Impact Assessment

Of

An Intervention on 'Distribution of Quality Vegetable Seeds in Mini-packets to Remote Farmers'

- Shovan Chakraborty, January 2014

Background:

Katalyst, an M4P project in Bangladesh, has worked to benefit poor farmers and mSMEs[1] for more than a decade. One of its major areas of work has been in the seed sector, in particular to raise vegetable yields through access to good quality seeds. The companies that were in the market supplying good quality seeds considered the large farmers as their target market. This dictated the package size and supply channel of quality seeds. As a result, the smaller a farmer is and the remoter location she/he belongs to, the lower chance she/he has to purchase quality seeds. Sometimes, the quality seeds in regular packs would be purchased by the mobile seed vendors supplying these marginalized farmers, but the inappropriate packet-size then would lead these smaller farmers to buy degraded quality or even adulterated[2] vegetable seeds.

Intervention:

Katalyst worked with two companies to develop the product package and business plan to supply quality seeds to smaller farmers in more remote locations. Mini-packets of quality vegetable seeds worth 10-20 Takas (US$0.13-0.26) were created. In the first season of the intervention, the target of the two partner companies was to sell 100,000 such mini-packets. Before the end of the season, these companies sold their entire stock of more than 400,000 mini-packets. Though the product was meant to be launched in 5-10 districts, they actually got sold in more than 50 districts.

Early efforts for Impact Assessment:

As with all Katalyst interventions, and in line with the DCED Standard, the results chain for the intervention was defined first in simple form, and then in more detail; both versions are shown in Annex A. However, the measurement exercise was found to be relatively complex. Initially, a field search was launched to trace farmers that used mini-packets. As normally done in Katalyst, the tracking was intended to be done through partner companies and their mini-packet supplying service providers that had somewhat formal or permanent establishment. This sample consisted of dealers and retailers of vegetable seed. They, however, were not able to help trace the final users of mini-packet seeds, because it did not make sense for them to remember a lot about customers buying low value items. Also, these dealers/retailers were often wholesaling mini-packets to mobile seed vendors, so had no information about the final purchasers anyway.

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[1] micro, small and medium sized enterprises

[2] When smaller farmers ask for small amounts of seeds from good quality seed-packs of large size, vendors/retailers often open the large packs and sell small amounts of seeds to multiple farmers (from the same pack). As a pack, in this way, can stay open for quite some time before its seeds can be completely sold, the quality of the seeds degrades. Furthermore, many vendors/retailers use this opportunity to adulterate the contents of the large seed packs of good companies with inferior quality seeds.

It was therefore not even possible to derive an average 'number of mini-packets bought per farmer'. Without this figure, it was impossible even to calculate how many farmers were using the product. Yet there were clear indications[3] that mini-packets, by then, had already reached areas remoter than expected in the initial season. Interviewing mobile seed vendors would have been helpful, but they usually sit in informal rural markets ('haats'). Without knowledge on which specific market happens on which day, the team could not trace many mobile seed vendors[4] either.

Another challenge was to get enough time to learn about mini-packet sales dynamics from these service providers in interviews. Seed sales are seasonal, meaning that the retailers and dealers are very busy selling seeds when they are active, so are hard to interview. The geographic spread of seed sales also made surveying a challenge. The few farmers that were tracked were mostly relatives of dealers/retailers. And as mini-packet seeds get used in small strips of land (usually not considered a priority by the farmers), the respondents could not remember accurately much about the previous usage details of the land. This not only led to sample bias and recall bias, but also to challenges in attribution. A clear non-user comparison group could not be defined. Thus, this drive for impact assessment could not reach conclusions, but it did suggest ways in which it could be better designed.

Process of Iterative Measurement:

One insight was that a more flexible design for impact assessment was needed, as too little was known about the dynamics of mini-packet sales and usage. A multistage assessment plan was therefore developed, where each step was to be developed through learning from the previous step. The first step was to track the users of mini-packets. Initial assessment showed that most users are from remote locations and are spread out in more than 50 districts (of 64 districts in Bangladesh). Katalyst therefore used company sales data to identify those districts where sales were highest.

