Predicting performance in contracting of basic health care to NGOs: experience from large-scale contracting in Uttar Pradesh, India

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Escalating costs and increasing pressure to improve health services have driven a trend toward contracting with the private sector to provide traditionally state-run services. Such contracting is seen as an opportunity to combine theorized advantages of contracting with the efficiency of the private sector. There is still a limited understanding of the preconditions for successful use of contracting and the resources needed for their appropriate use and sustainability. This study assesses the large-scale contracting of 294 non-governmental organizations (NGOs) for delivery of basic health services in Uttar Pradesh, a state with almost 170 million in India. Due to high rates of discontinuation or non-renewal of contracts based on poor performance in the project, a better method for selecting partners was requested. Data on characteristics of the NGOs (intake data) and performance/outcome monitoring indicators were combined to identify correlations. The results showed that NGOs selected were generally small but well-established, had implemented at least two large projects, and had more non-health experience than health experience. Bivariate regressions of outcome score on each input variable showed that training experience, proposal quality and having ‘health’ contained in the objectives of the organization were statistically significant predictors of good performance. Factors relating to financial capacity, staff qualification, previous experience with health or non-health projects, and age of establishment were not. A combined training plus proposal score was highly predictive of outcome score ($\beta = 1.37, P < 0.001$). The combined score was found to be a much better predictor of outcome scores than a total score used to select NGOs ($\beta = 0.073, P = 0.539$). The study provides valuable information from large-scale contracting. Conclusions on criteria for selecting NGOs for providing basic health care could guide other governments choosing to contract for such services.

Keywords Contracting, basic health care services, contractor qualification, evaluation, non-governmental organizations, India
KEY MESSAGES

- Very little has been written in the literature regarding selection criteria for contractors providing basic health services.
- In this study, training experience, proposal quality and having 'health' contained in the objectives of the contracted organization were statistically significant predictors of good performance.
- Factors relating to financial capacity, staff qualification, previous experience with health or non-health projects, and age of establishment were not.

Introduction

Over the last few years the interest in establishing closer links and collaboration between the public and private sectors has grown (Uplekar 2003; IFC 2004; Nishtar 2004; Croft 2005; Widdus 2005; Heijnen 2009). Recognition by some governments that they are unable to adequately serve all populations within their country, especially those that can be harder to reach, has pushed them to look to the private sector as a vehicle for increasing access to services (Grundy et al. 2009). Contracting with the private sector is seen as an opportunity to combine assumed advantages of contracting with the efficiency of the private sector (Loevinsohn and Harding 2005; Loevinsohn et al. 2009).

Although more and more contracting projects are being implemented, research has been scarce on their design, implementation and effects (Lagarde and Palmer 2009). Important knowledge on many aspects of contracting is missing. One such aspect is what characterizes contractors that implement contracted tasks in a reliable, sustainable and satisfactory manner. The objective of this study is to identify factors for successful implementation of large-scale contracting of non-governmental organizations (NGOs) for delivery of basic health services in remote and deprived populations.

Background

This study was carried out in Uttar Pradesh, the most populous state in India with a population of almost 170 million (Office of the Registrar General and Census Commissioner 2001). Uttar Pradesh ranks 31 out of 32 states on the National Human Development Index (HDI). Life expectancy is 59 years, the maternal mortality ratio (MMR) is 440 per 100,000 births and the infant mortality rate (IMR) is 69 per 1000 live births (MOHFW 2009).

The public health system in Uttar Pradesh is composed of a little over 20,000 Sub-Centres, 3690 Primary Health Centres, 515 Community Health Centres (CHCs), and 70 District and Combined Hospitals (MOHFW 2009). Sub-Centres provide the first level of care, and are generally focused on maternal and child health. Sub-Centres are occupied by an auxiliary nurse-midwife (ANM) who provides basic health services such as antenatal care, family planning services and immunizations. Primary Health Centres generally house one doctor and a few ANMs. There are considerable problems with the health infrastructure. Fifty-nine per cent of Sub-Centres lack a regular water supply and 75% lack electricity. Additionally, many Primary Health Centres are not adequately equipped with supplies, and vacancies (unfilled positions) and absenteeism are a large problem (IIPS and MI 2007).

In addition to the publicly provided care, an estimated 34,985 private health establishments provide health care (NSSO 2003). Around 60% of those providers are found in urban areas.

