

Beyond building: how social norms and networks shape mason construction practices in incremental homebuilding

Scott Merrill, Erin Markel, Adriano Scarampi, Meghan Bolden, and Sheldon Yoder

Abstract: *How do low-income households and masons make house construction decisions? A three-country study examined social norms, networks, and information flows that influence construction practices in Kenya, India, and Peru. The study used a suite of qualitative research strategies, including desk research, site observation, focus group discussions, and key informant interviews, to examine households and informal construction service providers, and the interactions between them. The research sought to answer the following questions: 1) How do households and individuals make housing decisions? 2) What are the information flows, key influences, and social norms that steer these decisions? and 3) How can programmes leverage knowledge about norms to improve the quality of home construction? Findings covered areas of gender, disaster resilience, and construction labour - this article focuses on the latter. Ultimately the paper argues that designing impactful programmes for low-income housing markets requires understanding and incorporating these social norms, networks, and information flows.*

Keywords: housing, construction, market systems, social norms, social networks

Introduction

The housing challenge

Nearly 2 billion people worldwide live in inadequate shelter. Given the size of the housing deficit, both quantitative and qualitative, direct delivery of formal housing solutions by governments or development actors will not solve the housing crisis globally. Unlike middle- and upper-income households in the developed world who often purchase completed homes, in developing economies many households - particularly low-income households - commonly engage in building, repairing, and improving their shelter on an informal and incremental basis. In this incremental

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construction process, families begin residing in a home with only the most basic features and build at the pace of their ability to finance additional construction. The work starts and stops as resources are available, often resulting in deterioration of supplies, increased costs, and inconsistent quality of housing. A robust body of research has established that these factors play an important role in human development, economic development, and the environment (Acolin and Hoek-Smit, 2020). These incremental builders represent an estimated 70 per cent of all urban housing in the developing world (Goethert, 2010), and are often an invisible segment within a vibrant housing market, where a healthy supply of formal housing solutions exists but are rarely designed to meet incremental builders' needs. As a result, these overlooked households rely on informal markets to access materials and services.

A household's choices of how they build their home are significantly impacted by the cost and availability of materials and construction services they can access. There are, however, sometimes more subtle factors that influence these choices. These include social networks and social norms (Campbell, 2014; MarketShare Associates, 2016), which affect the decisions made by households as they build, repair, and improve their homes. This, in turn, determines safety and quality of the homes.

Social networks

In pursuing better housing, most families rely on their personal social networks to access information about construction materials, services, and practices and use this information to inform their purchasing decisions. The flow of information through social networks is therefore particularly important in influencing construction decisions and practices. Such social networks include friends, family, neighbours, local masons, and hardware stores.

Social norms

Social norms govern what is considered 'normal' or appropriate behaviour for a certain group of people (Cislaghi and Heise, 2016; Markel et al., 2016; Klassen et al., 2017). Social norms heavily influence the homebuilding decisions and construction practices of households, as well as the masons and other construction artisans who serve them. Because social norms around housing are so strong, traditional approaches to industry capacity building and awareness raising are often ineffective in improving construction quality.

Norms can be understood in terms of their prevalence (the extent to which a norm is present and common across a given group), strength (the extent to which a social norm influences behaviour and sanctions against breaking a given norm), and relevance (how a norm is a help or hindrance to a programming or behavioural change objective) (MarketShare Associates, 2017). Understanding and influencing social norms is increasingly prevalent in global health (Cislaghi and Heise, 2018) and other sectors (Bicchieri et al., 2014; Stefanik and Hwang, 2017; MarketShare Associates, 2020) but has not been widely applied to affordable housing. However,

some market systems development practitioners have begun to explore the application of social norms theory in market systems development programmes (Klassen et al., 2017) in agriculture and other sectors. Building on that work, this article explores the role that social norms and social networks play in governing construction decisions and practices in three countries, India, Kenya, and Peru. It shows how a better understanding of norms and networks can enable more effective interventions to improve the quality of housing.

Study design and methodology

Between May and October 2018, Habitat for Humanity's Terwilliger Center for Innovation in Shelter (TCIS) and MarketShare Associates (MSA) carried out a study in Peru, Kenya, and India to understand the social norms and decision-making process of low-income households and masons and how they influence the design of housing and construction.

Study objectives

1. To better understand how key market actors (namely women, households, and masons) make decisions related to house design and construction, what agents play an influencing role, and what social norms influence these decisions.
2. To strengthen TCIS's approach to applying behaviour change techniques to their work with the private and public sector.
3. To apply the findings to intervention design and implementation.

Research framework and design process

The study methodology combined qualitative exploratory methods with an applied causal approach, drawing from lessons in researching social norms in the field of sociology, behaviour change methodologies, decision-making theory, and feminist theory in measuring decision making.

To understand how social norms shape decision making in actionable ways, the implementation team identified key behaviours to target for change. These behaviours were: 1) women have increased agency in housing decision making; 2) households use more disaster-resilient construction techniques; and 3) masons change their practices to provide better services for low-income homebuilders. This article focuses on masons and the third behaviour outcome.

Research tools and instruments

After identifying behaviours, the next step in the design phase was to select the analysis outputs. The study team selected two research tools: Value Network Analysis and Influencer Diagnostic (VNID) to measure social networks and Behavioural Analysis and Norms Diagnostic (BAND) to identify and determine changes in behavioural drivers including social norms (MarketShare Associates, 2017a, b).

