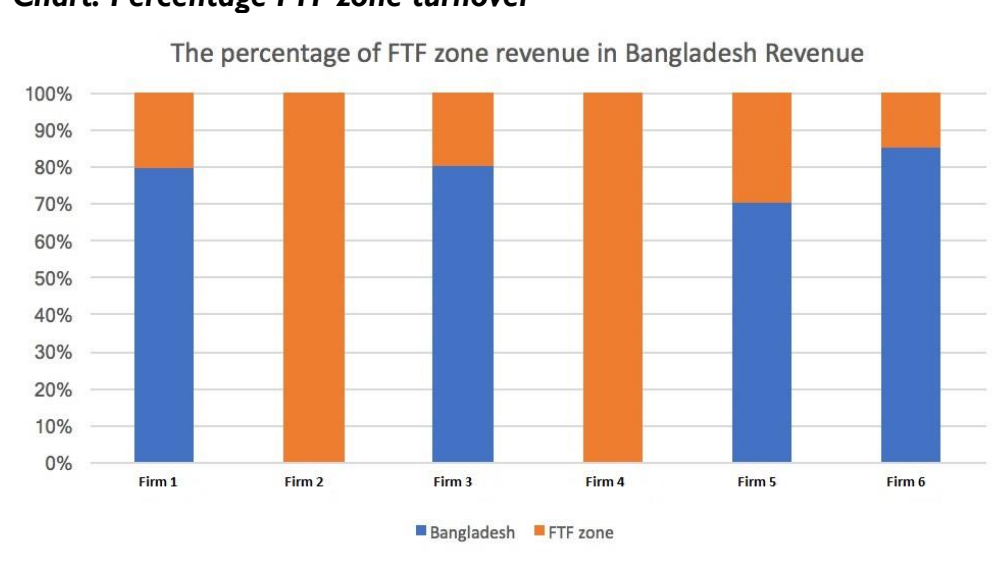
Half of the six firms participating in the network analysis were Input Suppliers (n=3), with the remaining three being one Processor (Firm 2), one Machinery Company (Firm 3) and one Trader / Buyer (Firm 4). The input suppliers participating in this survey have significantly larger operations both in Bangladesh and the FTF zone in terms of average annual revenues and volumes and revenues than the other three firms. All of the input suppliers are working in multiple value chains related to the RDC grant, whereas Firm 2 (mungbean), Firm 3 (rice) and Firm 4 (mungbean) are each focused on a single VC.

Table – Value chains related to the RDC grant

Answer	Firm 1	Firm 2	Firm 3	Firm 4	Firm 5	Firm 6
Rice	X		X		X	X
Maize	X					
Mungbean		X		X	X	X
Lentil					X	X
Sunflower						
Mustard	X				X	X
Groundnuts						
Sesame						
Other						

Firm 2 and Firm 4 work only in the FTF zone, appearing to have the most limited operations among the six lead firms. Firm 5 (n=7) and Firm 6 (n=8) have presence in the greatest number of geographies related to their grant activities. Annual revenue numbers appear to roughly correspond with geographic presence, however two of the six respondents declined to provide annual revenue figures, instead opting to provide information on annual volume of product, making this data difficult to compare. Nonetheless, with annual revenues of approximately 500 million BDT (150 million in FTF zone), Firm 5 appears to be significantly larger than the remainder of the cohort. For those four actors with activities in both the FTF zone and elsewhere in Bangladesh, there is a remarkable level of parity with FTF zone activities comprising approximately 20% of their turnover.

Chart: Percentage FTF zone turnover



We then analyzed what each of the egos value most in their business relationships, hoping to gain insight into optimal types of relationships from the perspective of these important actors. Respondents were asked to rank the qualities that their firm values most in their business relationships, with 1 being highest and 5 being lowest. Quality Assurance (n=10) and Reliability (n=14) were the characteristics most valued in business relationships. Cost Competitiveness (n=23) and Information and Communications (n=26) scored the lowest. The cost competitiveness result seems surprising, given the highly transactional nature of most of the relationships (Section B) in this network. There may not be a lot of cost differentiation among lead firm partners at present, and results would seem to indicate that those business partners delivering higher quality and reliability may find it comparatively easier to charge more for their product or service.

Table – Qualities valued most in business relationships

Answer	Firm 1	Firm 2	Firm 3	Firm 4	Firm 5	Firm 6	TOTAL
Reliability 1	2	2	1	4	2	3	14
Cost Competitiveness 2	4	3	5	2	4	5	23
Quality Assurance 3	1	1	4	1	1	2	10
Volume 4	3	5	2	3	3	1	17
Information and Communications 5	5	4	3	5	5	4	26

We further compared the qualities most valued between those firms that had higher levels of turnover in Bangladesh than FTF zone, and vice-versa, to assess whether the priorities varied. Little difference was found, possibly indicating that the issues confronting lead firms are similar in FTF to those elsewhere in Bangladesh.

We then looked at relationship turnover to assess the general stability of a firm's relationships and identify any differences between those in the FTF zone and elsewhere in Bangladesh. We received the exact same results for both the FTF zone and overall Bangladesh, with 5 of the 6 respondents indicating that more than 75% of their business partners are repeat. Only one firm, Firm 2, indicated that approximately 50% of their relationships are repeat.

We then asked how the respondents typically work with their partners, trying to get an idea of the depth of those relationships and the extent to which they invest in relationships. 4 of the 6 respondents indicated a high level of investment in these relationships, indicating "we consistently train our business partners and/or provide other incentives for them to work with us." 2 of the 6 (Firm 2, Firm 6) indicated that they sometimes train and provide incentives to partners. None of the respondents indicated that they simply work with firms that provide them with the best price. These results might be compared with relationship strength questions, particularly frequency of communications and satisfaction, to identify patterns.