Within those districts, 35 sub-districts were selected where the company dealers and retailers had the highest volume of mini-packet sales. As there were indications that most of the volume was being channeled through informal rural markets, 15 enumerators were hired to attend all the large markets in the selected sub-districts for 2 weeks. They would sit by retailers and mobile seed vendors in the markets and record the details of farmers buying vegetable seed mini-packets. In-depth interviews by project staff generated insights regarding roles of retailers and mobile seed vendors in selling the product. This user-tracking activity (tracer study) helped Katalyst build a list of more than 1,000 purchasing farmers including their home address, what variety of seeds they bought, and whether they had bought mini-packets earlier.

[3] We found that most farmers were purchasing mini-packets from mobile seed vendors rather than from retailers/dealers; it could therefore be deduced that a great volume of products were being traded in the haats (rural markets). These haats, which are less formal markets, historically have been major business spots for the remotest farmers.

[4] A Mobile Seed Vendor usually sits for 1-3 days in a haat. In the other days of a week, they sit at other haats. Most of these vendors, therefore, do not have fixed establishments in haats. They ideally sit with their offerings on a mat; some have temporary roofs. Loose *seeds* commonly is the single largest part of their portfolio. Many also trade locally/regionally in packed low-quality seeds and some also have large packets of quality seeds.

It also revealed that each farmer was buying 1.8 mini-packets on average; this figure, based on a sample of more than 1,000 farmers, combined with their response on repeat buying rates, gave a solid basis for deriving the total number of mini-packet users in the market. This was a breakthrough in the assessment process. The assessment design was then further developed according to the sequential steps in the result chain to start to understand the benefits accruing to the farmers from purchase and use of the mini-packs.

Katalyst learnt that 20 major varieties of vegetables were being sold in mini-packets to buyers that season. Now a user farmers' survey could be done, but considering the potential complexity in making comparisons to derive impact for 20 different varieties, focus had to be narrowed on the ones that had highest sales. It was also important to get some sense of the benefits accruing in low value as well as high value[5] vegetables. But Katalyst still did not know enough about how to define the non-user comparison groups. This was to depend on whether the user farmers converted to a mini-packet crop from alternative seeds for the same crop, or from a different crop. It was also possible that some were using fallow strips of land to plan the new seeds, which in itself would affect yields.

Again, an iterative process was used; the non-user group survey was postponed, and research focused on the users only. They were asked what they were doing in the previous season on the land where they had just decided to sow mini-packet seeds. This survey on 320 farmers in 13 sub-districts from 5 divisions (out of 7 in Bangladesh) using 6 vegetable-crop-seeds from mini-packets revealed the profit patterns from the same piece of land in the same season of the previous year. As this survey was done before the harvesting of mini-packet seeds, it greatly reduced recall bias.

With the needed information to define two different kinds of non-user comparison groups (same crops with seeds from different sources / different crops), a second round of farmers' survey could be done on non-user farmers from the same locations as the users. This had to be done very rapidly, before the harvest, to avoid recall bias. Having collected information on 240 farmers of this kind, the survey to understand after-conditions for both kinds of farmers could be designed.

In the third stage of the survey, 500 farmers (300 users and 200 non-users of minipacks) were interviewed. These substantial sample sizes[6] were prompted by the first DCED audit of Katalyst. Going to the same farmers twice, wherever possible, allowed for shorter questionnaires, and enhanced quality of collected data.

With before and after data on user and non-user groups, a detailed analysis could be done to derive the impact on users. The area of attribution is, indeed, always one of the most challenging ones in the measuring of impact. To a great extent, the DCED audit made Katalyst question itself how strongly attributable results can be measured under the complex intervention contexts in the project. The complexities in calculation were that: there was still quite a number of crops to compare; there were

[5] Sales data from the company reflected that there were significant sales of seeds of low-value crops as well as of high-value crops.