The VNID combines a value chain analysis and social network analysis to provide a visual mapping of the key relationships between the various market

players in the system and several ‘flows’ between these actors such as the flows of resources. It is meant to be an expressive diagram, showing multiple actors and several distinct flows between them (materials/service flows, financial flows, information flows). The VNID tool is not meant to be comprehensive and static, instead it is designed to be actionable, rapid, and iterative.

The BAND tool combines a social norm identification process, with social norms mapping and constraints analysis. The tool allows teams to explore which social norms exist and then undertake a deeper investigation to document and map the implications of each selected social norm. Teams explore what drives these behaviours and decision-making processes, and if social norms are (or are not) an underlying factor (Bicchieri et al., 2014). Key social norms are then prioritized for further exploration by mapping them against three key attributes: prevalence, strength, and relevance.

Next came the actionable insights (Shakya et al., 2014; Cislighi and Heise, 2016) phase. This utilized a methodology called ‘vignettes’ to help reveal how norms operate in a group by investigating respondents’ expectations about what other people would do or think in a particular situation (Stefanik, 2016). These vignettes describe hypothetical scenarios and are deployed in interviews and focus group discussions with segmented target groups to explore sensitive issues. Vignettes are important as they can allow respondents to open up about their expectations by using fictional stories and reduce response biases. In order to reach ‘information saturation’ (i.e. confirmation that the social norm applies widely across a particular target group), the researchers hold interviews and focus groups until clear patterns emerge in the data. The final output is a mapping of the social norms, in-depth analysis, and actionable recommendations validated by wider stakeholders.

Three key attributes of a social norm

Prevalence: one of the key criteria that determines whether a behaviour is influenced by a norm or not, is the extent to which the norm is held by specific groups within a community, or its ‘prevalence’. The more the community agrees with the norm, are influenced by it, and expect others to adhere to it, the more prevalent the norm is.

Strength: another key criterion that determines whether a behaviour is influenced by a norm or not is the extent to which a social norm is enforced and is difficult to break. Strength is determined by two factors: 1) presence of sanction: the extent to which individuals are subject to sanctions if the norm was breached, and 2) sensitivity to sanctions: the extent to which individuals are willing to break the norm and incur the sanction.

Relevance: a third key criterion is the extent to which a particular norm constrains the behaviour changes. Not all norms, even if strong, are as relevant to TCIS, and the programme should prioritize those norms that are most relevant.

Research process

Importantly, the local stakeholders were engaged in the adaptation of the research tools of both the VNAM and BAND.

The research team conducted initial secondary research and document reviews to bring together relevant existing information in each country. Then the

research team planned and implemented primary research in each country using a three-phase approach:

1. During the first two-week phase, the research team focused on unpacking the housing design and construction decision-making processes, and identifying the social norms shaping these decisions. The primary focus of this phase was interviews and focus group discussions with households, as well as interviews with masons and contractors to a slightly lesser degree. The team also finalized the VNAM research instruments.
2. The purpose of the second two-week phase was to validate the key findings from the first phase of fieldwork, diving deeper into emerging findings and the social norms identified. Here, the research team developed localized vignettes which were implemented in interviews and focus group discussions.
3. In the final one-week phase, the team led internal workshops in each country to discuss and validate research findings and design interventions (further described below in the section 'Process to validate findings and intervention ideas').

Sampling and participants

The study applied snowball and purposeful sampling techniques. In each country, the first phase captured the views of low-income households and the masons who provided home construction services to them. Flexibility in the research process allowed the research team to follow leads and gave space in the schedule to interview additional data sources as needed. This meant starting each phase of research with high-level sampling targets and only an initial set of pre-scheduled interviews and focus group discussions, with the rest scheduled later, based on chain-referral.

Interviewees and focus group participants were identified primarily through purposeful sampling by microfinance institutions, while masons were identified through builders' associations and existing contacts of the research team. The 'influencers' and households were identified through a snowball or chain-referral system. The third phase focused on validation and design exercises with the TCIS team and key local stakeholders.

Overall, the study conducted 187 interviews and held multiple focus group discussions with a total of 123 participants. Table 1 breaks down the sample by country and type of interviewee and focus group and Table 2 breaks down the focus group discussion by type of participant in each country. Focus group discussions were not conducted in Kenya because the team was able to gather sufficient data through individual interviews. Despite this methodological difference, the findings were similar to those of Peru and India. Additional research may be needed to examine the relative efficacy of interviews and focus group discussions in gathering data on social norms; however that was beyond the scope of this study.

Analysing data

The research team input all data into NVivo, a qualitative data analysis software, and conducted analysis through a deductive and inductive coding process. A design

Table 1 Interview sampling overview

<i>Type of interviewee</i>	<i>Kenya</i>	<i>India</i>	<i>Peru</i>
Females in households	27	6	14
Males in households	13	19	0
Masons, supervisors, and contractors	21	36	12
Key influencers and other market actors	12	24	7
Total sample by country	73	85	33
Total sample	191 participants		

Table 2 Focus group discussion sampling overview

<i>Type of focus group discussion (FGD)</i>	<i>India</i>	<i>Peru</i>
Female FGDs	62	7
Male FGDs	25	6
Mason and retailers FGDs	10	4
Influence and other market actors	0	9
Total sample by country	97	26
Total sample	123 participants	

framework (i.e. code book) was developed prior to fieldwork, as part of the deductive process, to guide analysis for all three countries. This framework included a comprehensive set of identified codes drawn directly from the research questions and relevant literature. The research team applied the deductive codes, while simultaneously using an inductive approach.

