Journal of Business Venturing 25 (2010) 245–260

Contents lists available at ScienceDirect

Journal of Business Venturing

How social and human capital influence opportunity recognition and resource mobilization in India's handloom industry

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ARTICLE INFO

Keywords:
Entrepreneurship
Social networks
Handloom industry
Craft industry

ABSTRACT

Small-scale firms in rural areas play an extremely important role in the development of any country, and especially in developing countries. To understand entrepreneurs who operate in a low-technology industry, we rely on the network perspective on entrepreneurship. In this paper, we investigate how the social and human capital of entrepreneurs (in this case master weavers in the handloom industry) influence their ability to recognize opportunities and mobilize resources. In addition to examining the direct effects, we also explore the possibilities of social capital mediating between human capital, on the one hand, and opportunity recognition and resource mobilization on the other. This paper adds to existing literature in two ways: firstly, we expand the social capital paradigm by including different cultural settings and links to existing studies regarding small enterprises. Secondly, we provide additional evidence to the ongoing debate as to what constitutes a 'good network'.

1. Executive summary

This research attempts to understand how small entrepreneurs operating in a traditional rural industry in India utilise their social networks for business operations. It uses quantitative methods that have been developed in the network perspective of entrepreneurship. The network perspective of entrepreneurship explains why certain individuals identify opportunities, and why others do not. Most of the network-related literature has been developed in the western countries. However, networks have been found to be important for small-scale entrepreneurs in rural areas of the lesser developed countries as well. Expanding the network entrepreneurship literature to include a different cultural setting is the first contribution of this paper.

While there is some agreement on the importance of networks in successful ventures, having a good network in itself is no guarantee for success. The academic community has not yet identified what kinds of networks bring a competitive advantage to entrepreneurs. Addressing some of these debates within the network perspective will be the second contribution of the paper.

Furthermore, this study indicates that social capital (in the form of networks) or human capital in isolation cannot completely explain how entrepreneurs identify opportunities and mobilize resources. Forms of indirect interactions between these two constructs need to be explored to increase our understanding on entrepreneurship. Hence, the final contribution of this paper is to look at the path-dependent interaction effects of human and social capital of entrepreneurs on opportunity recognition and resource mobilization.

The research context to test the theory is the handloom industry in India. Entrepreneurs who operate in this industry use archaic hand-operated looms to produce traditional textiles. Production takes place entirely in the rural areas, the handloom

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doi:10.1016/j.jbusvent.2008.10.006

markets are distributed across the country, with some products also reaching the export market. Since the social networks of the handloom entrepreneurs are an essential aid to both production and marketing, this industry provides a suitable context to study the research questions.

Primary data was collected using qualitative and quantitative methods. Information was collected from 107 master weavers in four locations in India, and the data analyzed using SPSS 11.0. Hierarchical regression models were used to test the various hypotheses that were developed. To realize the mediating effect, the method suggested by Baron and Kenny was used. Sobel's test was used to confirm the mediating effects.

It was found that the number of structural holes in an entrepreneur's network has a positive effect on opportunity recognition. However, it has a negative impact on an entrepreneur's ability to acquire resources. Thus, firms that operate in an environment that is rich in opportunities benefit more from structural holes, than firms that operate in a stable environment. It was found that structural holes have a detrimental effect on resource acquisition. In this kind of environment, closure is more important. In fact, for most firms, both recognizing opportunities and acquiring resources are important, and the former benefits from networks that are rich in structural holes, while the latter is helped most by closure. Thus firms need both forms of network configuration. A sparse network benefits opportunity recognition in the handloom industry and once opportunities are recognized, other network characteristics, such as closure, come into play to exploit them. Additionally, strong ties play an important role in resource acquisition.

Among the human capital variables it was found that experience of the entrepreneur, seems to positively influence resource mobilization but seems to have a detrimental effect on opportunity recognition. By testing for the mediation effects, we found that more experience leads to higher levels of closure which in turn has detrimental effects on opportunity. Language on the other hand has a positive influence on opportunity recognition, meaning the more languages the entrepreneur speaks, the more opportunities he will be able to identify. Finally this paper concludes with arguments on why our findings can be generalized to other craft industries as well.

2. Introduction

The importance of small enterprises in rural areas in emerging economies is recognized by many researchers and practitioners (Van Dijk, 2000). In a country like India, where about 70% of the people live in rural areas, non-farm enterprises are an important element in the country's ability to absorb potential excess to farm labor (Lanjouw and Lanjouw, 2001).

Compared to the number of non-farm studies that focus on either the macro-level (i.e. the industry) or on the intermediate level (i.e. along the sub sector or 'economic spheres'),[1] there are fewer studies that examine the level of the individual firm. Prominent among the firm level studies within the developing country content, is the study conducted by Long (1977 pg. 123). Based on Geertz (1963), Cohen (1969), Mines (1972) and Long (1968), Long identifies rural entrepreneur in any single area to be similar in their socio-economic conditions, hence, differential performance of rural entrepreneurs can be attributed to interpersonal networks. He formalizes his arguments by developing an "actor-oriented approach" and uses this approach to investigate the networks of marketing and transport entrepreneurs in the Peruvian Highlands. He finds that network structure (i.e. geographical and social span) and content (i.e. types of transactions effected between entrepreneurs) are important to the entrepreneurs in question.

A number of studies have followed in Long's footsteps (Altaf, 1983; Broehl, 1978; Owens, 1973; Owens and Nandy, 1978; Upadhya, 1997) and confirmed his findings, specifically with regard to the importance of social networks to small entrepreneurs in developing countries. Recent developments in entrepreneurship studies, especially those that adopt a network approach, provide a framework to further understand the ways small entrepreneurs in rural areas of emerging economies use their networks in their business activities (Honig, 1998; Mueller and Thomas, 2000).

Entrepreneurship as an academic field is gaining importance, as researchers try to understand why some people succeed to discover opportunities while others do not, and how these discovered opportunities are evaluated and exploited. New opportunities may involve introducing new goods and services, exploring new markets, developing new production processes and/or combining raw materials in new ways (Venkataraman, 1997; Shane and Venkataraman, 2000). In recent times, the network perspective, which investigates how the connections between entrepreneurs and their social contacts facilitate or constrain their businesses, has become a dominant concept in explaining the phenomenon of entrepreneurship (Johanisson, 2000).

Within the network perspective, there is a group of scholars who support the idea that being part of a network where all the network members know most of the other members is beneficial to an entrepreneur (Coleman, 1988). Another group of scholars (Granovetter, 1977, 1983; Burt, 1992, 2000) argue that, because information regarding opportunities and resources is distributed unevenly throughout society, if an entrepreneur is to identify opportunities, he or she will have to reach out to different parts of society; weak ties provide bridging opportunities that enable entrepreneurs to go beyond their immediate network. This school of thought argues, consequently, that weak ties, in combination with sparse networks, are beneficial to entrepreneurs.