[6] Though the available funding did not allow for statistically very significant sampling, a sample size reasonable and practical enough to for the expected extrapolation was used.

three different kinds of switches/conversions needing three ways of attribution; the same respondent in many cases gave info on multiple varieties of crops; the same respondent in some cases made two different kinds of switches/conversions; in some cases, the same user respondent benefitted in one crop but did not benefit in another.

Having dealt with the challenges and analytical complexities, a difference-in-difference attribution method showed that 71% of mini-packet users were receiving economic benefits. On average, the income of individual users had increased by BDT 1,300 (US$17) per season. Many farmers showed signs of repeat buying. Around 25% of the 1,000 users identified had used mini-packets in the earlier season as well. Another user tracking survey was done in the following season to understand repeat buying rates in more detail. This was a priority indicator as its value was important in the process of estimating the number of users and beneficiaries. In this second user tracking survey, it was found that 50% users were repeat purchasers, confirming that vegetable mini-packets were showing strong signs of sustainability and usefulness in the market. The iterative process of data collection from various value chain actors strengthened triangulation and enabled Katalyst to gather strong qualitative evidence for measuring systemic change in the Adopt-Adapt-Response-Expand framework developed with help of Springfield Centre.

Result Implications:

The results of this assessment proved impact of the intervention to donors. The level of rigor helped us to measure the large-scale impact in a plausibly attributable manner. The project also learnt about the growth in repeat buying rates of mini-packets; this shed light on the level of sustainability of the intervention. Inventory dynamics and net working capital required by mobile seed vendors dealing with mini-packets revealed an effective channel of seed sales to remote, poor farmers; management of seed companies understood that selling quality agro-inputs in mini-packets through mobile vendors at rural markets can be very effective. Historically, rural markets have been the primary venues for the remote rural population's regular business. And the survey revealed that mobile vendors there have very close relations with the smaller farmers. The idea of this channel, along with a conveniently sized, affordable product gave birth to a successful development strategy yielding sustainable change. Enriched with this understanding from the assessment, Katalyst plans to explore similar interventions with other agro-products in future. There were many other detailed findings that would help better steering of the project in similar areas of work.

The distinctive feature of this assessment lies in the combination of iteration, plausible precision in evaluation design, triangulation, usage of a qualitative framework for measuring systemic change, and using a difference-in-difference attribution methodology. This multi-stage study was carried out by a team comprising of MRM and implementation staff from both Katalyst and the co-facilitator organization, with help of the staff of the partnering seed companies, through hired enumerators. The efficacy of this team in designing, planning and coordination proved the value of having an MRM system

mainstreamed[7] into the regular management process of the project; Katalyst intends to continue this approach for mainstreaming.

The assessment outlined above became one of the longest in Katalyst. It helped Katalyst validate a benefit outreach of 460,000 for the programme as a whole by the end of phase 2. Many aspects[8] of learning from this assessment, which in fact started as a kind of experimentation, have fed into subsequent monitoring and assessment work of Katalyst.