Process to validate findings and intervention ideas

Each country research team used a human-centred design (HCD) approach to validate findings in workshops. The Kenya team focused on validating findings and intervention ideas with wider stakeholders; in India, researchers used wider stakeholder validation workshops and also interviewed select groups; and in Peru the team designed an innovative ‘shark tank’ style workshop where intervention ideas were pitched to panels of stakeholders, who selected which interventions to ‘invest’ in.

Utilization assessment

To understand the application and utilization of the research, a research team later conducted interviews with key local programme team members who had been involved each country’s research, including two programme team members in Peru, two team members in Kenya, and five team members in India. Crucially, these programme teams were responsible for translating the research findings into tangible activities implemented by private and public sector actors, with the goal of improving access to affordable housing. These programme teams comprised

members with a range of backgrounds and experiences including the fields of engineering, finance, and business.

Findings and research application

This section focuses on the findings and actions taken by each of the programme teams.

India findings

The value network analysis and map (Figure 1) for India showed that the sources of influence on masons vary based on the type of mason and wealth of the household (Scarampi, 2019). Respondents identified three broad categories of masons who lead construction projects serving households: 1) a labour mason (*kothanaar* - note local names are in Tamil), who is an experienced mason that generally works under a contractor but also can work independently or manage a small team, usually for one job at a time, earning a daily wage; 2) a labour contractor (*mestry*), who employs a team of at least 10 people, has the capacity to undertake at least two projects simultaneously and is paid a fixed fee, which they then use to pay contract labourers' daily wages; and 3) a labour and material contractor (also called a *mestry*) who manages a larger team of 15-30 people for multiple simultaneous jobs, is paid a fixed fee for each job, and manages daily wage payments to labourers and payments to material suppliers. In addition to these categories there are also more junior helpers who do most of the menial work and hard labour.

It is important to note that although the three categories are presented as distinct, masons often perform different roles depending on the type of work available. For example, it is not uncommon for a *kothanaar* to occasionally undertake simpler masonry work under a *mestry* or other *kothanaars* when in between their own jobs. Additionally, material suppliers, engineers, and their own peer groups are important influencers of both categories of *mestry*, while *kothanaars* are influenced primarily by the *mestrys* that they work with.

The role of households in influencing mason behaviour also differs based on income. Lower-income groups are more influenced by advice from masons while higher income households have more influence on the masons they hire. Additionally, lower-income households have fewer sources of information about construction than higher-income households, who are more educated. Higher-income groups tend to seek advice from labour and materials contractors (*mestry*), who communicate directly with architects and engineers more often than the labour masons (*kothanaar*) do.

Several norms govern masons' practices, with the strongest and most prevalent being the reluctance of many masons to see formal construction training as credible (Figure 2). This norm comes in large part from the belief that construction is a hands-on profession that is primarily learned on the job. Most masons interviewed were therefore extremely dismissive of formal training courses, and to a lesser extent certification processes, claiming that they add almost no value to the profession.