Recent studies, however, indicate that neither sparse nor closed networks by themselves offer the optimum solution (Rowley et al., 2000; Elfring and Hulsink, 2003). The authors of these studies indicate that it is important to have the right mix of strong and weak ties, and of dense and sparse network elements. This mix is contingent upon various aspects, such as the industrial, technological and environmental conditions that surround the industry. In addition to these aspects, we would add the purpose or objective of the network (Ahuja, 2000) as another contingency factor, by drawing a distinction between the mobilization of

[1] Exploration of the sub-sectors started in the 1980s with the publication of Boomgard et al. (1983); while the concept of economic spheres was popular in the 1970s after the publication of Barth (1967).

resources and the recognition of opportunities. By distinguishing these two entrepreneurial processes we address the challenge posed by Sorenson and Stuart (2005) to disentangle the network effects with regard to opportunity recognition from the network consequences for the mobilization of resources. This distinction enables us to improve our understanding of the underlying mechanisms of network effects concerning the functioning of entrepreneurial firms.

Successful entrepreneurship involves more than being part of a good network. To be successful, entrepreneurs will have to put their network to use. In other words, they will have to scan the information that is coming in, identify opportunities and then look for any resources that are beyond their control. This is where human capital (i.e. experience, skills and intelligence) comes into play. Consequently, the first research question we address in this study is the following:

> In what ways does the human and social capital of entrepreneurs have a direct effect on their ability to recognize opportunities and mobilize resources?

Furthermore, this study indicates that neither social nor human capital in isolation can completely explain how entrepreneurs identify opportunities (Ardichvili et al., 2003). We explore an intervening relationship between human and social capital. Specifically, we look at how social capital mediates between human capital and the dependent variables. The second research question this paper addresses is the following:

> How does social capital mediate between human capital and the dependent variables: opportunity recognition and resource mobilization?

The handloom industry provides a suitable setting to study networks and entrepreneurship. To begin with, it is the largest non-agricultural employer in rural India, which has survived by developing marketing networks across the country. It has survived because the entrepreneurs in this industry have been able to bring out the strengths of the industry – to produce market-oriented products in small numbers rapidly – and survive in the open market, along with the mill industry. Entrepreneurs who operate in this industry use archaic hand-operated looms to produce traditional textiles. Production takes place entirely in rural areas and, unlike many other rural industries, the handloom markets are distributed across the country, and some products are exported as well. The prime movers in the industry are entrepreneurs called 'master weavers',[2] who raise money in the informal banking systems and organize their production based on what the markets demand. Each master weaver provides the raw material and designs to a set of weavers, who produce the textiles and are paid accordingly. The master weavers then deliver the products to their clients (textile retail outlets distributed across the country) who sell them on to the end-customers. With close to twelve million people employed in the industry, the handloom industry is a contentious issue, as both central and state governments have for decades supported the weavers' cooperatives.

Both the government and non government organizations have supported the cooperative movement in an attempt to counter the exploitative tendencies of the master weavers. Although large amounts of money have been spent on this counter-offensive, the master weavers still control about 75% of the handloom production. Our focus is not on the power relationship between master weavers and their weavers, as significant research has been conducted in that area. However, fewer studies have attempted to understand how these entrepreneurs are able to produce their products and market them successfully in the very markets where cooperatives are failing (Mukund and Shyamasundari, 2000).

Our study allows us to connect the network theory of entrepreneurship to studies that focus on small enterprise development (i.e. informal sector studies and cluster development), economic anthropology and specifically on the handloom industry. As such, the first contribution of this paper is to extend the network theory of entrepreneurship that has been developed in Western social and cultural environments or in high-technology sections of developing countries to include low technology Indian handloom industry. Our findings may be applied to craft-based industries in general, since they all need to satisfy highly differentiated conditions and mobilize resources locally (McAuley and Fillis, 2005; Paige and Littrell, 2002). Secondly, disentangling resource mobilization from opportunity recognition as a contingency factor of network effects has enabled us to explain our finding that both closure (and strong ties) and structural holes are required. Closure and strong ties satisfy the need for resources locally, while structural holes have proved to be crucial when it comes to recognizing opportunities in other communities. Thirdly, we show how the effect human capital has on resource mobilization and opportunity recognition is mediated by social capital.

3. Social networks and entrepreneurship

The important role played by social networks in the process of new venture creation was first studied by Birley (1985), who found that informal ties (i.e. family and friends) appear to play a more significant role than formal ties (i.e. banks, accountants, etc.) when it comes to making resources available.

Following Birley, Aldrich and Zimmer (1986) argue that entrepreneurship is "embedded in networks of continuing social relations. Within complex networks of relationships, entrepreneurship is facilitated or constrained by linkages between aspiring entrepreneurs, resources and opportunities" (pg 8).

[2] The other prime mover is the weavers' cooperatives. For various reasons, including charges of exploitation, the government encouraged the weavers to move away from the master weavers and create their own cooperatives. However, because of the large amounts of money being channelled into the cooperatives, the government controls both production and sales. Although the government has spent millions of rupees, the cooperative sector at no point in time included more than 20% of the weavers, since support from cooperatives has been sporadic and limited.

In line with Gulati (1998), our study into social networks consists of relational and structural components. Relational embeddedness categorizes the relationships within the social network of entrepreneurs as either *strong* or *weak*. Structural embeddedness identifies the structure of the social network as either *dense* or *sparse*. In the following section, we present a brief outline of the salient points in the above-mentioned debate.

3.1. Entrepreneurship and structural embeddedness

Generally speaking, studies that investigate the relationship between the structural dimension of network embeddedness and firm performance have taken two routes, one of which is based on the notion that dense networks are advantageous to firms (Coleman, 1988), while the other holds that it is sparse networks that are beneficial to firms. A network is said to be completely redundant or closed when all its members know each other (Burt, 2000). Within a closed network, a dense group of actors that known each other for a relatively long time and interact frequently provides a number of benefits to the actors involved. Firstly, information is transmitted quickly to all the group members, which helps save valuable time and energy. Secondly, in a closed network, the values of the group are clearly, although often implicitly, defined, which in turn ensures a higher level of trust and reciprocity between the members of the network. This ensures that opportunistic behavior is dealt with quickly and effectively through appropriate sanctions. Coleman (1988) argues that, as a result, closed social networks offer a mechanism by which economic transactions are lubricated, which warrants smooth and fair interactions within a minimal regulatory framework. In addition, closed networks stimulate continuity (Steier and Greenwood, 2000), for instance, in situations where one member of a group stops interacting with other members, a network does not need to become fragmented because someone else can fill the gap.

Compared to closed networks, networks where there are few contacts between the various members are said to be less redundant (Burt, 1992). To identify the benefits contained in a non-redundant network, Burt uses the term 'structural hole' to capture the existence of gaps in people's social structures. The existence of a structural hole between two groups does not mean that the people in the groups involved are unaware of each another. It merely means that they focus on their own activities to such an extent that they do not pay much attention to the activities of people in the other group. Burt also suggests that firms that are embedded in sparsely connected networks, i.e. firms that have many structural holes, will enjoy advantages with regard to efficiency and brokerage based on their ability to facilitate the exchange of non-redundant information. The benefits of having a network rich in structural holes are access, timing and referrals. A network with many structural holes will have access to more sources of new information, which will increase the likelihood of receiving information that can be put to use. In addition, it is important for the timing of information to be right, in the sense that entrepreneurs have access to new opportunities before others do. Since entrepreneurs cannot possibly be everywhere, their contacts can make sure that they are at the right place at the right time.