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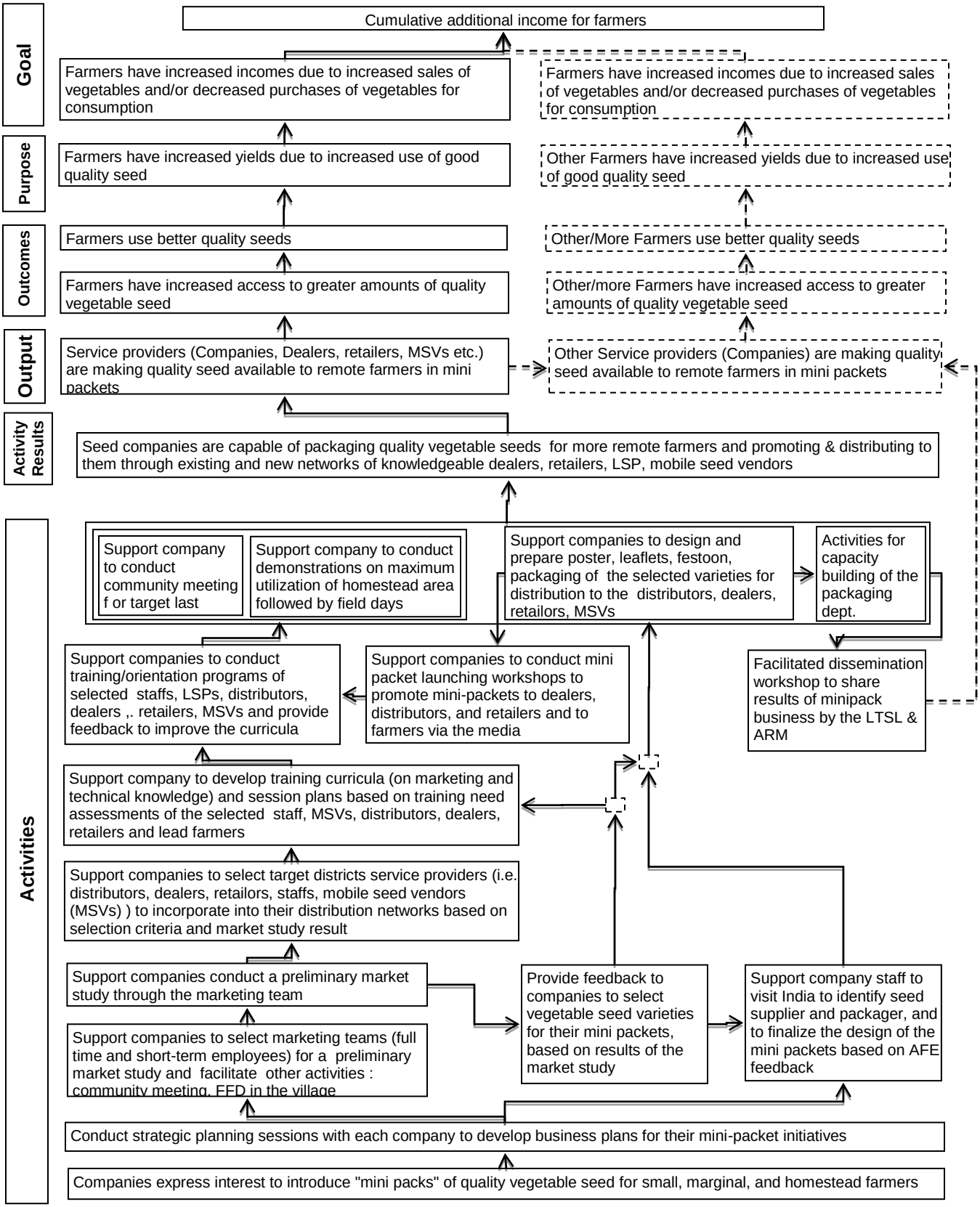
The paper has been edited for online readers by Jim Tanburn, coordinator of the DCED secretariat.

[7] This mainstreaming of MRM in Katalyst has been a special feature of the programme for several years; it makes use of the DCED Standard framework very practical, and the DCED audit process has been helpful in making iterative improvements to it.

[8] Some of the mentionable contributions are as follows: The difference-in-difference attribution method was used in large scale interventions of sectors such as maize, vegetable; triangulation methods have been used more strongly in assessments of sectors such as fertilizer, rural distribution; elements of user tracking is being used in a major study in the ICT sector; rigorous pretesting of research instruments has become more common practice; all assessments are now more iterative and thereby more effective.

ANNEX A: semi-detailed version of the result chain (impact logic)



ANNEX 2: Simplified version of the result chain (Impact Logic)