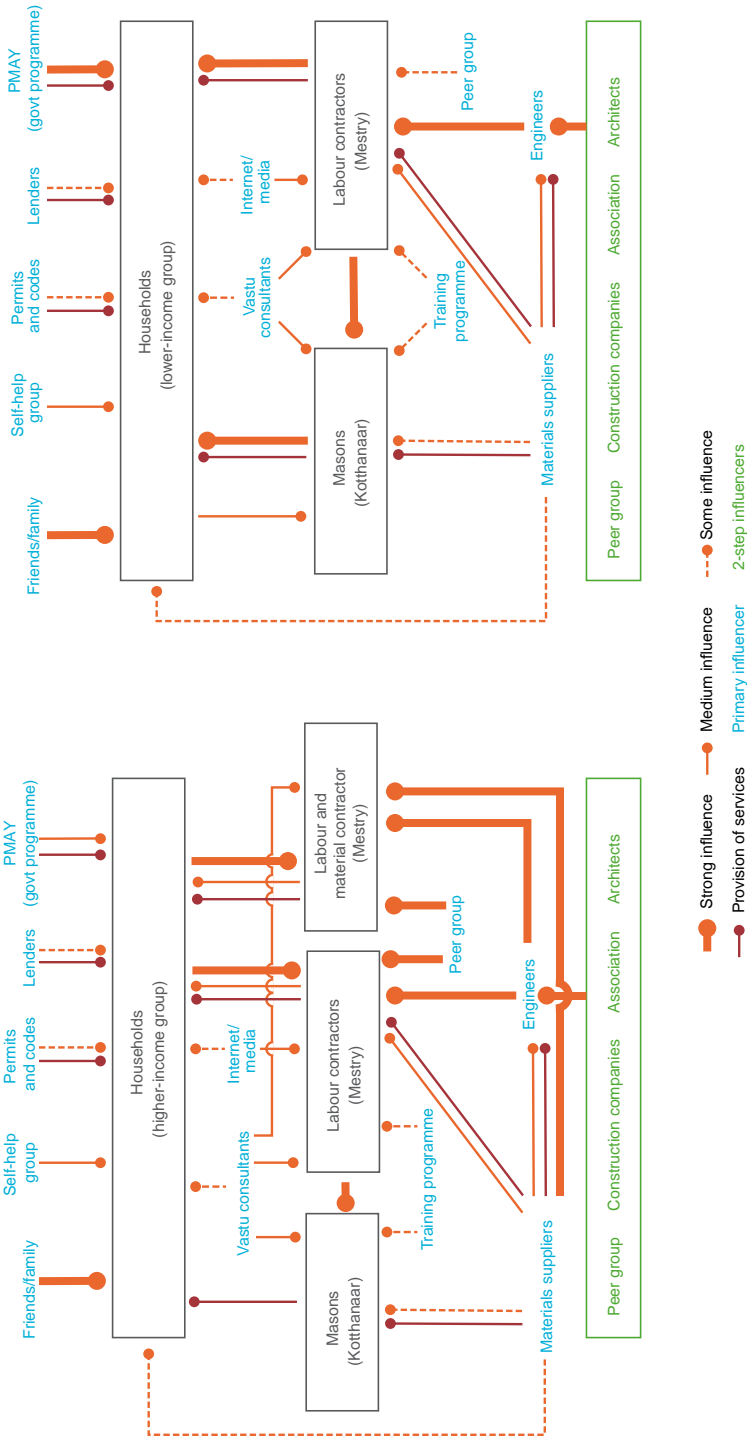


Figure 1 Value network map, India

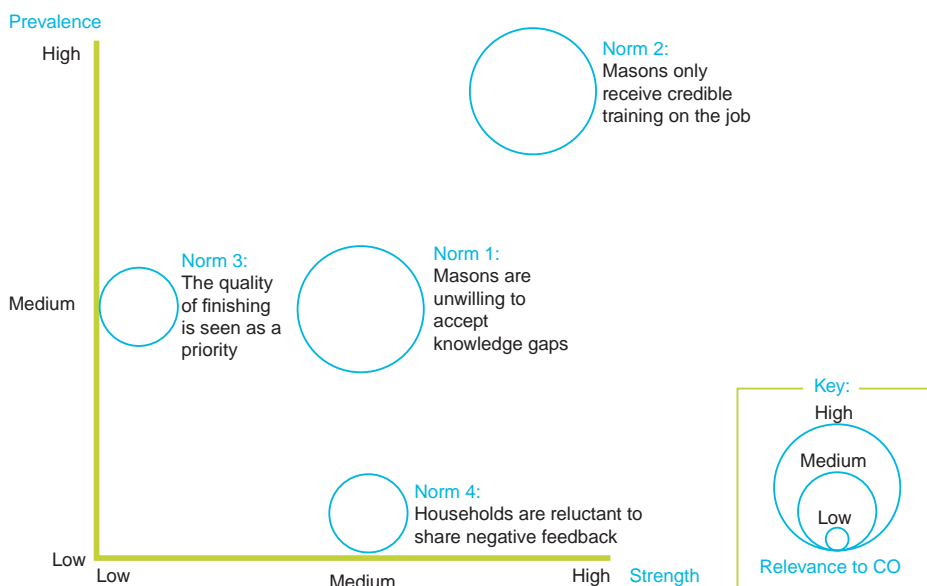


Figure 2 Norms shaping masons' practices in India

Any construction worker who is formally trained would also have to go through the same on-the-job training as anyone else. This is consistent with the finding from the value network analysis which found that other masons are the primary influencers of masons.

Application of the findings. These findings have influenced the advice provided by programme staff to private sector partners. A new facilitation strategy that emerged as a result of this research has programme staff routinely discuss relevant norms (e.g. apprenticeship is the norm in mason skilling) with potential private and public sector actors to understand how they are dealing with these norms and what changes, if any, to recommend. For example, programme staff discussed the relevant norms with Tamil Nadu Skill Development Corporation (TNSDC), the apex body for formulating and approving all skill training programmes in the state and suggested a few changes to their programming. These included changing the standard 15-to-30-day training programme to 2-3 days and switching to an evaluation framework that also allows for the assessment of skills and knowledge acquired by masons outside the classroom. Additionally, as the value network maps show potential for influence from developers and construction material suppliers, staff recommended collaborations between training providers and manufacturing companies that would allow the companies to showcase their products while training the masons in specific skills. (One such pilot was carried out in 2020 between CIDC, a training provider, and Ardex Endura, a waterproofing manufacturer.) All of these recommendations were subsequently implemented by TNSDC.