We then asked partners about their internal investments, and found a very strong orientation on commercial functions. When asked to force rank on a 1-6 scale each firm's own level of investment in specific business functions, all respondents indicated that their top investment is in transactional relationships (buying and selling). There were high levels of consistency in

responses across the board, with organizational improvement and market information relationships also prioritized. The largest firm among the respondents, Firm 5, was an outlier in prioritizing financing relationships and deemphasizing organizational improvement (business expansion) relationships. There does not appear to be much investment at all in advocacy / regulatory or socio-political relationships.

Table – Ranking of each firm’s level of investment in business functions (1 is highest)

Answer	Firm 1	Firm 2	Firm 3	Firm 4	Firm 5	Firm 6	TOTAL
Transactional relationships (buying and selling) 1	1	1	1	1	1	1	6
Advocacy/Regulatory relationships 2	6	5	4	6	6	5	32
Socio-political relationships (informal) 3	5	6	5	5	5	6	32
Market information relationships 4	3	3	2	2	3	3	16
Financing relationships 5	4	4	4	4	2	4	22
Organizational improvement relationships (business expansion) 6	2	2	3	3	4	2	16

Finally, we wanted to obtain a sense of each respondents’ reach to farmers. Although many do not have direct relationships with farmers, we asked for their estimates of how many farmers in the FTF zone received information on their products in the previous year related to their grants. Input suppliers had the highest numbers, averaging 113,333 farmers reached. Firm 4 and Firm 2 were lowest.

Table – Number of farmers receiving information on products related to the grant last year

Answer	Firm 1	Firm 2	Firm 3	Firm 4	Firm 5	Firm 6
# of Farmers	120,000	1,000	20,000	200	120,000	100,000

2. Baseline Relationship Metrics (All Actors)

Respondents were then asked to provide information about their relationships. For each group that a respondent indicated that they work with in the FTF zone, they were asked to provide three “exemplar” relationships that characterize their relationships with the overall group. Those results are presented for all participating firms below. Overall, the results of analysis of baseline relationship metrics indicate that:

- Average volumes are universally low for producer relationships, though there are only two egos that say they work directly with them.
- For those egos that have relations with them, egos seem to communicate most frequently with Input Suppliers and Distributors.
- Not a lot of interaction with support service providers or government – appears to be a gap.
- Highly transactional relationships.
- Retailers are the largest alter group.
- Large volumes with Distributors and Retailers.
- Respondents appear to be more satisfied with large suppliers and distributors than they are with small and medium ones.

Map – Real (Exemplar) Alters, Grouped by VC Role, Node and Edge Color by Egonet (All alters Grey)

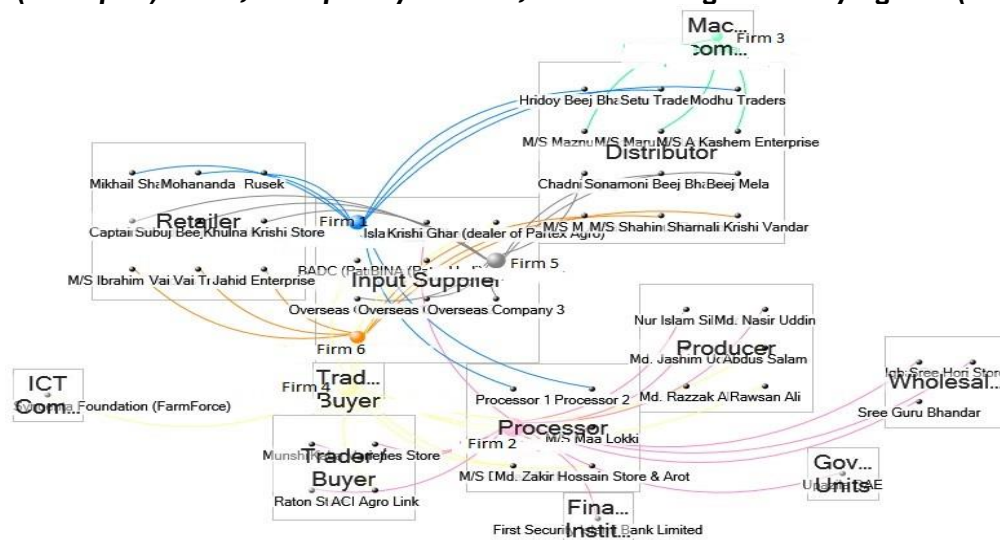


Table: Baseline Relational Metrics

Ego	BG Alters		FTF Alters		FTF Alter Attributes (Av.)				FTF Relationship Attributes (Av)				
	Group	#	Group	#	Reliable	Cost Comp	Quality	Vol	Type	Coms Freq	Coms Effec.	Credit	Vol (BDT)
Firm 1	Input Supplier		Input Supplier										
	Distributor	650	Distributor	140	5	4	4.67	4	Trans.	2	4	Y	566,666
	Retailer	3000	Retailer	800	4	4	3.33	4	Trans.	1	3.67	Y	30,000
	Producer		Producer										
	Processor	5	Processor	2	4	4	3.5	4	Trans.	2	3	N	0
	Machinery Co		Machinery Co										
	Trader/Buyer		Trader/Buyer										
	Wholesaler		Wholesaler										
	Financial Inst	6	Financial Inst										
	ICT Company	1	ICT Company										
	Research/Consult	5	Research/Consult										
	Govt Unit		Govt Unit										
	None		None										
Ego	BG Alters		FTF Alters		FTF Alter Attributes (Av.)				FTF Relationship Attributes (Av)				
	Group	#	Group	#	Reliable	Cost Comp	Quality	Vol	Type	Coms Freq	Coms Effec.	Credit	Vol (BDT)
Firm 2	Input Supplier		Input Supplier	1	3	2	2	2	Trans.	1	2	N	10,000
	Distributor		Distributor										
	Retailer		Retailer										
	Producer	1000	Producer	1000	2.67	4	3	2.67	Trans.	1	2.67	N	4,000
	Processor	1	Processor	1	4	4	4	5	Trans.	1	4	N	10,000
	Machinery Co		Machinery Co										
	Trader/Buyer	165	Trader/Buyer	165	3.67	3	2.67	2.67	Trans.	4	3	Y	160,000
	Wholesaler	16	Wholesaler	16	4	4	3	3	Trans.	5.33	4	N	103,333
	Financial Inst	1	Financial Inst	1	4	N/A	N/A	N/A	Trans.	14	4	N/A	N/A
	ICT Company		ICT Company										