Contracting with NGOs

The Government of Uttar Pradesh decided in 2003 to enter into contracts with NGOs to provide basic health services at Sub-Centres in remote areas. After some adjustment it was determined that the NGOs would provide slightly more advanced care than what would normally be stipulated at Sub-Centre level, including hiring a doctor qualified in allopathic, Ayurvedic or homeopathic medicine. For this reason the facilities were labeled ‘Health Posts’ rather than Sub-Centres.

Contracting started in 2003–04 when 73 NGOs were chosen. Contracts were kept small on purpose—one Health Post per NGO. The Uttar Pradesh government was wary of committing large amounts of money to one organization in fear of the organization failing to deliver the required services adequately. It was thought that by forming many small contracts, the government could spread its risk. Contracts included the provision of basic health services: simple curative care, referral for more difficult cases, identification and registration of pregnant women, peri-natal care, referral for complicated pregnancy or high-risk births, basic child health care, assistance with immunization and other national programmes, and the conduct of health camps for outreach and health education. In order to perform their duties, NGOs needed to work closely with some government workers at the local Primary Health Centres, but NGOs were responsible for hiring their own staff, including the male and female doctors. Male doctors (allopathic, Ayurvedic or homeopathic) were to be available at least three days a week, and female doctors available once a week.

The NGO budget was based on estimated costs of government provision. Staff salaries were roughly specified and equivalent to or lower than government salaries, and broad categories of expenditure were limited but slightly greater than for government Sub-Centres due to the increased level of care with doctor availability. NGOs had the flexibility to determine how to spend the budget within each category. Contract management and payment was generally adequate and timely, although some misunderstandings led to delayed payments on occasion.

NGOs were informed that they would be evaluated according to their facility management and performance along several indicators of peri-natal care utilization, health camp provision, national programme participation, immunization assistance and referral evidence, and that only NGOs that showed adequate performance would have their contracts renewed.
Monitoring and evaluation improved over time so that by the third round (on which this study is based), third party evaluation was planned quarterly. Internal monitoring by the Additional District Project Manager or Medical Officer In-Charge was performed monthly. However, initial expectations were set at 100% coverage for many indicators—an unrealistic expectation—and it was not specified how well an NGO needed to perform to get their contract renewed. On the other hand, the Terms of Reference clearly stated what services were to be provided, staffing levels expected, medicines and supplies that were required, and reporting requirements.

Results from the first round of contracts showed improvements in service and justified continued funding of the plan. However, the second round of contracts renewed only 53 out of 73 (73%) of the contracts with the rest being declared under-performing. Sixty-six new NGOs were added for a total of 119 NGOs in the second round (2004–May 2006). At the end of the second round of contracting, 67 (56%) were continued, an even lower rate than the previous year. It was determined that many of the contracts were being awarded for political reasons rather than for the quality of the proposal. The government of Uttar Pradesh then decided to award the contracts at the state level rather than the local district level to avoid these problems. A third party, Indian Institute of Management (IIM), was contracted to aid in the verification and short-listing of NGOs. The third round of NGOs added 227 new NGOs to the previous 67 for a total of 294 for May 2006–December 2007 (including a 6 month extension).

The primary objective of this study was to evaluate the contracting process by assessing the selection process and the performance of NGOs. A secondary objective was to determine if more efficient selection criteria could be used.

**Methods**

**Input and outcome variables selected**

For the most recent round of contracts, NGOs submitted an ‘intake’ form with their proposal, detailing their staffing levels, experience, training, financial information and mission. In addition, a third quarter monitoring assessment was done by a third party at the end of about 9 months of operation. A set of outcomes were defined and measured by the third party (see Outcome below). Outcome data were collected using standardized and field-tested questionnaires for NGO facility management (including service provision data), beneficiary interviews and focus group discussions. Data from the intake forms and the monitoring evaluation were then combined to identify correlations between intake information and health service monitoring outcomes.

Factor analysis was used to confirm whether different scoring groups were truly related. Factor analysis is a method for exploring or confirming whether different measures are contained under one broader idea and can be grouped together. For example, a rating of the level of assets owned by the organization, annual financial turnover, a measure of the number of previous projects and financial size of projects they have previously implemented, and a measure of other non-health projects undertaken, were grouped together under ‘capacity’. The variables selected for the analysis are given in Box 1.

Factor loadings are an indication of how strongly a particular variable affects the group. Generally, a cut-off is chosen, below which variables are not included. Conventionally, 0.4 has been used as a threshold for identifying major components (Lawlor et al. 2004).

Qualification of different providers did not factor together strongly. Only ANM and dai qualification measures loaded higher than 0.4. These were kept to create an index score for provider quality.