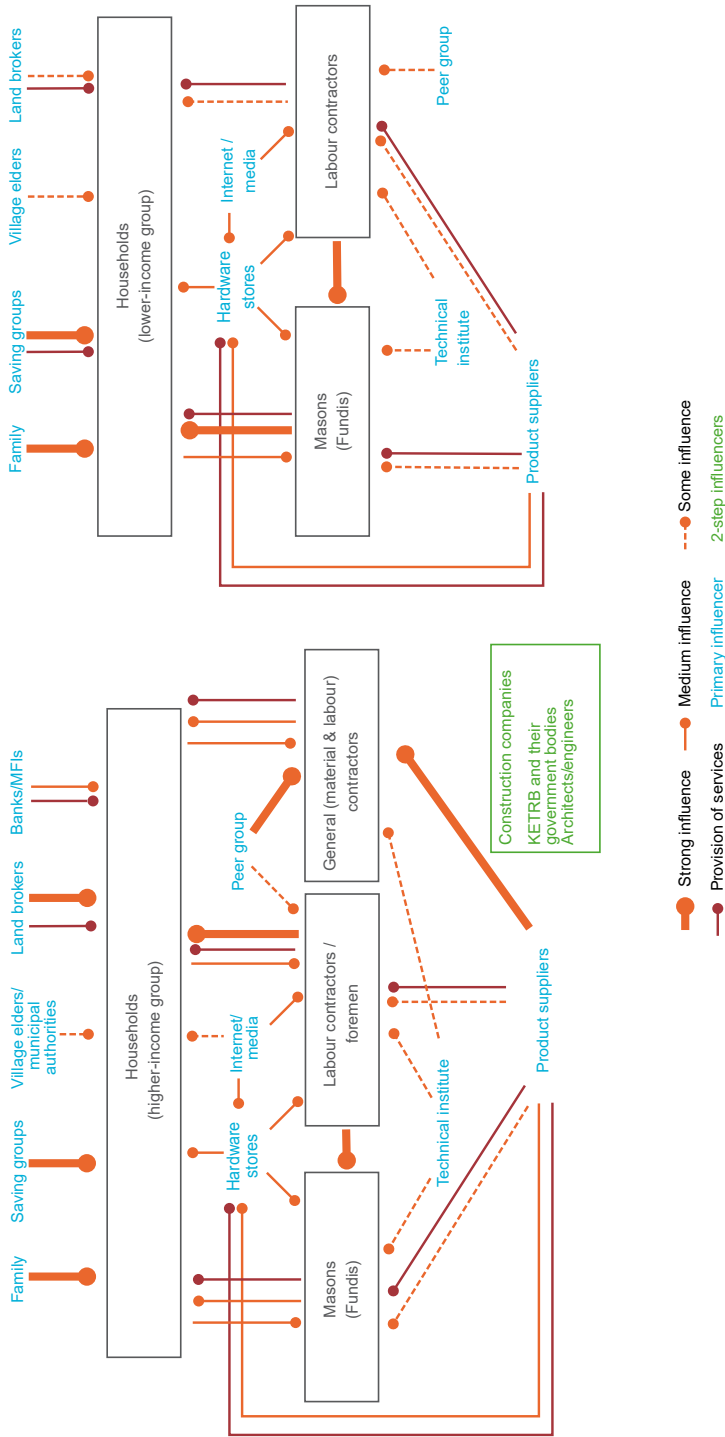


Figure 3 Value network map, Kenya

Kenya findings

Similar to India, the value network map for Kenya (Figure 3) differentiated construction service providers into masons or *fundis*, labour contractors or supervisors, and general contractors (Vasudevan, 2019). *Fundis* tend to rely on word-of-mouth within their networks, as well as at construction sites, to learn about both job opportunities and knowledge regarding new materials, technologies, and techniques. More experienced construction workers (e.g. supervisors) are the primary source of influence for *fundis*. Larger-scale labour and general contractors, on the other hand, draw upon a variety of sources for these purposes including Facebook, Google, and smart phone apps, as well as hardware stores. In the case of larger general contractors, they also draw on material manufacturers, architects and engineers, and the Kenya Engineering and Technology Review Board (KETRB). Technical training institutions have a weak influence on mason practices, but do play an important role in their career progression because formal certification is critical to compete for formal sector tenders.

Both *fundis* and their clients expect the other to cheat them (e.g. *fundis* overcharging for materials or not showing up for a job; clients abruptly stopping work or withholding payment). Households mitigate the risk by doing ‘due diligence’ by looking at other structures that the *fundi* has built, asking for referrals from trusted sources, or hiring *fundis* from their social networks (see Figure 4). To avoid overcharging, households usually insist on buying the materials directly from hardware stores, rather than allowing the *fundi* to buy them. In some cases, they will accompany the *fundi* to the hardware stores, where the *fundi* confirms the quality of the construction materials while the household pays for them.