	Research/Consult		Research/Consult										
	Govt Unit	1	Govt Unit	1	5	N/A	N/A	N/A	Skills	15	4	N/A	N/A
	None		None										
Ego	BG Alters		FTF Alters		FTF Alter Attributes (Av.)				FTF Relationship Attributes (Av)				
	Group	#	Group	#	Reliable	Cost Comp	Quality	Vol	Type	Coms Freq	Coms Effec.	Credit	Vol (BDT)
Firm 3	Input Supplier		Input Supplier										
	Distributor	17	Distributor	17	2.67	3	3.33	3	Trans.	4.67	3.33	Y	200,000
	Retailer		Retailer										
	Producer		Producer										
	Processor		Processor										
	Machinery Co	10	Machinery Co										
	Trader/Buyer		Trader/Buyer										
	Wholesaler		Wholesaler										
	Financial Inst		Financial Inst										
	ICT Company		ICT Company										
	Research/Consult		Research/Consult										
	Govt Unit		Govt Unit										
	None		None										
Ego	BG Alters		FTF Alters		FTF Alter Attributes (Av.)				FTF Relationship Attributes (Av)				
	Group	#	Group	#	Reliable	Cost Comp	Quality	Vol	Type	Coms Freq	Coms Effec.	Credit	Vol (BDT)
Firm 4	Input Supplier	3	Input Supplier	3	3	3	2.67	1.67	Trans.	12	3	N	35,333
	Distributor		Distributor										
	Retailer		Retailer										
	Producer	200	Producer	200	3.33	4	3.67	4	Trans.	4	4	N	3,666
	Processor	2	Processor	2	2.5	2	2.5	2	Trans.	2.5	3	N	22 MT
	Machinery Co		Machinery Co										
	Trader/Buyer	1	Trader/Buyer	1	4	4	4	3	Trans.	12	5	N	2,376,000
	Wholesaler		Wholesaler										
	Financial Inst		Financial Inst										

	ICT Company	1	ICT Company	1	3	N/A	N/A	N/A	Skills	12	3	N/A	N/A
	Research/Consult		Research/Consult										
	Govt Unit		Govt Unit										
	None		None										
Ego	BG Alters		FTF Alters		FTF Alter Attributes (Av.)				FTF Relationship Attributes (Av)				
	Group	#	Group	#	Reliable	Cost Comp	Quality	Vol	Type	Coms Freq	Coms Effec.	Credit	Vol (BDT)
Firm 5	Input Supplier	100	Input Supplier	10	4	4.3	4.3	4	Trans.	9.33	4	N	0 / NA
	Distributor	1,000	Distributor	65	4.33	5	4.3	4	Trans	7.33	5	Y	0 / NA
	Retailer	10,000	Retailer	650	4.33	5	3	4	Trans.	4	4.33	N	0 / NA
	Producer		Producer										
	Processor		Processor										
	Machinery Co		Machinery Co										
	Trader/Buyer		Trader/Buyer										
	Wholesaler		Wholesaler										
	Financial Inst	10	Financial Inst										
	ICT Company	5	ICT Company										
	Research/Consult	10	Research/Consult										
	Govt Unit	8	Govt Unit										
	None		None										
Ego	BG Alters		FTF Alters		FTF Alter Attributes (Av.)				FTF Relationship Attributes (Av)				
	Group	#	Group	#	Reliable	Cost Comp	Quality	Vol	Type	Coms Freq	Coms Effec.	Credit	Vol (BDT)
Firm 6	Input Supplier		Input Supplier										
	Distributor	500	Distributor	100	4.33	4	5	4	Trans.	9.33	4.67	Y	766,666
	Retailer	10,000	Retailer	2,000	4.33	4	5	4	Trans.	5.33	4.67	N	73,333
	Producer		Producer										
	Processor		Processor										
	Machinery Co		Machinery Co										
	Trader/Buyer		Trader/Buyer										
	Wholesaler		Wholesaler										
	Financial Inst		Financial Inst										
	ICT Company		ICT Company										

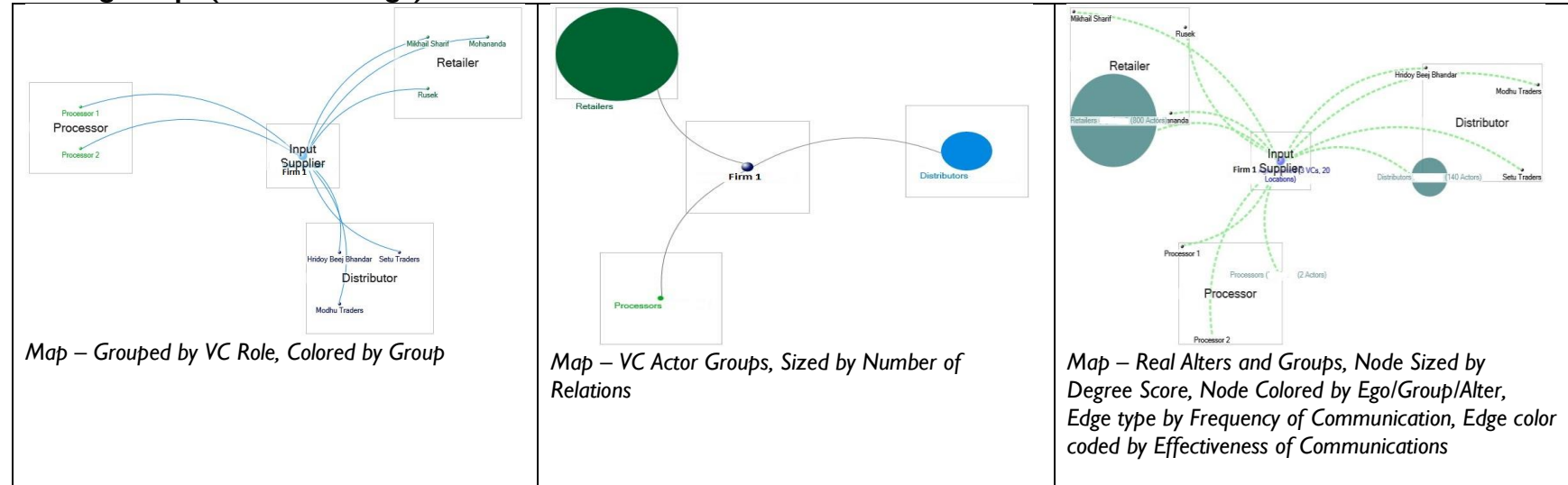
	Research/Consult		Research/Consult										
	Govt Unit		Govt Unit										
	None		None										