Experience did not factor together, likely because experience in one sector did not appear to relate to experience in another. Additionally, including training variables in the experience factor analysis indicated that field and internal training factor together with equal weight. Therefore, a combined measure of overall training experience was created by adding together the two training measures (Table 1). The index of ‘training’ was a simple sum of field training and internal training experience scores. The index collapsed the top four scores (6–10) into one category due to the small numbers.

**Experience**

The overall experience score also simply added experience over the different categories of non-health and health projects. It capped measurement at 10 points for previous projects, after which the distribution of NGOs became very thin (Table 2).

**Outcome**

Outcome scores were based on several facility management indicators as well as outputs relating to maternal, child and reproductive health, health education and community perception, immunization, patient referral and national programme involvement. Data on utilization were taken from facility registers. Accuracy of the registers was verified through interviews with a random sample of beneficiaries and with health management information system (HMIS) data. The overall monitoring score was used as the outcome because it was what contract renewal was based on.
The monitoring score was based on NGO facility management and project implementation (40%), peri-natal care coverage and service provision (20%), focus group discussions of community perception (15%), vaccination assistance (10%), referral evidence (10%) and national programme participation (5%). NGO facility management included measures of equipment and medicine availability, staff availability (verified by focus group discussions and beneficiary interviews) and record keeping. Immunization assistance included provision and awareness. All measures included user satisfaction, measures of staff attitude and an overall judgement by the survey team. Scores ranged from 0 to 69 out of a possible 100 points.

### Data analysis

A test of the original intake evaluation scores was performed by regressing outcome score on intake score. Simple bivariate regressions of outcome score on each intake variable were run to identify potentially relevant measures. Then all intake variables used to score the NGOs for selecting contractors were used together in the regression. The backwards elimination technique was then used to systematically remove the least significant variable until only significant variables remained.

Another backwards elimination regression was run using the factor analysis-identified indices (capacity, quality, training) and other variables including proposal quality and:

- whether ‘health’ was in the objectives of an organization;
- previous experience with health and non-health projects;
- the percentage of female staff;
- the number of particular professionals who were part of the NGO staff including:
  - medical professional,
  - social worker/sociologist/ humanities professional,
  - activist/community leader.

### Results

NGOs selected were generally well-established (had been in existence for more than 10 years), had already implemented at least two large projects, were relatively small organizations (under 100 employees), had generally more non-health experience than health experience, had annual financial turnovers over Rs. 500,000 and earlier projects were generally over Rs. 500,000 in value.

The simple regression of outcome score on intake score indicated that the intake score had no predictive value. A second multi-variable regression, using all individual inputs in the intake score as independent variables, indicated that none of the individual input variables were significantly predictive at the 0.05 level.

Bivariate regressions of outcome score on each separate input variable showed that training (and its individual components of field training and internal training), proposal quality and having ‘health’ contained in the objectives of the organization were statistically significant predictors at the 0.05 level.

No other variables were significant predictors of outcome score. In addition, estimators of staff qualification individually and the overall qualification index, as well as previous experience implementing projects, health or non-health, were mostly negatively associated with the outcome, but not significantly.

All results are given in Table 3.

The backwards elimination using indices created by factor analysis indicated that training and the proposal rating were the only significant predictors of outcome score. This also reflects the backwards elimination results from individual variables where field training and the proposal score were the only significant predictors. Factors relating to financial capacity, staff qualification and previous experience with health or non-health projects, and age of establishment, were not significantly predictive of the outcome score.
A combined training and proposal score (sum of two scores) was highly predictive of outcome score ($\beta = 1.10, P < 0.001$). The training and proposal score combination was found to be a much better predictor of outcome scores than the total score used to select NGOs ($\beta = 0.073, P = 0.539$).

The outcome score used heavily weighted NGO facility measures. More heavily weighting performance measures of perinatal care, a major component of required services, resulted in significant correlations with slightly different input indicators: training and the presence of ‘health’ in the NGO’s objectives. Putting together the two results, a combined measure of proposal quality, ‘health’ in the objectives and training experience were highly significant and slightly increased the R-squared value of both models: the first predicting original outcome score and the second predicting re-weighted score.

Discussion

Results indicated that experience in training field staff and the quality of the project proposal were significant predictors of performance. Considering that many indicators of financial stability were included, and that NGOs who were cancelled due to complete failure to perform (cancelled midway before the evaluation was done) were included and received outcome scores of 0 for their performance, it is important to note that none of the measures of financial management remained in the regression. In other words, the assets of an organization, financial turnover, number and volume of previous projects were not predictive of outcome score. This is important because a common concern of governments when working with contracting is that NGOs with large contracts may embezzle the funds, take the initial disbursement and fail to deliver, or dissolve the organization. However, that concern was not supported by this study since financial stability measures did not remain in the regression.