3.2. Entrepreneurship and relational embeddedness

Broadly speaking, the relationships that people develop can be classified into either strong or weak. Strong ties result out of longstanding and frequent interactions between the parties involved. The time and effort the various parties invest in such a relationship are likely to ensure a strong degree of trust and reciprocity. Vice versa, weak ties are more transient in nature and do not require much effort to maintain.

Compared to weak ties, strong ties are reliable contacts that produce three benefits for entrepreneurs: trust (Uzzi, 1997), predictability (Uzzi, 1997) and voice (Aldrich et al., 1997), all of which lubricate the economic transactions of a venture and increase its chances of survival and growth. Trust ensures that the parties involved in an exchange relationship to behave in a predictable manner and not shun their responsibilities. Such behavior is important to smoothen the exchange of goods and services which in turn is mostly initiated based on promises rather than legal contracts. Voice, on the other hand, is important when problems emerge in the exchange relationships. Strong ties ensure problems that are conveyed and overcome, while when the ties are weak, partners are likely to terminate the business relationship. Strong ties enable the transfer of complex information, because people know each other well and are familiar with each other's interests (Hansen, 1997), which makes the transfer of information less puzzling. Along similar lines, Uzzi (1996, 1997) and Larson (1992) argue that strong ties provide fine-grained knowledge that promotes trust and inter-firm understanding. Fine-grained information does not contain noise, which means that the recipient can immediately put it to use without having to verify its validity.

Weak ties, on the other hand, are temporary in nature and involve parties who do not invest time and effort into maintaining these ties, which consequently have little emotional content. Contrary to what one might intuitively expect, weak ties do offer benefits to entrepreneurs. Granovetter (1977, 1983) referred to this phenomenon as the 'strength of weak tie'. He suggests that weak ties can lead to information that strong ties cannot provide and that, as a result, that information is likely to be new in nature. The 'strength of weak tie' hypothesis is based on the principle that strong ties usually involve a dense cluster of actors who are all mutually connected, which means that much of the information circulating within this social system is redundant. Weak ties, on the other hand, are often links with actors who move in social circles other than those in which the focal actor operates. Weak ties facilitate the discovery of opportunities, because they serve as bridges to new and different information (Granovetter, 1983; McEvily and Zaheer, 1999).

Recently, researchers have argued that it is important to have the right 'mix' of strong and weak ties, a mix that is contingent on a number of aspects, such as the industrial, technological and environmental conditions surrounding an industry (Rowley et al., 2000; Elfring and Hulsink, 2003). These authors argue that it is important to know the conditions under which different network elements lead to specific benefits.

4. The Indian handloom industry

The Indian handloom industry primarily produces material for traditional garments for women. In addition, it also produces upholstery, fabric, towels, handkerchiefs, etc in smaller quantities.Mukund and Shyamasundari (2000) explain that the handloom market has never been homogenous in nature, but that it has traditionally been divided into two distinct segments: the isolated lower-end local markets that are supplied by local weavers and markets that cater to the upper classes, who demand fabrics from all over the country.

To facilitate the movement of the products from the production areas to these high-end markets, market intermediaries, known as master weavers, became necessary. Normally speaking, the role of a market intermediary involves organizing production and supplying the output to meet market demand. They also transmit information about specific design requirements to the production area, which enables them to cater to the fashion requirements of the markets. Since handloom is a caste-based industry, most of the fabric producers and market intermediaries belong to the same 'Padmasali' caste.

Fig. 1 indicates that, from the purchase of yarn up to the delivery of the final product, most of the management is in the hands of the master weaver, whose clients are the textile stores in various urban and semi-urban areas, and it is through these clients that the products reach the end-customers. The master weaver's involvement can be divided into two separate areas of operation, namely production and marketing.

Production involves managing the raw material and labor to manufacture final products. Typically, a master weaver receives about two weeks' credit for his raw material, which in this case is mainly the yarn. A master weaver may purchase the dyed yarn from the supplier or, if his production is sizeable or he requires a specific color, he may have it dyed according to his requirements and supply the final product to the weaver. Some pre-loom activities are predominantly carried out by the women and children in the weaver's household. The weaver then starts to weave the cloth according to the design requirements of the master weaver. He does so either at home or in a small workshop where hired weavers come and work. On average, a master weaver has close to fifty weavers working for him. More often than not, these weavers are distributed over a wide geographical area. To coordinate production, a master weaver either hires employees or uses the services of his male family members (sons, nephews and brothers-in-law).

Once the master weaver receives the woven cloth from the weavers, he has to market the cloth. He usually has a set of clients (i.e. owners of retail stores who sell the products to the end-customers) in various parts of the country. Clients who purchase regularly obtain products on credit, while others, who purchase occasionally, have to pay in cash. The master weaver or a member of his family visits each client at least once a month, for two reasons: to market the products and to recover credit. Usually, each client is given a credit period of one month. Since the master weaver is dependent on his clients to sell his products, most clients do not repay on time, which means that, in order to recover his credit, a master weaver has to make several trips. In addition, he needs to recover the credit he has provided to his weavers to make sure he has enough cash to fund his next business cycle. Less cash would mean that either his supplier or his weaver receives less money than the amount to which they are entitled. Considering the cyclical nature of handloom sales, a master weaver has the upper hand during the high season (during festivals and the marriage 7season), when he will receive his payments on time, while the client has the upper hand during the lean season (during monsoons) and receives more credit. As time progresses, and as cash cycles become both perfect and imperfect, a master weaver's operation becomes a set-up in which he continuously manipulates his clients, suppliers and weavers to ensure his business keeps running.

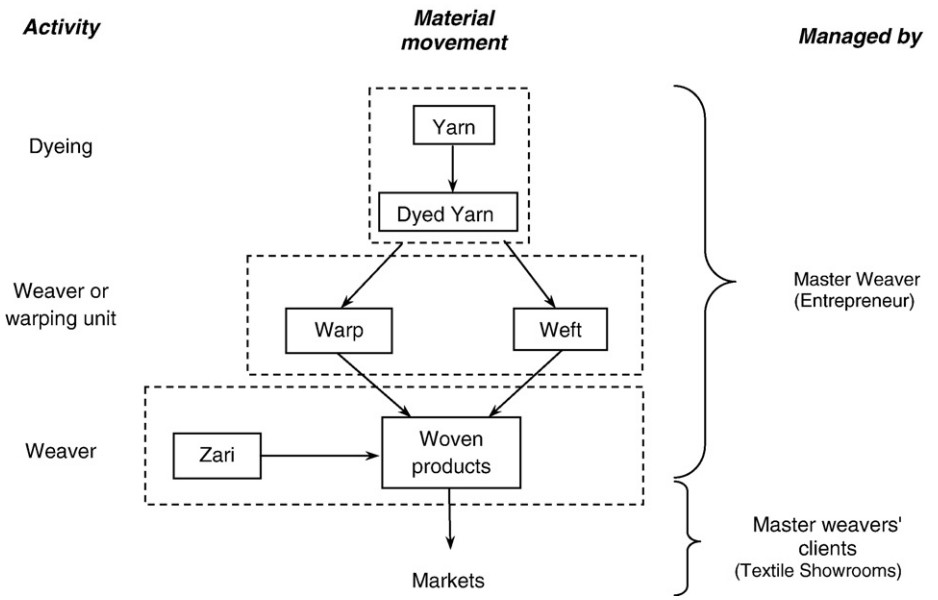

Fig. 1. The handloom industry's value chain and governance.