3. Baseline Ego Reports

FIRM I EGO NETWORK

Profile: Firm I is an input supplier that RDC plans to support in distribution channel expansion and strengthening through direct sales depots and development of mobile applications targeting 15,000 farmers.

Basic Ego Maps (Click to enlarge):



Quantitative Observations:

- The actor in this dataset with the least frequency of communications with its partners.
- Firm I is doing a lot more work outside of the FTF zone than it is within it.
- Firm I seems to have a narrow / focused set of relationships, be very driven by transactions, and have minimal partner communications.
- Firm I's main frustrations seem to be in the area of quality, although given their low levels and effectiveness of communications with other actors, they do not appear to have been measures taken to address the issues.

Qualitative Observations:

- The nature of the grant under consideration had changed since the quantitative survey was administered. Previously, the focus was on the firm's input distribution operations. Presently, the focus is on supply channels for single rice varieties and distribution in high-end retail

channels. Senior managers noted that the market for undifferentiated rice is highly competitive with little room for growth but there was a growing market for higher-quality rice, especially uniform varieties like basmati.

- Firm I's aim is to develop *local business persons* (LBP) who can ensure farmers' access to quality seed and inputs, provide technical support to farmers, coordinate harvest and post-harvest activities, and coordinate aggregation and delivery to Firm I.
- The firm will recruit and develop LBP from among several possible groups, for example, lead farmers, local intermediary buyers, independent business people.
- The company's plans are at early stages and it has not yet determined incentive packages or other mechanisms for developing LBP candidates.
- Firm I will utilize its existing tea marketing and distribution network to promote its new rice brand(s) and place them in stores.

Key Metrics:

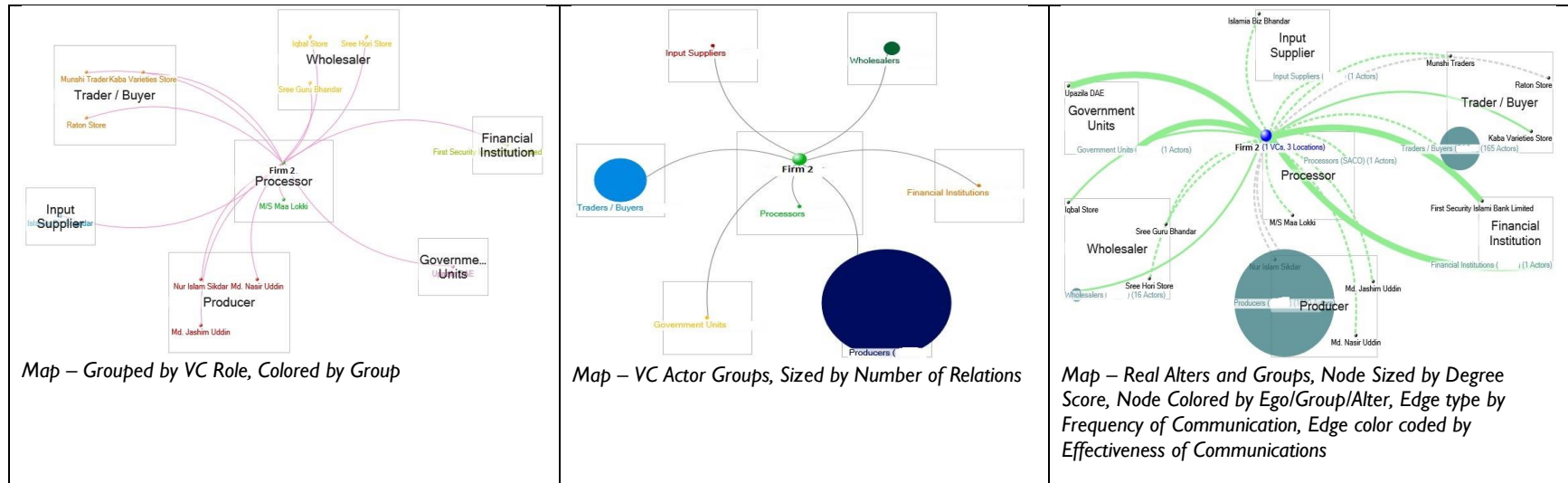
Relational Metrics

Ego	BG Alters		FTF Alters		FTF Alter Attributes (Av.)				FTF Relationship Attributes (Av)				
	Group	#	Group	#	Reliabl e	Cost Com p	Qualit y	Vol	Type	Coms Freq	Coms Effec.	Credit	Vol (BDT)
Firm 1	Input Supplier		Input Supplier										
	Distributor	650	Distributor	140	5	4	4.67	4	Trans.	2	4	Y	566,666
	Retailer	3000	Retailer	800	4	4	3.33	4	Trans.	1	3.67	Y	30,000
	Producer		Producer										
	Processor	5	Processor	2	4	4	3.5	4	Trans.	2	3	N	0
	Machinery Co		Machinery Co										
	Trader/Buyer		Trader/Buyer										
	Wholesaler		Wholesaler										
	Financial Inst	6	Financial Inst										
	ICT Company	1	ICT Company										
	Research/Consult	5	Research/Consult										
	Govt Unit		Govt Unit										
	None		None										

FIRM 2 EGO NETWORK

Profile: Firm 2 is processor / trader of pulses managing a network of farmers and farmer leaders providing technical support and linking with agro-dealers. Firm 2 currently works only in the FTF zone.