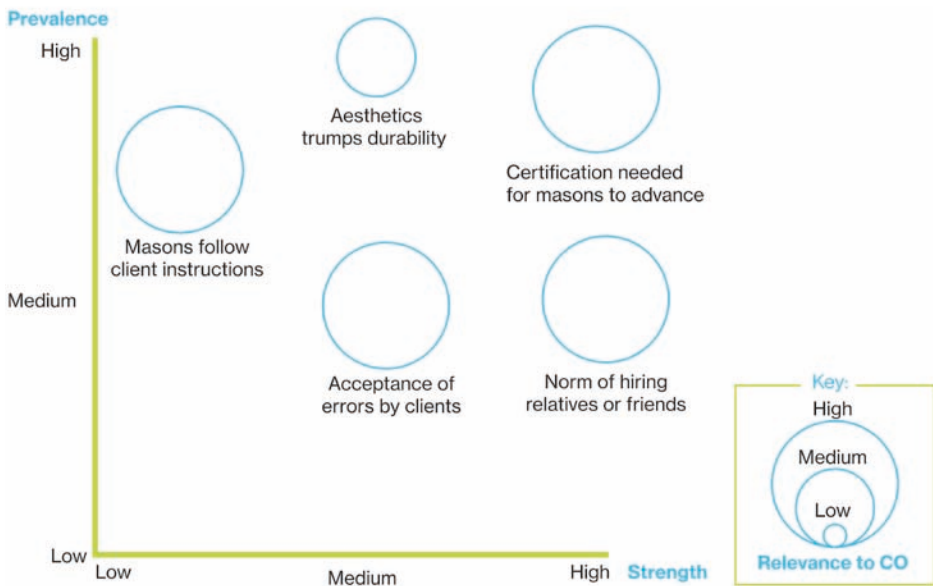


Figure 4 Norms shaping masons' practices in Kenya

Despite the lack of trust, households typically value the role of the *fundi* as a construction advisor. Households keep a close watch on *fundis* while they work on the construction site, but there is little feedback to masons after the house has been constructed, particularly with respect to structural and stability issues. There is a mindset among households that once they have paid, it is too late to expect masons to return to fix any errors in the work or, as one respondent put it, ‘once bought, can’t be returned’ (see Figure 4). In turn, *fundis* mitigate the risk of households stopping work or withholding payment by taking on multiple jobs at the same time. The norm of distrust and cheating leads to inefficient use of time and energy by households and *fundis*, as well as a broken feedback loop that results in *fundis* rarely being aware of whether the work that they have delivered is up to standard and how they could improve.

Application of the findings. The Kenya country team made three changes based on these findings. First, building on the perceived need for formal certification as a means of career progression, they looked for opportunities to upgrade *fundi* skills and provide certification through non-traditional methods - such as onsite training offered by technical and vocational education and training institutions, in partnership with larger-scale contractors and developers - and more novel techniques such as virtual reality training. The team is piloting this hybrid scheme integrating virtual reality training and onsite training, with an initial focus on masonry.

Second, considering the norms driving the lack of trust in the *fundi*-client relationship, they are supporting alternatives to the word-of-mouth referral system. This included working with a vocational training provider to develop an online training and deployment portal that *fundis* and households can use to find each other; and a full-featured app. The app offers *fundis* and contractors links to jobs, while giving households the ability to rate and select from a larger pool of *fundis* than what is available in their own social networks. The app also addresses trust issues in the homebuilder-*fundi* relationship. Homeowners can issue payments through the platform that are paid to *fundis* only upon completion of specific milestones. This also benefits *fundis* as they can be certain they will receive payment upon completion of the agreed milestones.

Third, the programme is seeking to shift households’ evaluation of masons’ skills away from aesthetics alone by working with an interactive chatbot, an education method that has proven influential in other sectors in Kenya. In one case, through a simple, text-based education campaign, prospective homebuilders were given a crash course in identifying and hiring *fundis* whose work is both durable and looks good. This campaign resulted in the highest level of interaction that the SMS-provider had experienced to date.

Peru findings

Like the other countries, Peru’s value network map (Figure 5) shows that masons are important providers of information to low-income households (Villaviciencio, 2019). Surprisingly, however, there are no strong influencers on the masons working