The second reason why master weavers visit their clients on a regular basis is to keep in touch with what the market wants. The end-customers come to the retail outlets and while shopping they indicate their preferences. This information is in turn collated and passed on to the master weaver at his next visit. This feedback channel is extremely crucial to ensure that the products are manufactured are in demand , or in other words marketable. Both retailers and master weavers depend mainly on these interactions to be successful. Even in the same geographical area, each retailer will have a different clientele, which in turn creates the various market segments that require different product ranges.

4.1. Opportunities in networks in the handloom industry

Casson (1982) defines entrepreneurial opportunities as opportunities to produce new goods, services, raw materials and organizational methods that allow outputs to be sold at prices that are above production costs. Based on this definition, there are two kinds of opportunities in the handloom industry: those that are market-based and those that are product-based. Market-based opportunities involve new clients who run retail outlets in urban areas. Product-based opportunities result from new raw materials or a new combination of the raw materials that makes it possible to generate new designs.

Opportunities in the handloom industry arise as follows. The dimensions of many of the products are standardized. The sari, for instance, is a rectangular piece of cloth that has predefined measurements (6 yards or 9 yards) and a set pattern (borders, the main body and one end that falls over the shoulder called *pallu*) consisting of several traditional or contemporary designs and motifs. Considering that saris have been woven for thousands of years, there are innumerable traditional motifs from which to choose. These motifs are woven into the sari with a gold, silver or copper thread (*zari*). In addition, due to the development of dyes and yarns, a sari can be produced in various different colors and textures. Taking this into consideration, there are countless varieties of saris that can be designed and produced. Since most women want saris that are different from the ones they already have, a master weaver will have to keep changing his products if he is to stay in business. For a transaction to occur between the parties involved (the master weaver and the retail outlets, and or the retail outlets and the end-customers) price is the only indicator that takes the aesthetics, raw material and labor costs into account. We will discuss this topic later in this paper.

4.2. Networks and opportunity recognition

Kirzner (1997) has argued that market information is distributed unevenly throughout society, which creates situations where some entrepreneurs have access to information, while some others do not (Coorper et al., 1995), which in turn could be why some entrepreneurs identify opportunities and other do not. While weak ties, on the one hand, are temporary in nature and involve parties who do not invest time and effort into maintaining these ties, on the other hand, they often link entrepreneurs to actors who move in social circles other than the focal actor's circle. This enables the entrepreneur to receive novel information from different levels of society. Consequently, weak ties can be seen as bridges to new and different information (Granovetter, 1983; McEvily and Zaheer, 1999) that give entrepreneurs a better chance of recognizing opportunities (Hill et al., 1997, Singh et al., 1999).

Master weavers continuously have to update their knowledge of markets and customer preferences. In the handloom industry, like in many craft-based industries, it is important to balance creativity and customer requirements. As Lampel et al. (2000) explain, in these kinds of industries, consumers need to be familiar with the products, but at the same time they want to be surprised by something new. While a master weaver may know with what his end-customers are familiar, he needs the help of his clients (i.e. retail store owners) to know what is new because, unlike many crafts where the producers sell directly to the end-customers, in handloom, the end-customers make purchases through the stores.

It is important for master weavers to receive information from various stores across the country if they are to increase their chances of finding the right combination of colors, patterns and designs to which their competitors do not have access, to produce a highly marketable sari. As Burt (1992) explains, entrepreneurs with networks rich in structural holes not only receive more information, they can also control more rewarding opportunities. Not only does a master weaver get his information from his network contacts, he is also looking continuously for new combinations of designs and raw material to identify successful textile patterns. It is this alertness that enables him to span and bridge structural holes "to disconnected parts of the markets where it is valuable to do so" (Burt, 2000). This brings us to the first set of hypotheses.

H1. The higher the number of structural holes a master weaver's social network contains, the higher the number of opportunities he will identify

H2. The higher the number of weak ties a master weaver possesses, the higher the number of opportunities will identify

The benefits entrepreneurs receive due to their strong ties and close networks are trust (Coleman, 1988), voice (Aldrich et al., 1997) and fine-tuned information (Uzzi, 1997). Each of these benefits can potentially lead to opportunities. First of all, in addition to dampening opportunistic behavior, trust is an important element of a referral process. It is not possible for a person always to be physically present when potential opportunities arise, but entrepreneurs can still have access to opportunities if other people mention their name. Another important element in this referral process is the knowledge that the people who are present have of an entrepreneur's capabilities. Strong ties, due to a combination of the duration, intensity and frequency of interactions, are in a better position to know what these capabilities are, and they are likely to provide entrepreneurs with direct access to potential opportunities. Secondly, in the course of business interactions, it is likely that the business partners experience problems with a product or service. According to Aldrich et al. (1997), strong ties will provide the partners with an opportunity to 'voice' their discomfort and create

problem-solving arrangements (Larson and Starr, 1993), rather than terminating the relationship and looking for a new partner. Depending on the level of discomfort, solving these problems also can lead to an opportunity to develop a new service or product (Ramachandran, 2003). Finally, as Uzzi (1997) argues, entrepreneurs during their course of business activity constantly stumble on information that they may or may not put to use. In cases when they are not interested, they are likely to provide this information to their strong ties, who can then put it to use. This brings us to a set of hypotheses that presents an alternative to the previous set.

H1a. The more closed a master weaver's social network is (i.e. the lower the number of structural holes), the more opportunities he will identify.

H2a. The higher the number of strong ties a master weaver possesses, the more opportunities he will identify.

4.3. Networks and resource mobilization

Birley (1985) and Zimmer and Aldrich (1987) have shown that entrepreneurs look for financial and other kinds of support from close friends and family. Birley has found that, when it comes to finance, entrepreneurs will have to rely on their family, especially at the start of their venture. In addition, in a country like India, loans are provided either against collateral or against audited cash flow statements. Master weavers in rural areas are at a disadvantage, as they tend to operate on a very informal basis. The only other source of finance to which they have access is the informal financial market. From a resource dependency perspective, an entrepreneur will be successful when he obtains access to and makes use of the resources that he needs. In this setting, "asset parsimony", a term introduced by Ansoff (1979) that refers to the effort needed to acquire the minimum quantity of assets at the lowest possible cost, can be a strategy to achieve a competitive advantage (Starr and MacMillan, 1990; Jessen, 2001; Jenssen and Greve, 2002). Rather than paying the market price for resources such as labor, materials, advice through arm's length contact, Elfring and Hulsink (2003) argue that social transactions through network ties can play an important role in acquiring resources at lower values.