Basic Ego Maps (Click to enlarge):



Quantitative Observations:

- Firm 2 has the most diversified set of partnerships
- Firm 2 seems to have issues with quality and volume. This may have something to do with having to maintain such a diversified and extensive set of partnerships in the FTF zone. Also, this appears to correlate closely with those VC actors that they don't have a lot of communication with, or don't feel good about the communications with.
- Firm 2 has huge relationship frequency with Govt and Financial Service providers, but very average with all the VC actors that it works with. Firm 2 gives high marks to both of those actors / relationships as well, in terms of their communications and reliability.
- Firm 2 is spending a lot of time with their Financial Service provider, possibly heavily leveraged.
- Firm 2 is only giving credit to traders, with whom they have the greatest turnover it seems.
- Looks like Firm 2 is only operating in the FTF zone.

Qualitative Observations:

- Firm 2 is procuring lentils and mung beans from fewer farmers than last season, currently around 600. Farmers are more centralized. After this season, Firm 2 will expand farmer numbers but only in areas where it currently has a network of farmers. The company is also shifting from communicating and purchasing directly from farmers to working through farmer-group leaders. The group leader will receive a commission for his or her services.
- Firm 2 hires technical services of agricultural students and professors at local university to assist farmers.
- Firm 2 mills its own lentils and mung beans but uses an external processor to color sort mung beans for higher-value market segments
- Firm 2 distributes its own finished product. It previously used 12 wholesalers to distribute products to over 100 retailers. It now distributes less to wholesalers and more to retailers directly. Its distribution and market-base is limited to three districts around Barisal.
- Firm 2 now coordinates with three input suppliers, connecting them to farmers through group leaders.

Key Metrics:

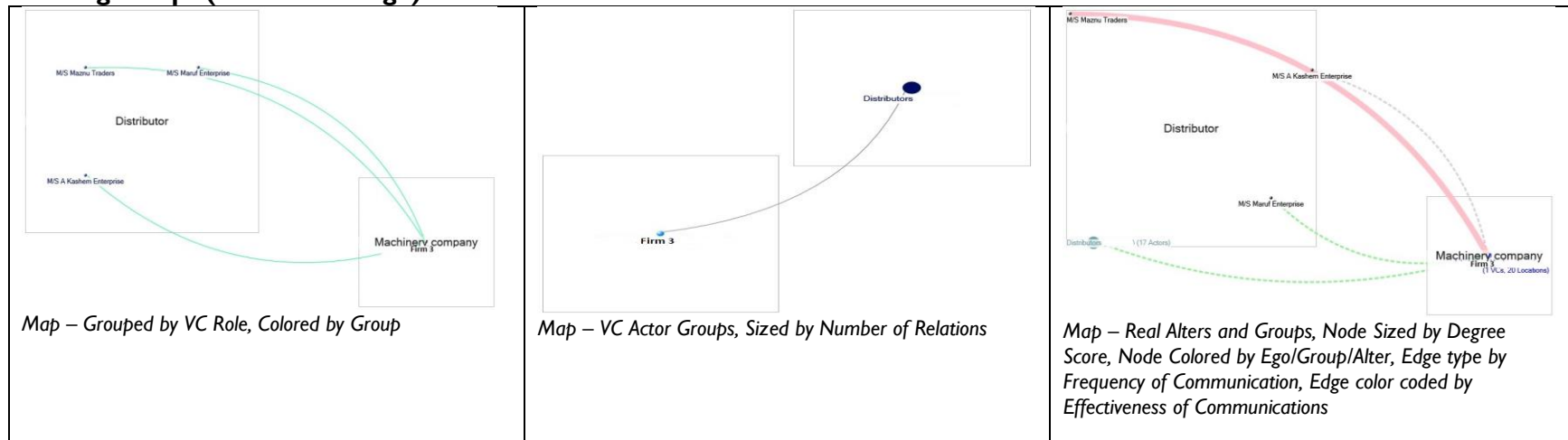
Relational Metrics

Ego	BG Alters		FTF Alters		FTF Alter Attributes (Av.)				FTF Relationship Attributes (Av)				
	Group	#	Group	#	Reliability	Cost Comp	Quality	Vol	Type	Coms Freq	Coms Effec.	Credit	Vol (BDT)
Firm 2	Input Supplier		Input Supplier	1	3	2	2	2	Trans.	1	2	N	10,000
	Distributor		Distributor										
	Retailer		Retailer										
	Producer	1000	Producer	1000	2.67	4	3	2.67	Trans.	1	2.67	N	4,000
	Processor	1	Processor	1	4	4	4	5	Trans.	1	4	N	10,000
	Machinery Co		Machinery Co										
	Trader/Buyer	165	Trader/Buyer	165	3.67	3	2.67	2.67	Trans.	4	3	Y	160,000
	Wholesaler	16	Wholesaler	16	4	4	3	3	Trans.	5.33	4	N	103,333
	Financial Inst	1	Financial Inst	1	4	N/A	N/A	N/A	Trans.	14	4	N/A	N/A
	ICT Company		ICT Company										
	Research/Consult		Research/Consult										
	Govt Unit	1	Govt Unit	1	5	N/A	N/A	N/A	Skills	15	4	N/A	N/A
	None		None										

FIRM 3 EGO NETWORK

Profile: Firm 3 is a machinery company, one of 21 separate companies that are part of the Firm 3 Group. RDC support will center on the promotion of mechanized farming through service camps, operator services, and awareness building activities expected to reach 30,000 farmers.