It is, however, surprising that the experience indicators were not more predictive as they are often considered to be key (Loevinsohn 2008). For instance, previous experience in health projects was not predictive. Broken down by category, maternal and child health and reproductive health experience, and family planning programme experience were not predictive of outcome scores. It appears that NGOs were able to hire the necessary expertise to implement this health project, or that health project experience was not necessary for being able to improve basic health services. This may in part be due to the relatively low level of sophistication needed to address basic health care. Similarly, measures of staff quality may be irrelevant because they only indicate staff currently employed and do not account for the ability of the NGO to hire future staff to fit the needs of the contract. Future studies should include measurements of this ability.

Training skills of the NGOs may be particularly relevant since the NGO was required to ensure that their staff were adequately trained to perform duties related to the project. Ancillary nurse midwives, who were frequently trained outside the government sector, were usually given additional project training.

It is reassuring to see that the rating of the project proposal was significant in predicting outcome scores. This indicates that demonstrated understanding of the tasks was predictive of outcome score.

To test the sensitivity of the outcome rating composition, individual components of the outcome rating were regressed against the same input variables (not shown). Training or field training experience, proposal quality, or having health as an objective, or some combination, was significantly positively associated with each component score, indicating that the differing weights for each component would not have changed the conclusions significantly.

The proposal rating appears to be a very important indicator of future performance. Additionally, indication of clear

### Table 3: Bivariate regression of outcome score on individual variables

<table>
<thead>
<tr>
<th>Variable</th>
<th>Est</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Training</td>
<td>1.72</td>
<td>0.002</td>
</tr>
<tr>
<td>Field training</td>
<td>2.59</td>
<td>0.002</td>
</tr>
<tr>
<td>Internal training</td>
<td>1.97</td>
<td>0.036</td>
</tr>
<tr>
<td>Proposal quality</td>
<td>1.46</td>
<td>0.006</td>
</tr>
<tr>
<td>Objective = ‘health’</td>
<td>6.02</td>
<td>0.034</td>
</tr>
</tbody>
</table>

**Programme experience**

- Health projects: $0.11, 0.818$
- MCH/RCH: $0, 0.988$
- Family planning: $-1.47, 0.119$
- HIV: $1.37, 0.169$
- Other health: $-0.7, 0.582$
- Non-health: $-0.39, 0.403$
- Water and sanitation: $-1.33, 0.761$
- Agriculture, microfinance or other non-health: $-0.22, 0.397$
- Field staff qualification: $-1.08, 0.123$
- Male doctor: $-1.33, 0.21$
- Female doctor: $-0.61, 0.241$
- Health supervisor: $-0.96, 0.216$
- Nurse/ANM: $-0.69, 0.371$
- Dai: $-0.35, 0.78$
- Programme coordinator: $0.15, 0.786$

**Programme staff composition**

- Medical professional: $-0.06, 0.967$
- Social work, sociology, humanities: $0.58, 0.566$
- Activist, community leader: $0.1, 0.981$
- Capacity: $-0.11, 0.878$
- Past project values: $0.14, 0.887$
- Past projects (no.): $0.03, 0.968$
- Assets: $0.05, 0.917$
- Annual financial turnover: $-0.62, 0.588$
- Have an accountant: $2, 0.141$
- Years of certification: $-2.11, 0.146$
- Percentage female staff: $-0.14, 0.822$

Note:

MCH/RCH = maternal and child health/reproductive and child health.
ANM = auxiliary nurse-midwife.
Experience in specific skills needed by the current staff of the organization (that would not be hired specifically for the project), and a commitment to the overall goals of the project, may also add information. However, a simple scale of 10 points for rating the project proposal and 0–6 each for field and internal training may not provide sufficient variation to select from large numbers of candidates. For example, when applied to the original 1230 applications, selecting 300 NGOs would have resulted in a group of 224 or 324 from which it would be necessary to further review.

It should also be noted that the outcome data on which renewal decisions were based were collected only 9 months after the contracts began. Although 67 NGOs had already been working for at least a year, this was less than a quarter of the total NGOs. It is possible that it would take longer than 9 months for some changes to be measurable. Additionally, no baseline data were used in this analysis, so it is possible that some areas started in more difficult positions. However, because the level of care provided was so basic and because, in all areas, Health Posts were implemented in difficult areas where no services had been previously available, it is less likely that these factors contributed significantly to differences in NGO performance measures at 9 months.