Strong ties will be more highly motivated to help an entrepreneur than his weak ties will. Also, if a raw material trader wants to issue credit to other master weavers, he would naturally choose to issue it to people who he is sure will demonstrate reasonable levels of business performance, and who will be responsible enough not to look for opportune moments to either defer or completely renege on credit repayments. In the Indian handloom industry, strong ties are ties in which a master weaver has invested time and energy into maintaining these ties. In addition, most ties have lasted more than ten years. It is also likely that a master weaver with more strong ties has been interacting with the same set of raw material suppliers, which would enable him to secure more resources. The following set of hypotheses test whether master weavers who are embedded in close networks and have more strong ties are able secure more resources.

H3. The more closed a master weaver's social network is, the more resources he obtains.

H4. The higher the number of strong ties a master weaver possesses, the more resources he obtains.

4.4. Human capital

Human capital is another important variable that has an influence on opportunity recognition (Dimov and Shepard, 2005). Human capital is an entrepreneur's knowledge, which he could have acquired through education, experience or both. Yu (2001) argues that, for mainstream economists, the argument that "everyone is surrounded by opportunities, but they only exist once they have been seen", is a paradox. However, by adopting a subjective perspective, Yu explains that an entrepreneur's mental construct plays a central role in the process of opportunity identification, and that it is not the knowledge itself, but the way people apply knowledge, that is crucial in recognizing opportunities. For an entrepreneur to benefit from an opportunity, he or she must discover that it has a value (Baron, 1998).

Shaver and Scott (1991) argue that people who are better able to look for and process information are more likely to be successful at opportunity recognition than other people. Shane (2000) poses the question why some people discover opportunities and others do not. He argues that people have different stocks of information and everyone acquires information depending on how they live. This plays a vital role in transforming incoming information into potential sources of opportunities, which brings us to the next set of hypotheses:

H5. The higher the amount of human capital a master weaver possesses, the more opportunities he will identify.

H6. The higher the amount of human capital a master weaver possesses, the more resources he obtains.

4.5. Mediating effects

Ardichvili et al. (2003) lists five factors that are crucial to opportunity recognition: entrepreneurial alertness, information asymmetry and prior knowledge, social networks, personality traits and the type of opportunity itself. They argue that these factors interact with each other to result in opportunity recognition. One of the interactions they mention is that of prior knowledge influencing social networks, which in turn influence entrepreneurial alertness and finally lead to the core process of opportunity recognition. Oh et al. (2004) have explored the possibilities of social capital in the form of network ties and the way its effects are mediated by human capital in the form of local language ability. In a country like India, where a different language is spoken in each state, speaking several languages is undoubtedly an advantage for a master weaver, because it will enable him to

approach clients/suppliers from a larger geographical area. This would imply that master weavers who speak several languages will have better social capital and, as a result, they will be able to identify more opportunities and mobilize more resources.

Similarly, if a master weaver has better weaving or designing skills than others, he can demonstrate his skills and enter into an economic relationship with potential clients who own bigger and more prestigious retail establishments. Customers who frequent such establishments have a higher socio-economic status, which means their demands will be different. The information a master weaver will in turn receive from such establishments will be different and the demand for higher valued products will increase. For instance, a large showroom advertised that they made a sari with small checks and each check was of a different color, resulting in a staggering 55,000 unique colors. Customers can come and place orders for a specific shade of color. The product is manufactured by weavers who are able to translate the idea of producing such a Sari into action, and the opportunities that will open up from this experiment will be manifold. Another showroom came up with a reversible sari with a different color on each side. In other words, customers purchase two saris for the price of one. Again, weavers who are part of this experiment have access to a wider range of opportunities. The opportunities that the weavers identify in these cases are not due to human capital but from the social capital that results from this human capital.

This suggests that higher levels of human capital will lead to higher levels of social capital (in the form of friends, family, suppliers and clients), which in turn can influence the dependent variables. The hypotheses we will test in this regard are the following:

H7. Social capital plays a mediating role between human capital and resource mobilization.

H8. Social capital plays a mediating role between human capital and opportunity recognition.

3.6. Research framework

Based on the arguments presented above, the research framework for this study is presented in Fig. 2.

5. Research methods

The data we used in this study were collected in Andhra Pradesh, a state located in the south of India that is among the top four states in the country in terms of handloom production. We have used both qualitative and quantitative methods to generate data. Such methods allow for research to be conducted in areas where little work has previously been done (Hong and Antoncic, 2003). The qualitative study enabled us to understand the industry, while the quantitative study enabled us to test the competing theories. The qualitative part of our data collection consisted of semi-structured interviews with twenty master weavers in five locations (Mangalagiri, Chirala, Pochampalli, Gadwal and Uppada), which helped us gain an understanding of the handloom industry. We used the information obtained from the qualitative research to develop a questionnaire.

Quantitative data were collected using a survey containing questions focusing on the various aspects of a master weaver's operation and details of his social network. We adopted a two-level approach in developing the questionnaire. In the first part, the pre-testing phase, the questionnaire was based on the available literature and also included a list of themes that are prominent and relevant to master weavers in the handloom industry. The questionnaire was developed immediately after the initial interviews were completed. Qualitative interviews were also used to test the questionnaire. In the testing phase, we specifically wanted to find out whether or not the master weavers understood the questions as we intended them, and whether or not they could answer the questions without any difficulty.

The final questionnaire was prepared after several changes were made to the initial questionnaire. Initially, the questionnaire was in English and was filled out by asking the questions. The final questionnaire was in Telugu, which was then administered at four locations, namely Mangalagiri, Chirala, Gadwal and Pochampalli. Uppada was excluded, because there were too few master weavers in that area.

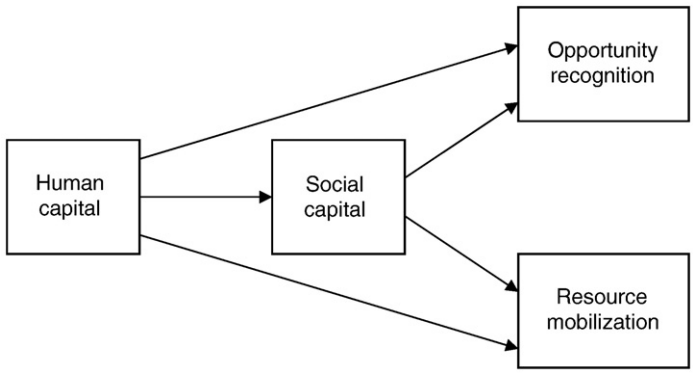

Fig. 2. Framework for studying opportunity recognition and resource mobilization with regard to master weavers in the handloom industry.

In light of the fact that master weavers are not used to responding to questionnaires sent through the mail, we decided to visit each of the master weavers in person. The questionnaire was filled in by the research assistant during a personal interview. The master weavers were given the questionnaire at the start of the interview, to give them an idea of the questions before the actual interview started, to ensure that they would not become impatient. The respondents who took part in the trial sets were visited subsequently to answers questions we included in the final questionnaire. More often than not, the questionnaire was filled in over multiple sessions. A total of 107 questionnaires were completed.