Basic Ego Maps (Click to enlarge):



Quantitative Observations:

- Only interacting with distributors, and of a limited number (n=17)
- Seem to communicate with alters quite frequently, though satisfaction with that communication is average

Qualitative Observations:

- Firm 3 is one of 21 separate companies that are part of the Firm 3 Group. The activities of other companies are extremely diverse ranging from fertilizer production and distribution to media management. Firm 3 sometimes relies on other groups for expertise and advice, preferring in-house help to the use of external service providers.
- Firm 3's principle products are German-made tractors and hand power-tillers from China. Dealers like the quality and reliability of the tractors but the hurdles for customers to buying them are the price, price of spare parts, and scarcity of spare parts on the local market. Most tractors are Indian or Chinese for which there are abundant spare parts, though many counterfeits likely exist, and mechanics are familiar with nearly all brands. Firm 3 power-tillers are more price-competitive to other available brands but lag in sales because other

brands are more established. One dealer of Firm 3 and other brand power-tillers notes that Firm 3 brands comprise only 5% of annual power-tiller sales. Chittagong Builders and ACI brands are currently the strongest.

- Firm 3 made several corrections to the structure of its egonet during focus group discussions (see table). The company noted that relations with spare parts and service centers are mostly transactional but that relations dealers include lots of information and technical support. The company has no commercial relationship with the independent mechanics.

Actor	BG Alters	FTF Alters
Dealers	70	17
Authorized spare parts centers	10	4
Authorized service centers	6	1
Trained, independent mechanics	100	30

- Dealers generally earn a commission on the down payment (35-40%) of a tractor or on all cash sales. For only tractors, Firm 3 will either sign a lease agreement with the buyer or issue a loan through the Group's Bank, which requires collateral and has higher interest rates. Dealers also get performance incentives in the form of vacation travel.

Key Metrics:

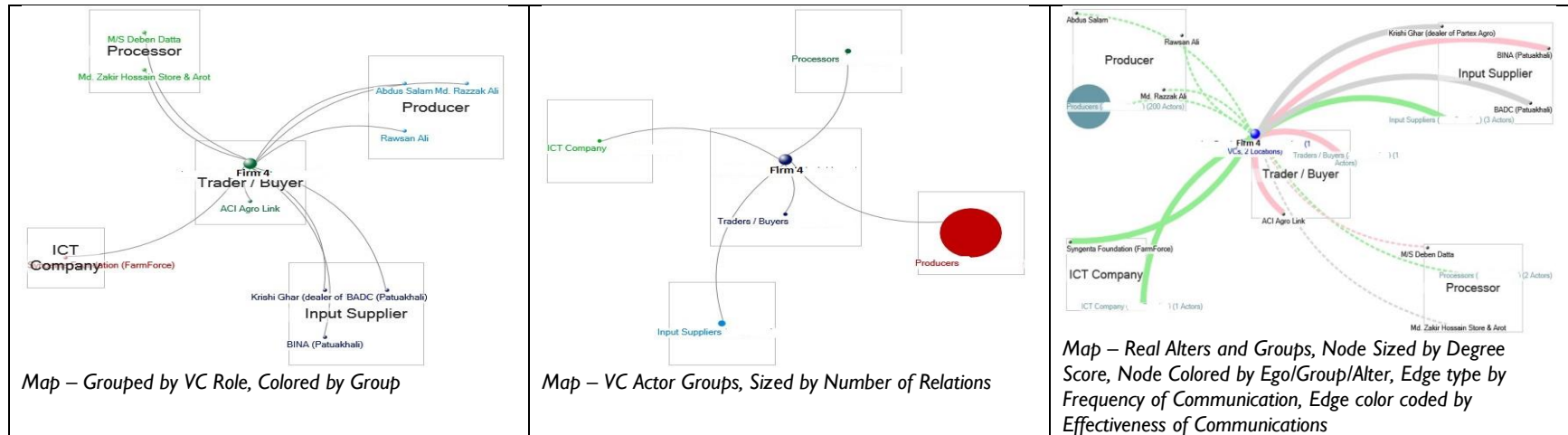
Relational Metrics

Ego	BG Alters		FTF Alters		FTF Alter Attributes (Av.)				FTF Relationship Attributes (Av)				
	Group	#	Group	#	Reliability	Cost Comp	Quality	Vol	Type	Coms Freq	Coms Effec.	Credit	Vol (BDT)
Firm 3	Input Supplier		Input Supplier										
	Distributor	17	Distributor	17	2.67	3	3.33	3	Trans.	4.67	3.33	Y	200,000
	Retailer		Retailer										
	Producer		Producer										
	Processor		Processor										
	Machinery Co	10	Machinery Co										
	Trader/Buyer		Trader/Buyer										
	Wholesaler		Wholesaler										
	Financial Inst		Financial Inst										
	ICT Company		ICT Company										
	Research/Consult		Research/Consult										
	Govt Unit		Govt Unit										
	None		None										

FIRM 4 EGO NETWORK

Profile: Firm 4 is a small trader / buyer only working in the FTF zone that RDC plans to support in procurement of quality mungbeans through contract farming with approximately 400 farmers. The model leverages ICT / traceability and capacity development.

Basic Ego Maps (Click to enlarge):



Quantitative Observations:

- All activities in the FTF zone
- Working with one Trader / Buyer that they are doing a HUGE volume with
- The only actor in this dataset that doesn't offer any credit to any of its partners

Qualitative Observations:

- Company uses Department of Agricultural Extension (DAE) agents to improve farmers' practices.
- JF employs local field officer to provide technical support and quality control and organize monthly feedback sessions with farmers.
- Contracts signed with farmers (both husbands and wives) are based on a DAE model. However, the company expects to update the template to be more precise about payment methods, incentives (e.g., quality premiums), and performance indicators. The company currently does not offer any incentives to farmers beyond a slightly higher price (a competing firm routinely offers even higher prices for

uniform varieties of mung bean for export to Japan). JF would like to negotiate a floor price with farmers with a final price based on that day's market price. However, price fluctuations make this problematic.

