

There is a long-standing debate on how development organizations, NGOs, and governments can best allocate scarce resources to those in need.¹ As opposed to universal allocation of resources, a more targeted approach attempts to minimize program costs while maximizing the benefits among those with the greatest need or market opportunity.² Many international development organizations, strategically targets clients based on geographic location (e.g., community, region, country) or socio-economic indicators, such as the World Bank's "\$1 a day" poverty line. Drawing on literature from several sectors, this brief presents additional methods of beneficiary targeting that international development organizations might consider.

Overview of Targeting/Segmentation

In its most basic form, client targeting or segmentation is the process of partitioning an entire market or population into "differentially responsive segments."³ Often client targeting and segmentation are used interchangeably, but each term pertains to a slightly different process.

According to Mooij (1998) *client targeting* is the "identification and selection of certain groups or households or even individuals, and the distribution of benefits to them."⁴ To date, client targeting has been the most common method of dividing potential beneficiaries.⁵

Market segmentation is a subset of client targeting and refers specifically to designing a product or service "to appeal to different segments or sub-groups of the market."⁶ While segmentation is quite popular in other sectors, such as the pharmaceutical industry, it has only recently gained traction in agricultural development.⁷

Reasons for Targeting/Segmentation

Four major reasons are cited in the literature for using targeting/segmentation. First, these approaches can distribute resources in a more equitable and efficient manner than untargeted interventions.⁸ Though the targeting process itself requires resources, untargeted interventions may allocate a disproportionate share of benefits to those who are relatively better off.⁹ A growing emphasis on pro-poor interventions has increased interest in segmentation/targeting.¹⁰

Second, targeting/segmentation can help meet potential beneficiary needs better. By considering characteristics important to a beneficiary group, organizations can potentially provide goods and services more likely to be adopted by beneficiaries.

Third, targeting/segmentation can hone an organization's strategy. When trying to reach a large and heterogeneous population, it allows an organization to think about different strategies for different groups within the target population. Of course, this is only helpful if the groups are defined by characteristics that are truly meaningful to the differing strategies, a caveat important in targeting.

Lastly, targeting/segmentation can be important for measuring outcomes. Separate from strategy, changing how the target population is segmented can greatly affect how progress is measured.

Targeting Methods

Client targeting interventions are often categorized into three main methods: individual assessment, categorical or geographical indicators, and self-selection. However, these

NOTE: The findings and conclusions contained within this material are those of the authors and do not necessarily reflect positions or policies of the Bill & Melinda Gates Foundation.

categories are not mutually exclusive and multiple methods are often applied simultaneously.¹¹ A short description of each method follows and Table 1 lists common mechanisms for employing the methods.

- *Individual assessment*: This method involves identifying individuals within a population, usually through a means test.¹² While this is the only way to “perfectly target,” interventions, gathering information on each potential beneficiary through household or individual surveys is highly resource-intensive.¹³
- *Categorical/geographic indicators*: This approach involves identifying potential beneficiaries based on generally observable characteristics or by characteristics of a geographic area.¹⁴ Combining geographical targeting with other targeting criteria is the most common method of targeting in developing countries.¹⁵
- *Self-Selection*: This method is also known as market segmentation and involves a benefit that is available to all, but is specifically designed to particularly attract a target population. This method does not require administrative costs to exclude beneficiaries.¹⁶

Table 1: Summary of Client Targeting Methods

Method	Mechanisms for assessment
Individual assessment	Means test based on qualitative or quantitative surveying
Categorical/geographic indicators	GPS, remote sensing, market information, country-level statistics, or individual-level data aggregated to a geographic area
Self-selection	Market segmentation through social marketing, tiered pricing, vouchers, or subsidies

Targeting Potential and Efforts in Agriculture

Targeting efforts in agricultural development and development in general predominantly focuses on specific interventions. However, these methods are also useful for strategic targeting at an organizational level. The CGIAR network, the Association for Strengthening Agricultural Research in Eastern and Central Africa (ASARECA), and CAADP have adopted some of these alternative targeting methods to help strategically guide their respective organizations.¹⁷

The HarvestChoice program has been developing new geographic models to better understand agricultural production worldwide. In one paper, the program modeled

the value cost ratio (VCR) of various fertilizer policies in East Africa by layering simulated fertilizer transport costs, market access, fertilizer response rates, and farm gate maize prices.¹⁸ The resulting map shows pixel-level VCRs and suggests that policies be implemented only in areas with VCRs greater than four to accommodate risk while providing incentives to farmers.