According to Babbie (2004, pp 263), adopting such an *interview survey* has a number of advantages. First of all, the response rate is relatively high. Because we made several trips, our response rate was close to 100%. More importantly, this method reduces the number of "don't know" answers. Additional benefits include the possibility to clarify confusing questions, which makes sure the answers are relevant. In our case, the most important part of the questionnaire focuses on the master weavers' networks and the relationship between their various alters. It was in this section that the advantage of having an interviewer fill in the answers was most evident. It may have been virtually impossible to obtain information from master weavers in any other way, because they would only answer our questions after they asked sufficient questions to assess how genuine the person talking to them was.

5.1. Generating network data

In this study, we are interested in understanding the networks of the individual master weavers, which are also known as 'ego-networks'. *Ego* is the person whose network is solicited, while the *alters* are his contacts. The best known and most widely used instrument to collect ego-oriented network data in social surveys was first administered in the 1985 General Social Survey (GSS) (Bailey and Marsden, 1999). GSS is a nationwide survey aimed at understanding the personal networks of American citizens. The instrument is centered on a "name generator", which, when administered, generates the respondent's social network. Central to this name generator instrument is the question:

> From time to time, most people discuss important matters with other people. Looking back over the last six months — who are the people with whom you discussed an important personal matter?

This question is followed by 'name interpreter' items, which help the researcher gain a deeper understanding of the characteristics of the respondent's alters and the type of relationships they have. Furthermore, questions are asked about the respondent's perception of the relationships between the various pairs of alters (Bailey and Marsden, 1999).

In light of the ease with which the name generator could be used in the area we investigated, we adopted it to generate the network data. Firstly, in line with Bailey and Marsden, the most important business-related issues for a master weaver were identified through a qualitative study. The issues that are important to a master weaver are creating new designs, servicing existing clients (i.e. existing markets), looking for new clients (i.e. new markets), acquiring and managing raw material, labor and finance. We used a name generator for each of these issues. The advantage of having these issues presented in a list is that they help respondents remember the alters. As some researchers (Van der Poel, 1993) have stated, this method provides a better coverage of the ego's core network and increases the reliability of the data (Burt, 1983). In line with Marsden (1993, p. 400), we used three types of name interpreter items: 1) the attributes of alters, like age and caste 2) dyadic features of the relationship between ego and alter, for instance the intensity, duration and importance 3) characteristics of the relationships between various alters (friend, business acquaintance or relative).

6. Operationalization

In this section, we discuss how each of the constructs of the theoretical framework has been operationalized. Following several network constructs, we discuss the remaining constructs: human capital, resources, opportunities and performance in relation to the research domain — the handloom industry.

6.1. Network variables

The network variables we use in this study are network size, network density, average tie strength and network constraint. Network size, which is added as a control variable, is the total number of alters (either weak or strong) to which a master weaver is connected. It is measured simply by counting the unique relationships of the master weaver (referred to as alters). Network density is the total number of relationships between the master weaver and his unique alters, divided by the total number of potential ties that are theoretically possible between an ego and his alters (Burt, 1983). Network constraint indicates the extent to which a master weaver is constrained by the structure of the network involving his alters (Burt, 1992). The lower its value, the more structural holes the ego's network contains. In Burt's terms, fewer the number of ties between an ego's contacts, the more advantageous is the ego's network.

To measure tie strength, the duration, frequency and intimacy of each master weaver's alter were coded to create a dichotomous variable for each variable.[3] These variables were subsequently added to create an indicator for the strength of the tie

[3] Duration was coded as 1 if more than 10 years and 0 otherwise. Frequency was coded as 1 when ego and alter meet weekly and 0 if they meet less frequently. Finally, caste, which serves as a proxy for intimacy, was coded as 1 if both ego and alter were of the same caste, and 0 when they were not.

for each alter. The average tie strength of all alters is measured by adding the value of the tie strength of all the alters and dividing the result by the number of alters of a particular master weaver.

6.2. Opportunity recognition

Davidson and Honig (2003) explain that there is no way one can possibly know or sample from a universe of as yet undiscovered entrepreneurial opportunities. Therefore, a researcher has to develop indirect methods to measure opportunity recognition. As mentioned earlier, the main products in the handloom industry are the 'sari' and 'dress material'. As said, identifying the price is a source of opportunity recognition.

The handloom as an industry has survived by producing wide range of products that can find favour with wide range of customer requirements. In most cases, a master weaver will receive the customers' requirements through his clients and suppliers. Even then, he cannot be sure that all products will be sold. In this case, every product can be assumed to be unique, which means that it constitutes a different set of opportunities. Consequently, in this study we have *assumed that saris or dress material of different designs are different products* because they require a different set of inputs in terms of raw materials, weaving techniques and designs.[4] As we argued in section on opportunity, price could be a good indicator of the discovery of opportunities. In addition, we draw upon a typical interaction in a retail showroom. Customers would normally ask to be shown different saris in some specific price ranges. Alternatively, when a customer only comes in to purchase saris, the sales person normally responds by asking the price range. The customer will examine the whole range, which at times may be dozens of different varieties. If the right product is not found, she may visit another store. It is only after many such interactions that it becomes clear whether saris with new designs in a specific price range are accepted by the market.

Similarly, when the showroom owners meet the master weaver, they are also interested in looking at product classes that are divided on the basis of their prices. In addition, they want a large variety of products in the same price range, as the chances of the product being sold depend on the variety. Taking this into account, price is not just an indicator of the costs of the materials that were used in manufacturing a particular product, but also of what the market is willing to pay (the price as a quality index), which means it is a valuable indicator of opportunities in the handloom industry.

Master weavers will be reluctant to keep changing from one set of designs to another, because that will take up their valuable time in terms of extensive pre-loom activities as well as weaving, which requires different time inputs. This is not a problem when customers pay a sufficiently high price for a product. In normal markets, however, due to competition, showroom owners want new products, but at the same time they are reluctant to pay the associated expenses. Ultimately, it is a matter of negotiation between clients, master weavers and weavers as to who will bear the costs of changing the designs Also, there will be negotiations between the store owners and the master weavers regarding the credit period. Any period longer than what is customary would make the master weaver ask for a slightly higher price in compensation. This again creates a situation where there are price negotiations. In either case, price variation lies between 5% and 7%.[5] Master weavers want to continue producing a particular kind of product as long as possible with as little variation as possible, and only change the colors. We have applied these preferences to our study by taking the price of the most popular product as another indicator for opportunity recognition.

However, a master weaver cannot survive by producing one type of sari alone. To ensure some variation in his production he will also have to manufacture products that are either grander or simpler than this most popular product. This means that production costs can be higher or lower than those of the most popular product. Rather than trying to capture the entire product range we have taken the maximum range, defined as the difference between the most expensive and the cheapest products. Our assumption is that this range captures the entire spectrum of the products manufactured by a particular master weaver.

While the above-mentioned two measures capture the product diversity, another variable, 'new clients on credit' is assumed to indicate new markets that are to an extent secure. Although there may be any number of arm's-length buyers, when buyers start making repeat purchases, a master weaver may decide to extend a line of credit, after which the interactions between the parties reach a new level, as the master weaver may include the preferences of a particular client into his future product range or try to push a product range that he has not managed to sell in his existing markets through this new client. Because this client is most likely from a different geographical area, we have identified him as a new market source.[6]

A principal component analysis shows that these three variables (price of most popular product, range and number of clients on credit) together form a single component that explains about 60% of the variance in the three variables. The factor scores have been included in the regression models as the variable 'opportunity recognition'.