Monitoring and evaluation quality has been evolving over the span of the programme. By the third round, monitoring was systematic, but the performance level needed for contract renewal was not specified prior to evaluation. This may have made it difficult for NGOs to predict whether they were performing adequately. There is some evidence to suggest that performance-based contracts that provide specific targets and rewards for attaining them are more successful than those that are not performance-based (Liu et al. 2008). While contract renewal was based on performance, the lack of transparent expectations may have reduced the effectiveness of the performance-based feature. This study therefore assesses the ability of different characteristics to predict performance even in the absence of clear targets.

Further research is needed to determine whether training proposal scores and a commitment to health are related to change over time, and whether any of the indicators are good predictors of quality of care.

This research did not assess whether contracting with NGOs was better than expanding government services. Contracting was chosen because the government of Uttar Pradesh felt they needed help reaching communities in difficult areas. It was assumed that any improvement in service availability was better than what would have been available without contracting. Clearly, other health system factors affect performance, such as overall funding, coordination and government capacity, but in this case the comparison of different NGOs was done within the same health system, meaning that the NGOs were exposed to the same system factors.

The contracting initiative in Uttar Pradesh is unique in the literature in that very small units were contracted out to NGOs. Contracts in a study from Guatemala (La Forgia et al. 2005) were also with smaller NGOs, but generally to NGOs who were already delivering services to local communities. These NGOs then expanded their reach in their local areas. Selection criteria were based on location and current service, and there was criticism that NGOs who were friendly with the government got the contracts. Expansion after the pilot phase eventually resulted in a more transparent and competitive selection process requiring proof of financial stability and good financial management practices and experience providing basic care, and ultimate selection was based on the technical merits of the proposal.

The Urban Primary Health Care Project (UPHCP), a contracting initiative in Bangladesh, (Loevinssohn 2002) required all bidders to have implemented projects with a total annual value equal to US$100 000 or more for the previous five years, at least eight years experience working with health systems and related activities, with at least five years in Bangladesh, a gender balance in human resource composition, and certain minimum staffing requirements, along with standard requirements of having proven sound financial accounting practices, no history of litigation or arbitration awards against the bidder, registration with an official body, and, because it was Asian Development Bank funded, bidders had to be from a member country. It is possible that these requirements were overly restrictive, although the contract was much bigger than the one in Uttar Pradesh. As a result, only the largest, most well-established NGOs bothered to apply.

Setting high threshold requirements can, in effect, select for large, well-established NGOs, consulting firms or university-affiliated groups. In the Contracting Health Services Pilot Project (CHSPP) in Cambodia, also funded by the Asian Development Bank, and in a contracting project in Afghanistan funded primarily by the World Bank, USAID and the European Community, both based largely on findings from the Cambodia experience, contracts were large with relatively high standards for applying. Contracts covered entire districts or provinces or larger cluster areas. Only large international NGOs with local experience were awarded contracts in Cambodia, and a significant number of international NGOs were awarded contracts in Afghanistan, with the remaining contracts awarded to well-established local NGOs that had developed during the Mujahedeen and Taliban eras (Loevinssohn 2000; Sondorp 2004).

Setting high thresholds may unnecessarily restrict applications, especially if services are relatively unsophisticated. However, contracting with large numbers of small NGOs for small contracts may be less efficient than contracting with a larger organization to cover larger areas. Economies of scale and lower transactions costs of contract management may make contracting for larger service areas more cost-effective. Even so, it appears that proposal quality, and not financial stability or project volume and experience, is more important for lower level service provision.

**Conclusion**

Experience implementing health projects has been a basic requirement or rated factor in all projects. While this seems evident for large-scale contracting efforts, it is possible that hiring one doctor and 2–3 paramedical staff and providing them with the basic equipment, supplies and medicine does not require extensive experience. Additionally, although some financial and organizational management skills are necessary,
it is possible that only a minimum threshold is necessary and anything beyond that is not important.

It has been pointed out that the context in which contracting is implemented is likely to be most important for its success (Liu et al. 2008) and that other health system factors affect performance. Even so, it can be assumed that there are generic design issues that are common (Loevinsohn 2008), one of them possibly being selection criteria of contractors. Very little has been written in the literature regarding selection criteria for contractors providing basic health services, and there appears to be no literature on whether the selection criteria used were appropriate. This study begins a discussion regarding the necessary qualifications for a contractor providing basic health services and the criteria that might be relevant in predicting whether a contractor will perform well or not.

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Conflict of interest

None declared.

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