The Farmer Focus initiative has used individual assessment segmentation methods. This program has so far conducted focus groups ($N=40$), ethnographic farm visits ($N=20$), and interviews with farmers ($N=91$) and extension officers ($N=9$), to identify segments of farmers based on their attitudes toward farming and interest in agricultural development programs.¹⁹ The preliminary research identified seven segments (e.g., strategic followers, entrepreneurs, swift copy cats) in the Tanzania sample and five in the Mali sample. The relatively small sample size limits conclusions at this stage, and highlights the resource intensity of individual assessment targeting.

In contrast to individual assessment, *development domains* or *development pathways* are areas for which a given development strategy is likely to have similar relevance.²⁰ This process involves collecting and/or using existing data to develop algorithms or categorical variables that identify homogenous areas. In Omano et al. for example, eight groups were defined based on giving a high/low designation to three variables: agricultural potential, market access, and population density. Recent studies using this include the “Policies for Improved Land Management in Uganda” project and the “Strategies and Priorities for Sub-Regional Agricultural Development ... in Eastern and Central Africa” project.²¹

Similar to development domains, *farming systems* can also help prioritize strategies for reducing poverty among the rural poor.²² The Food and Agriculture Organization has defined and mapped 63 farming systems worldwide and used the resulting report to update the World Bank Rural Development Strategy.²³ Many papers have used farming systems to explore how challenges and opportunities map to these systems.²⁴

As a recent example, in 2008 the Ministry of Agriculture led an analysis of the national seed sector to determine the potential for using market segmentation to increase the adoption of improved maize cultivars. Using market segmentation based on approximately forty stakeholder

meetings and eighteen questionnaires, a target group of farmers interested in using improved maize seeds was identified and a cash voucher program was developed to directly target that group of farmers.²⁵

Potential Targeting Dimensions for Agriculture

In agricultural development, many dimensions could be helpful in targeting beneficiaries. Pender et al. suggest four main factors that are particularly important for African conditions: population density, access to markets, agricultural potential, and altitude.²⁶ These and other possible variables of interest are listed below:

- *Individual or household characteristics:* Household location/size, education level, rural vs. urban, risk tolerance, landholding status/size, occupation (farm or non-farm), income level, gender, and nutritional status (e.g., child stunting)
- *Market access:* Distance to local markets, distance to major urban centers, distance to trade corridors, distance to international airports, population density
- *Agricultural potential:* Yearly rainfall, altitude, average temperature, drought risk, length of growing season, yield gap, soil type and depth, presence of pests and diseases, availability of irrigation, area of production

Recent data advances make targeting on these dimensions more fine-tuned than ever. Some of the sources of data used in Omano et al.'s African development domains paper are shown in Table 2.²⁷

HarvestChoice's newest Spatial Production Allocation Model version model also provides highly useful data for future geographical targeting. The model estimates crop production, area, and yield for 20 crops at three input levels in 10x10km grid cells for 90 percent of harvested area worldwide.²⁸

Issues/Concerns with Targeting

The reality of implementing a targeted approach to beneficiaries presents several challenges. Cornia and Stewart (1993) identified two types of errors that are common with imperfectly targeted interventions: excessive coverage, also known as "leakages," and exclusion of ineligible groups.²⁹

Table 2: Sources of data for Omano et al. development domains

Variable	Source
Topography and land cover	Global Land Cover 2000 Project, U.S. National Geospatial-Intelligence Agency, U.S. National Aeronautics and Space Administration
Population density/human settlement	Center for International Earth Science Information Network, IFPRI
Road infrastructure	U.S. National Imagery and Mapping Agency, IFPRI
Rainfall and climate	University of East Anglia
Regional soil and protected area	Compiled from national sources by the United Nations Food and Agriculture Organization (FAO), UNWFP World Conservation Monitoring Centre
National agricultural production and trade	FAO, World Bank's World Development Indicators

Source: Omano et al., 2007, p. 9–10

A large part of targeting/segmentation literature is devoted to exploring ways to reduce these errors and improve overall equity and efficiency. Other significant concerns are leakage/cost tradeoffs, paradox of targeting, and the availability and quality of data.