6.3. Resource mobilization

The handloom industry is quite unique in the sense that it is a rural industry with markets all over the world. Because of the number of people it provides employment for, the Indian government does not tax the industry. Individuals who earn their living

[4] We have explored the possibilities of using raw materials or designs as a source of opportunities but we could not use the data in the analysis because there was little variation between the various entrepreneurs we interviewed.

[5] Such price negotiations are not limited to India's handloom industry. In the handloom weaving industry in Senegal, Dilley (2004) found out that price is negotiated between the stakeholders involved and that price fluctuations rarely exceed 5%.

[6] A master weaver will not attempt to seek multiple clients in the same geographical location, as these clients will be catering to the same market. An exception, however, could be large showrooms in the central business districts of large cities, because many different kinds of customers shop in these areas.

in this industry do not require a permit to set up a firm, nor are they required to file income tax papers. This means that there is very little bureaucratic interference. Furthermore, there is no technological superiority of one master weaver over another, since all products are made on manually operated looms (which in technological terms pre-date the industrial revolution). Some master weavers work on automated looms, which means they are part of the power-loom sector; where policies are completely different in India than those that apply to the manual weaving sector.

Since firms exist for different periods of time, we did not use start-up investments as a measure of resource mobilization. Instead, we used the average credit period a master weaver receives when he buys the raw material (i.e. yarn, dyes and zari) as a proxy for resource mobilization. If a master weaver is able to receive a longer credit period from his suppliers, he can produce more products because he has access to a bigger working capital, which in turn gives him the opportunity the potential to generate higher profits.

6.4. Human capital

Our qualitative studies revealed that experience in running a business is an important factor, as is knowledge about weaving and designing. Furthermore, it is advantageous for a master weaver to speak several languages, as this will allow him to reach markets in a wider area. Thus, the human capital variables used in this study are the number of languages a master weaver speaks, experience in number of years in any handloom-related activity (weaver, apprentice, raw material supply, finance, etc.) and weaving and designing skills, measured on a five point scale (Cronbach's alpha = .86).

6.5. Control variables

Considering that there are also other variables that may play an important role in the success of a firm, we selected the following control variables: a dummy (called "Fresh firm") was used to indicate whether a master weaver is a start-up entrepreneur or is a part of an existing family firm, "firm age in years" and the total number of people working for the master weaver, either directly or working on a contract basis (called "labor").

7. Results

The two regression models, resource mobilization and opportunity recognition, are each constructed in a three-stage process. The first stage contains the control variables, while the second stage contains control and human capital variables and the final stage contains control, human and social capital variables.

To analyze the indirect effects, we used the procedure suggested by Baron and Kenny (1986), who view a variable as a mediator when it accounts for the relationship between the predictor and the criterion variable, as shown in Fig. 3.

Variable M is considered to be a mediator if the following criteria are met: if independent variable X significantly predicts dependent variable Y (i.e. $c \neq 0$ in Fig. 3: step 1) and X significantly predicts M (i.e. $a \neq 0$: step 2), and M significantly predicts Y controlling for X (i.e. $b \neq 0$ and $c' < c$: step 3). To test the mediation effect statistically, it is possible to use the test devised by Sobel (1982), which tests the significance of the indirect effect of the mediator by testing the hypothesis of no difference between the direct effect (c) and the mediated effect (c′) (Preacher and Hayes, 2004).

Table 1 contains the means and standard deviations of the variables used in this study and the correlations between them. It becomes clear that, among the human capital-related variables, experience and skills correlate negatively with the number of languages spoken. Among the social capital-related variables we find the correlations we would expect. Constraint and density, for instance, correlate negatively, which means that the denser a network is, the more it tends to limits the entrepreneur in question (i.e. the fewer the number of structural holes). Both network variables correlate negatively with network size, which is a common finding. The larger a network is, the less dense it tends to be. We have found no relationship between tie strength and the other network variables.

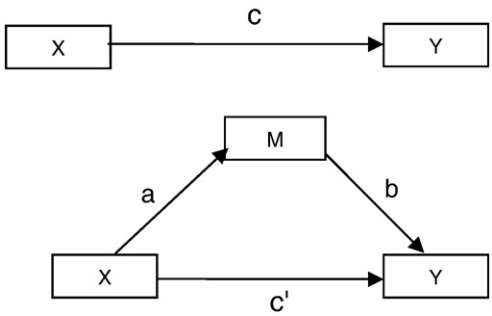

Fig. 3. Identifying mediation effects.

Table 1
Pearson correlations between the various variables used in the regression models.

		Mean	SD	1	2	3	4	5	6	7	8	9	10	11
1	Firm age	18.34	6.86											
2	Fresh firm	.64	.48	−.17*										
3	Labor	63.19	21.09	.040	.01									
4	Skills	3.68	1.02	.57***	−.11	.10								
5	Number of languages	2.29	1.067	−.29**	−.06	.17	−.19*							
6	Experience	6.72	4.967	.44***	−.05	.02	.71***	−.28**						
7	Network size	11.05	3.88	.09	−.02	.22*	−.03	.07	−.21*					
8	Density	.45	.17	−.06	.010	−.01	.03	.01	.07	−.28**				
9	Tie strength	2.10	.44	.39***	.06	.13	.18	−.21*	.23*	.067	.11			
10	Network constraint	.33	.12	.01	.13	−.08	−.02	−.21*	.17	−.50***	.41***	.17		
11	Resource mobilization	2.09	.85	−.02	.19	.13	−.22*	−.18	−.06	−.08	.18	.18	.35***	
12	Opportunity recognition	.00	1.000	.02	−.06	.09	.06	.39***	−.13	.08	−.15	−.14	−.34***	−.36***

*$p<.05$; **$p<.01$; ***$p<.001$.

Finally, resource mobilization correlates positively with network constraint and negatively with skills, while the other dependent variable, opportunity recognition, correlates positively with the number of languages spoken, and negatively with network constraint. When discussing the regression models, we will provide a deeper understanding of the results. Finally, opportunity recognition and resource mobilization are negatively correlated, which means that the better a master weaver is in recognizing opportunities, the more difficult he will find it to mobilize resources (and vice versa).

Table 2 contains the results of the regression analyses. As mentioned earlier, sub-models 1 through 3 are for resource mobilization, and sub-models 4 through 6 are for opportunity recognition. Models 1 and 4 contain only the control variables, models 2 and 5 the control variables and the human capital-related variables, while models 3 and 6 contain the control variables and the social capital-related variables.