- JF's growth vision is to cultivate a supply base of competent and reliable producers to supply JF with products year-round, as opposed to growth by expanding into only a handful of product lines.
- The mung beans JF sells to ACI, its sole buyer, are part of a pilot program for ACI who is looking to explore how to acquire and market "SAFE" products, products that are traceable back to the point of production and have guaranteed minimum chemical residues from crop protection products. JF's current supply of mung beans to ACI is less than 5% of its total annual demand, which it uses primarily as ingredients in its snack foods.
- Recent protests against the company in areas where it procures mung beans are thought to be politically motivated, repercussions for not contributing to the local political economy. In response, JF has hired more local field agents and switched to using the storage facilities of local intermediary wholesalers.

Key Metrics:

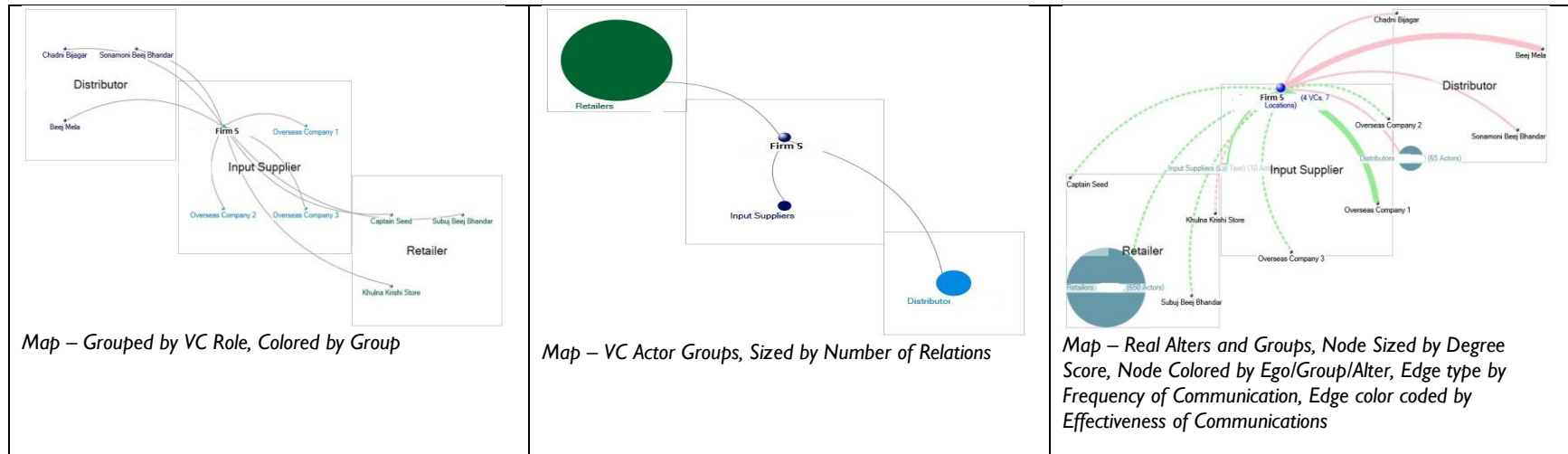
Relational Metrics

Ego	BG Alters		FTF Alters		FTF Alter Attributes (Av.)				FTF Relationship Attributes (Av)				
	Group	#	Group	#	Reliabl e	Cost Com p	Qualit y	Vol	Type	Coms Freq	Coms Effec.	Credi t	Vol (BDT)
Firm 4	Input Supplier	3	Input Supplier	3	3	3	2.67	1.67	Trans.	12	3	N	35,333
	Distributor		Distributor										
	Retailer		Retailer										
	Producer	200	Producer	200	3.33	4	3.67	4	Trans.	4	4	N	3,666
	Processor	2	Processor	2	2.5	2	2.5	2	Trans.	2.5	3	N	22 MT
	Machinery Co		Machinery Co										
	Trader/Buyer	1	Trader/Buyer	1	4	4	4	3	Trans.	12	5	N	2,376,000
	Wholesaler		Wholesaler										
	Financial Inst		Financial Inst										
	ICT Company	1	ICT Company	1	3	N/A	N/A	N/A	Skills	12	3	N/A	N/A
	Research/Consult		Research/Consult										
	Govt Unit		Govt Unit										
	None		None										

FIRM 5 EGO NETWORK

Profile: Firm 5 is a large input supplier that RDC plans to support in developing and implementing a rice-based cropping pattern marketing strategy by strengthening sales and distribution networks targeting 27,300 farmers.

Basic Ego Maps (Click to enlarge):



Quantitative Observations:

- Very satisfied with their partners, especially regarding cost
- High frequency of communication with partners

Qualitative Observations:

- Firm 5 holds twice-year trainings of distributors and some retailers.
- The company has introduced an inventory and accounting app to improve distributors' management systems, streamline ordering, and address the problem of counterfeit or adulterated products. The app tracks special bar coding that also authenticates the provenance of each item.

- According to several dealers, Firm 5 does a good job of promoting its products and brands with farmers who routinely ask for them. This demand creation is a central part of company activities and includes demonstration sites, farmer meetings, promotional events (most of which are done in coordination with local distributors and/or retailers).
- Firm 5 feels confident about its ability to develop demand and get products into its distribution channels. Its senior managers felt its greatest constraint to expanding its market share was the lack of growth orientation (i.e. value-add growth) on the part of distributors and retailers (see Section 4 above).
- Firm 5 has robust relations with five national and international seed associations and six research institutions. It gets its most valuable information on innovations and product development from the Asia-Pacific Seed Association (APSA) and the Bangladesh Agricultural Research Institute (BARI) is its most valuable research partner.