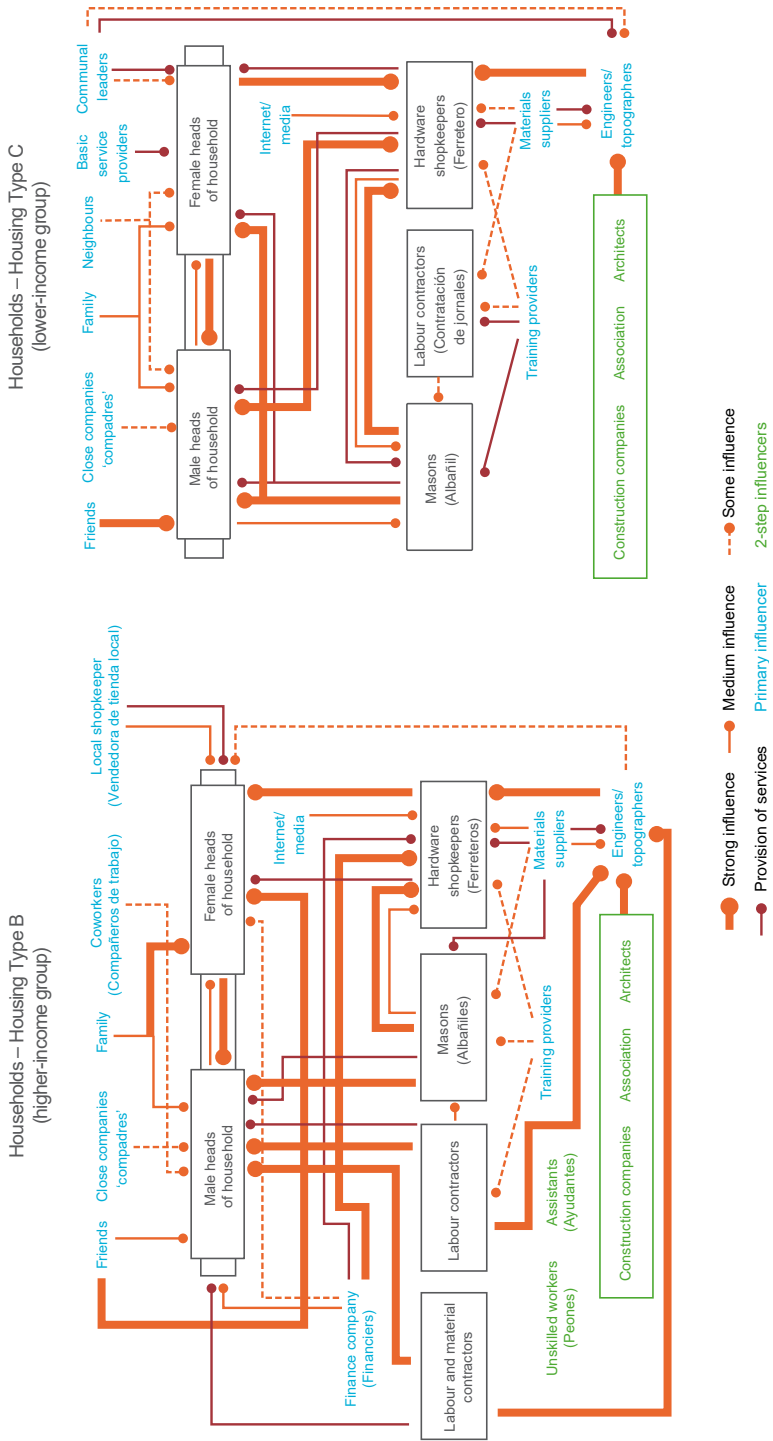


Figure 5 Information flows and influencer map, Peru

with low-income households since the norm privileges on-the-job training as the exclusive method for acquiring construction skills. However, masons working for households that are slightly better off are influenced by more categories of actors, including hardware stores, material suppliers, and labour contractors.

Social recognition is more important to both households and masons than formal credentials (Figure 6). In selecting a mason, households consider whether they have experience in home construction near their own home, whether those owners were satisfied, and whether the mason is perceived to be honest and punctual. Training sessions and formal courses are not an incentive for the masons to acquire new skills or certifications, given that households do not hire based on masons' formal qualifications. The masons noted that 'training only helps you when you are employed in big companies and not for family housing'.

Application of the findings. The Peru programme team applied these findings in their work to address the lack of home design, supervision, and retrofitting services for households. The programme team is developing a branded service called *Guardian Constructor* (Trusted Builder in English) that works with the norms around social recognition and on-the-job training. *Guardian Constructor* is a full-service programme that accompanies families at each step of the building process - with planning, designing, budgeting, financing, and construction supervision. The service intends to introduce a new character into the pool of actors who are socially recognized by low-income families to build their homes: small and medium construction enterprises (SMEs), which are headed by architects and engineers. Social recognition is conferred on these SMEs as *Guardian Constructor* becomes a

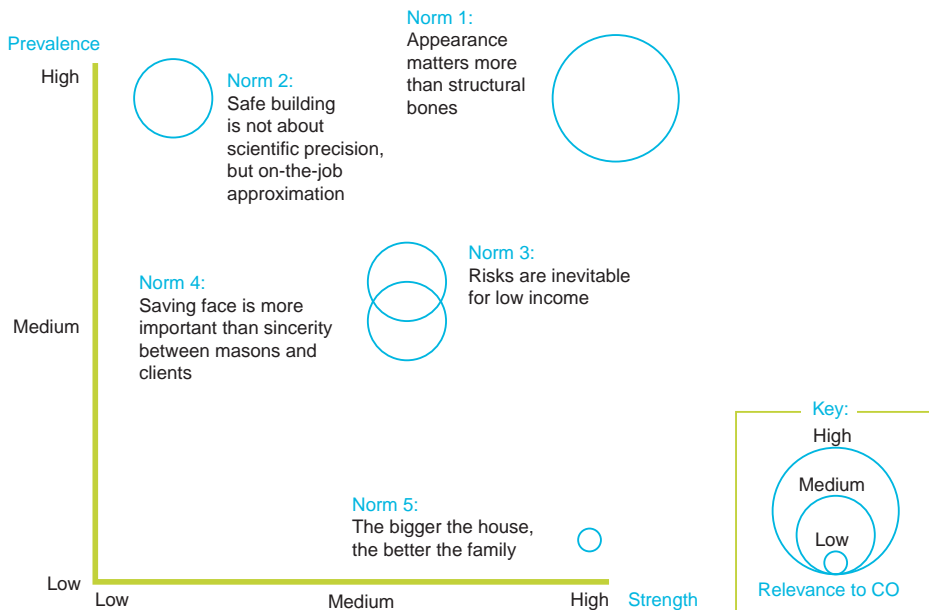


Figure 6 Norms shaping masons' practices in Peru

trusted name that low-income homebuilders recognize and share through their word-of-mouth referral system. At the same time, the service provides on-the-job training to the masons who are hired by these construction SMEs. *Guardian Constructor* facilitates commercial partnerships between construction SMEs, urban developers, and financial institutions and relies on in-person demonstrations and word-of-mouth referrals instead of flashy marketing campaigns and app-based technology. Ultimately, it builds social recognition and demand for these construction SMEs and the masons they hire to build the homes. Currently the team is in the prototype and field-testing stage, working with an urban developer, 15 construction SMEs, and six financial intermediaries.