Leakage/Cost Tradeoffs

A number of studies suggest that targeting beneficiaries at the level of the household requires extremely detailed information that is often difficult to collect.³⁰ Increasing data can improve program results, but may also increase administrative costs. "As more and more categories are introduced, then the targeting achieved by indicators becomes finer and poverty is reduced. On the other hand, more categories raise administrative costs."³¹

Paradox of Targeting

The *paradox of targeting* refers to the process of losing political support for an intervention as targeting becomes more specific.³² As Hanson et al. explain, "setting a broader target group may be necessary to 'buy off' potential opponents of a narrowly targeted scheme and avoid social division."³³

Quality of Data

As in other aspects of agricultural development, the lack of quality data limits the potential of targeting/segmentation methods. Many of the variables of interest to agricultural development either are not available or require arbitrary

cut-off points or groupings that may not be meaningful.

Using data to identify groups is not straightforward. The cluster and factor analysis that underlie groupings identified in exercises such as Farmer Focus are based on statistical techniques designed to explain as much of the underlying variation in the data as possible. The success in identifying a cluster that represents a valid and meaningful market segment rests with the underlying theory that informs the data collection and analysis (e.g., survey instrument, sampling strategy, variables chosen). Even with the best data possible, the analysis is still subject to interpretation.

Conclusion

Beneficiary targeting/segmentation has the potential to make organizational and program efforts more equitable and efficient. Organizations have customized targeting methods that are compatible with their budgets and priorities. With limited resources, smaller organizations have tended to use single robust indicators or simple

heuristics; whereas agribusinesses and private sector firms have used more data-intensive marketing tools to position their products. Technological innovation and better access to data have made targeting/segmentation more prevalent and potentially more affordable in agricultural development. However, creating valid and reliable target groups remains the most significant challenge.

Methodology

Literature cited in this brief includes peer-reviewed research, program reports, and working papers. Literature was found using Google Scholar, Web of Science, AgEcon, USAID's Development Experience Clearinghouse, ScienceDirect, and the HarvestChoice website, searching various combinations of the terms targeting, segmentation, development, development domains, and agriculture.

Please direct comments or questions about this research to Leigh Anderson, at eparx@u.washington.edu

¹ Besley & Kanbur, 1993, p.2

² Besley & Kanbur, 1993

³ Kotler, Roberto, & Leisner, 2006

⁴ Mooij, 1998, p. 2

⁵ Mooij, 1998, p. 2

⁶ Hanson, Worrall, & Wiseman, 2006, p. 5

⁷ De Groote et al., 2009, p. 1

⁸ Hanson, Worrall, & Wiseman, 2006, p. 2

⁹ Besley & Kanbur, 1993

¹⁰ Mooij, 1998, p. 3

¹¹ Hanson, Worrall, & Wiseman, 2006, p. 5

¹² Hanson, Worrall, & Wiseman, 2006, p. 5

¹³ Morris, Flores, & Zuniga, 2000, p. 2514

¹⁴ Hanson et al., 2006, p. 2

¹⁵ Bigman & Fofack, 2000, p. 132

¹⁶ Hanson, Worrall, & Wiseman, 2006, p. 5

¹⁷ Wood, 2007, p. 5

¹⁸ Guo et al., 2009

¹⁹ Farmer Focus, 2010

²⁰ Wood et al., 1999

²¹ Ruecker et al., 2003; Omano et al., 2007; Pender et al., 1998

²² Dixon, Gulliver, & Gibbon, 2001, p. 1

²³ Dixon, Gulliver, & Gibbon, 2001; Farming Systems and Poverty website: <http://www.fao.org/farmingsystems/>

²⁴ For example, Hyman et al., 2008; Biggs, 1995

²⁵ De Groote et al., 2009, p. 2

²⁶ Pender et al., 1998

²⁷ Omano et al., 2007, p. 9

²⁸ HarvestChoice website:

<http://harvestchoice.org/production/systems/distribution>

²⁹ Cornia & Stewart, 1993

³⁰ Ravallion & Chao, 1989, Kanbur 1987

³¹ Besley & Kanbur, 1990, p. 14

³² Besley & Kanbur, 1993; Gelbach & Pritchett, 2000; Conning & Kevane, 2001

³³ Hanson, Worrall, & Wiseman, 2006, p. 2-3

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