Key Metrics:

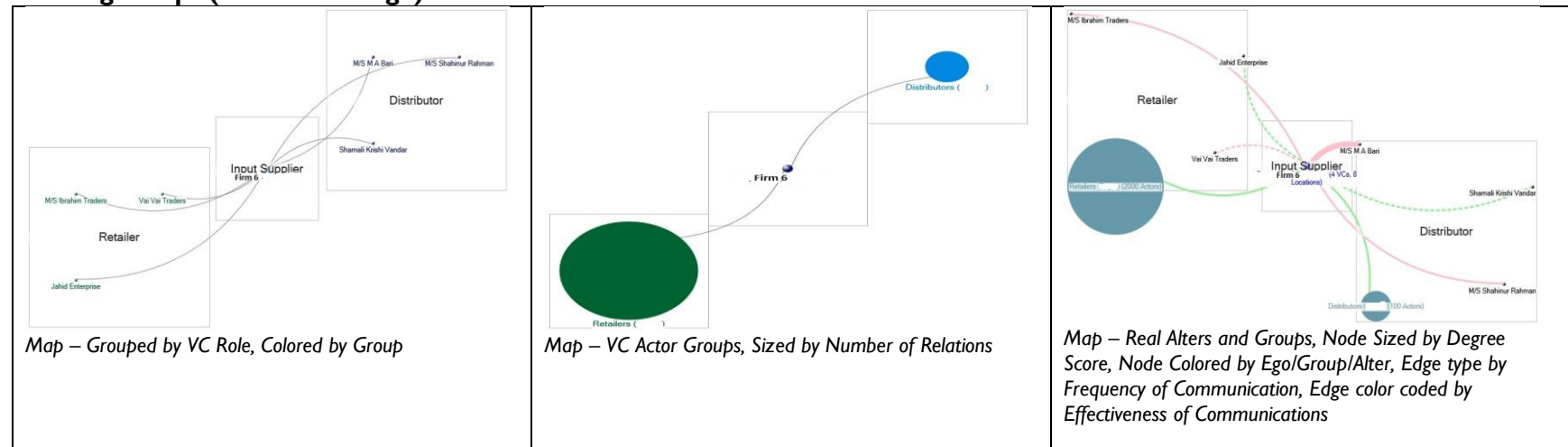
Relational Metrics

Ego	BG Alters		FTF Alters		FTF Alter Attributes (Av.)				FTF Relationship Attributes (Av)				
	Group	#	Group	#	Reliability	Cost Comp	Quality	Vol	Type	Coms Freq	Coms Effec.	Credit	Vol (BDT)
Firm 5	Input Supplier	100	Input Supplier	10	4	4.3	4.3	4	Trans.	9.33	4	N	0 / NA
	Distributor	1,000	Distributor	65	4.33	5	4.3	4	Trans	7.33	5	Y	0 / NA
	Retailer	10,000	Retailer	650	4.33	5	3	4	Trans.	4	4.33	N	0 / NA
	Producer		Producer										
	Processor		Processor										
	Machinery Co		Machinery Co										
	Trader/Buyer		Trader/Buyer										
	Wholesaler		Wholesaler										
	Financial Inst	10	Financial Inst										
	ICT Company	5	ICT Company										
	Research/Consult	10	Research/Consult										
	Govt Unit	8	Govt Unit										
	None		None										

FIRM 6 EGO NETWORK

Profile: Firm 6 is a large input supplier that RDC plans to support in establishing 30 crop clinics that will provide advice on agriculture to up to 15,000 farmers and promote Firm 6 products including herbicides, fungicides and balanced fertilizer for rice, groundnuts, oil seeds and maize.

Basic Ego Maps (Click to enlarge):



Quantitative Observations:

- Very narrow channel, just working with Distributors and Retailers and no engagement with other supporting actors. Looks gravy, easily manageable with high levels of satisfaction and high frequency of communication with partners. From the data, it looks like they probably do one thing, and do it well.
- Offering credit to their distributors, but not their retailers
- Doing about 10X as much volume with their average distributors than retailers, which makes sense considering that they have 100 distributors and 2,000 retailers
- High frequency of communication with partners

Qualitative Observations:

- Firm 6 has a strong field presence consisting of regional, district and sub-district managers and agents. It's field staff conduct farmer awareness campaigns through demo-plots and farmer workshops, product training with distributors and retailers, and sales and support to

distributors and retailers. In the north, Firm 6 launched a Crop Clinic Advisory program placing paid advisors in areas adjacent to retailers and accessible to farmers. The program is to diagnose farmer complaints and prescribe products through local sellers. The company already has just under 10 advisors in the FTF zone and will expand this number under the RDC grant.

- Firm 6 requires its distributors to have an inventory management system, at least for Firm 6 products. All dealers interviewed had such an inventory system, but only for Firm 6 products.
- Distributors typically get products on consignment and pay off the products when they are sold. If the distributor pays off the products within a short-than-expected time period, he or she receives a discount on the amount to pay. Distributors also get exclusive distribution rights to a specific territory. Firm 6 will sanction distributors who encroach on others' territories (i.e. sell to retailers outside their own areas).
- Firm 6's best distributor in the FTF zone has staff who actively recruit and manage relations with retailers. Others however, appear to manage retailers in more extractive ways. To paraphrase one distributor, "I don't seek out retailers, I prefer they come to me. I want them to recognize that they need me more than I need them." This attitude does not seem isolated.

Key Metrics:

Relational Metrics

Ego	BG Alters		FTF Alters		FTF Alter Attributes (Av.)				FTF Relationship Attributes (Av)				
	Group	#	Group	#	Reliabl e	Cost Com p	Qualit y	Vol	Type	Coms Freq	Coms Effec.	Credit	Vol (BDT)
Firm 6	Input Supplier		Input Supplier										
	Distributor	500	Distributor	100	4.33	4	5	4	Trans.	9.33	4.67	Y	766,666
	Retailer	10,000	Retailer	2,000	4.33	4	5	4	Trans.	5.33	4.67	N	73,333
	Producer		Producer										
	Processor		Processor										
	Machinery Co		Machinery Co										
	Trader/Buyer		Trader/Buyer										
	Wholesaler		Wholesaler										
	Financial Inst		Financial Inst										
	ICT Company		ICT Company										
	Research/Consult		Research/Consult										
	Govt Unit		Govt Unit										
	None		None										

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