Global findings

Across all three countries, the following findings came across strongly:

Masons have very weak incentives to take up formal training. As Figure 7 shows, norms driving behaviours and attitudes toward formal training in each country (presented in the three country-specific diagrams above) are both highly prevalent and quite strong. On-the-job training is the norm while vocational or technical training is rare; only 16 per cent of masons have formal training in Kenya, for example. As a result, technical training institutions have weak influence. Masons are dismissive of formal training courses and certification processes because of economic considerations (it costs money, requires valuable time, and opens few doors to more lucrative jobs) and strong social norms against doing this training. There are exceptions - in Kenya, some value is attached to formal training and

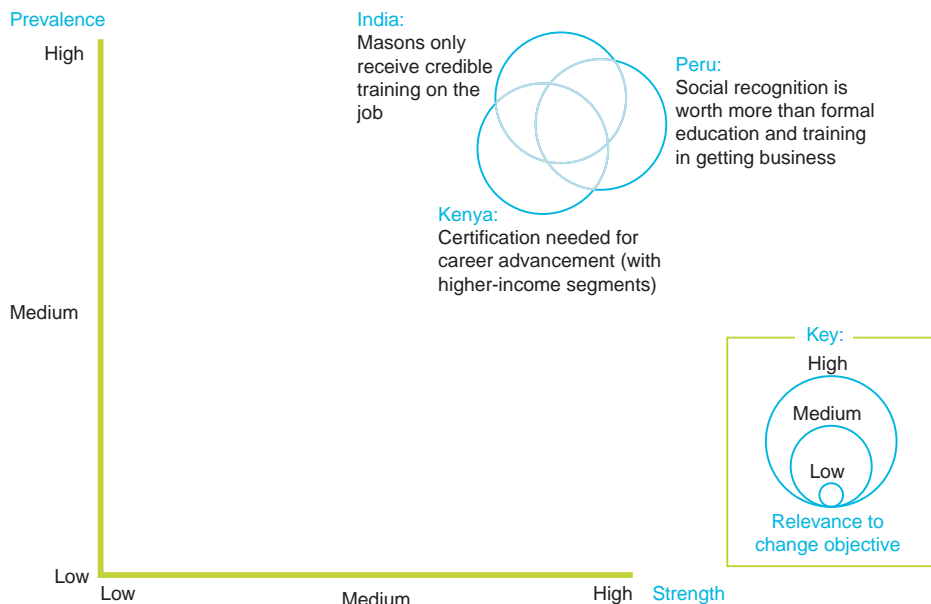


Figure 7 Norms around the role of formal training

certification for those wishing to become contractors, but certification is not necessary for masons serving low-income households.

Masons are important influencers of households' (particularly lower-income households') decisions related to technologies, materials, and techniques. The value network analysis maps for each country show a limited number of influences on households, especially lower-income households. Outside of immediate family, masons are the clearest source of influence on low-income household construction decisions across all three countries. However, there are important caveats. While not a hard and fast rule, they are consulted primarily for basic structural issues. Masons can only influence the choice of materials and layout of the house through proactive efforts, as these are considered household matters. As a result, less-experienced masons are generally not able to guide their clients to more optimal construction decisions, such as adopting a new material or practice. The strong and prevalent norm of conforming to the aesthetic style of other homes in the neighbourhood means masons could risk their reputations in the community if they use an untried material or method resulting in a home that looks different. Many masons indicate they would be willing to push harder for the introduction of new techniques and technologies to clients if they had the ability to test them first in a setting that does not risk their reputation, but these opportunities are often not available outside of formal-sector work, which is only open to the most qualified. Masons exert more influence on lower-income households than they do higher-income households who have access to more sources of information.

Conclusion

Incremental builders' housing decisions are influenced not only by the cost and availability of materials and other supporting services. Social networks and social norms are particularly important in driving decision making. While formal rules, such as building codes or other regulations, are readily apparent but weak in driving behaviour, social norms and social networks are less visible but often strong determinants of the decisions of incremental builders and the informal service providers who serve them. This article presents the application of research on social norms and social networks to the design of programme interventions.

Understanding the system of influencers can help housing practitioners identify leverage points within the system to provide information or advice to incremental builders and masons. Differences in how masons access information based on the type of work that they perform and the types of construction jobs they take on illustrate the importance of detailed segmentation for identifying influencers. Given the central role masons and other construction service providers play in household decision making – especially around the use of technologies, materials, and techniques – it is particularly important for programmes to understand the dynamics of these networks when seeking to introduce new materials or construction practices.

While the social norms themselves may be intuited by practitioners as 'hunches' or 'assumptions', understanding the strength, prevalence, and relevance of social norms

allows housing practitioners to design more effective interventions. For instance, understanding that a particular social norm is both strongly held and widespread, such as the norms driving behaviours and attitudes towards formal mason training in all three countries, indicates that it will be very difficult to change or influence that social norm. Instead, a practitioner may decide to take a different approach, for instance changing training strategies to shorten formal instruction time and include an assessment of skills acquired outside the classroom, as is the case in India; or using the *Guardian Constructor* brand to introduce technically qualified construction SMEs to the low-income homebuilding market, who in turn provide on-the-job training to masons.

Why is this important? The construction of incremental housing is a lengthy process for much of the world. The decisions and behaviours of incremental builders, masons, and other construction service providers play at least as important a role in the quality of the home as the technology and materials used. Solving the affordable housing crisis is as much about addressing the ‘soft challenges’ of household decision making as it is the ‘hard challenges’ of technology and construction, yet many programmes only focus on the latter. Housing development practitioners must recognize the important role social networks and social norms play in driving housing outcomes.

Influencing the construction decisions and practices of millions of incremental builders and informal construction service providers is vital to solving the global housing crisis. An understanding of social networks and social norms will allow housing practitioners to design and implement more effective programming to improve the quality of construction in the informal sector at scale.

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