7.1. Resource mobilization

Model 1 shows that two of the three control variables are statistically significant. Start-up firms are better in mobilizing resources than firms that are part of an existing family firm ($\beta = .21$, $p<.05$). Secondly, the higher the number of people working for a master weaver, the better he is in mobilizing resources ($\beta = .17$, $p<.10$). If we add the human capital-related variables (Model 2), we see that all three are significant predictors. As expected, experience has a positive influence on resource mobilization ($\beta = .40$, $p<.01$). What is not expected, however, are the negative effects of weaving and designing skills ($\beta = -.51$, $p<.001$) and number of languages spoken ($\beta = -.18$, $p<.10$). This means that the more experienced a master weaver is and the higher the number of languages he speaks, the less able he will be in mobilizing resources. We come back to this in the discussion.

The percentage of explained variance is 18.2. All in all, Hypothesis 6 is only partly confirmed by the data. Finally, adding the social capital-related variables to the basic model has the following results (see model 3). The control variable 'network size' has no effect. The two statistically significant variables are 'network constraint' and 'tie strength'. This implies, first of all, that the more

Table 2
Regression models with direct standardized regression coefficient of human and social capital on resource mobilization and opportunity recognition.

	Resource mobilization			Opportunity recognition		
	Model 1 (control model)	Model 2 (human capital)	Model 3 (social capital)	Model 4 (control model)	Model 5 (human capital)	Model 6 (social capital)
Fresh firm	.21*	.16+	.11	−.03	.02	−.01
Firm age	.03	.10	−.07	−.03	.03	−.01
Labor	.18+	.23*	.22*	.16	.10	.10
Experience		.40**			−.25*	
Skills		−.51***			.24+	
Number of languages		−.18+			.38***	
Network size			.01			−.11
Network density			.09			−.02
Tie strength			.20*			.01
Network const.			.43***			−.42**
R^2	.072	.235	.405	.026	.452	.174
Adj R^2	.041	.182	.352	−.01	.20	.103
F	2.3	4.4	7.7	.8	3.7	2.5
Sig.	.08	.001	.000	.50	.002	.024

+$p<.10$; *$p<.05$; **$p<.01$; ***$p<.001$.

constrained a master weaver's network is, the lower the number of structural holes and the stronger the ties, the better he is in mobilizing resources ($\beta = .43$, $p < .001$ and ($\beta = .20$, $p < .05$, respectively). This confirms Hypotheses 3 and 4.

7.2. Opportunity recognition

The results of the regression analyses regarding opportunity recognition are presented in models 4 through 6. Table 2 shows that the control variables (model 4) are not statistically significant. Model 5 adds the human capital-related variables. As expected, skills and the number of languages spoken are significant predictors of opportunity recognition ($\beta = .38$, $p < .001$ and ($\beta = .24$, $p < .10$). What is not expected is that the effect of experience is negative, which means that the more experienced a master weaver is, the less able he is when it comes to recognizing opportunities ($\beta = -.25$, $p < .05$). We come back to this unexpected result in the discussion. The human capital model partly confirms Hypothesis 5.

Finally, adding the social capital-related variables to the basic model yields only one significant result, namely network constraint. The less constrained a network is (i.e. the higher the number of structural holes there are) the better the master weaver is in recognizing opportunities ($\beta = -.42$, $p < .01$). This means that Hypothesis 1 rather than Hypothesis 1a is confirmed. Because the other variables, including the control variables and network size, have no impact on opportunity recognition, Hypotheses 2 and 2a are also rejected. The percentage of explained variance is only 10.3, which is considerably smaller than that of the human capital-related model (model 5).

7.3. Mediating effects

Earlier, we have argued that, if master weavers with greater access to human capital manage to identify more opportunities or are able to mobilize more resources than master weavers without the same access to human capital, this can be (partly) attributed to their social capital. To test this argument, we have several tests, to see whether the significant effect of the human capital-related variables on resource mobilization and opportunity recognition decreases or even disappears when social capital-related variables are added. If the effect of human capital decreases, this would confirm partial moderation, while, if it disappears completely, this suggests complete moderation.

The results are presented in Table 3. Model MR_A and OR_A test whether the human capital-related variables significantly predict resource mobilization and opportunity recognition, respectively. This is a first step in detecting a possible mediation effect. Since these two models have already been discussed and presented in models 2 and 5 of Table 2, we move immediately to step 2 of the mediation test, the prediction of the network variables by means of the human capital-related variables. Because, apart from network constraint, no network variable met the mediation requirements set by Baron and Kenny, we apply the mediation test only to network constraint.

With regard to the mediation effects of social capital, model RM_B and OR_B show that the human capital-related variables significantly predicts social capital. The more experienced a master weaver is, the more constrained his network will be, which therefore will contain fewer structural holes ($\beta = .34$, $p < .001$). Furthermore, the more skilled a master weaver is and the more languages he speaks, the less constrained his network will be ($\beta = -.44$, $p < .001$, and $\beta = -.27$ and $p < .001$, respectively). Model MR_C shows the effect of the human capital and network constraint on resource mobilization. The effects of experience and skills decrease, whereas the effect of the number of languages spoken vanishes. This suggests that network constraint indeed mediates the effect of human capital on resource mobilization (Hypothesis 7). These results are confirmed by the Sobel tests ($p < .05$ in all cases). Model OR_C, finally, shows that the effects of human capital on opportunity recognition almost disappear once network constraint is added. The effects of experience and skills disappear completely, whereas the effect of the number of languages spoken decreases slightly. This almost completely confirms Hypothesis 8.

To summarize, social capital plays an important role in mediating the effect of human capital on both resource mobilization and opportunity recognition. In the discussion, we look in greater detail at some of the unexpected results, such as the negative effect of skills on resource mobilization, and the opposite effects of network constraint on opportunity recognition (i.e. the higher the number of structural holes, the higher the number of opportunities being recognized) and resource mobilization (i.e. the higher the number of structural holes, the lower the number of resources being mobilized).

Table 3
Mediation models containing standardized regression coefficients.

	Resource mobilization (RM)			Opportunity recognition (OR)		
Name model	RM_A	RM_B	RM_C	OR_A	OR_B	OR_C
Dependent variable	RM (see path c in Fig. 3)	Network constraint (path a)	RM (path b, c′)	OR (path c)	Network constraint (path a)	OR (path b, c′)
Fresh firm	.16	.12	.11	.02	.12^{+}	.05
Firm age	.10	.11	.06	.03	.11	.06
Labor	.23*	−.02	.24**	.10	−.02	.09
Experience	.40***	.34***	.26*	−.25*	.34**	−.17
Skills	−.51***	−.44***	−.32*	.24^{+}	−.44**	.14
Number of languages	−.18^{+}	−.27***	−.07	.38**	−.27**	.31**
Network constraint			.43***			−.24*

$^{+}p < .10$; $^{*}p < .05$; $^{**}p < .01$; $^{***}p < .001$.

8. Discussion

The results of earlier studies on the effects of structural holes on the performance of organizations have not been conclusive. Some scholars report positive effects of structural holes on performance (Burt, 1992; McEvily and Zaheer, 1999), some (Ahuja, 2000; Xiao and Tsui, 2007) argue that they have a detrimental effect and some found no evidence (Batjargal, 2003). Our key contingency is the purpose of the networks and we link the contribution of particular network structures to two key entrepreneurial processes (Elfring and Hulsink, 2003), which are generally accepted to have a substantial impact on performance (Sorenson and Stuart, 2005). By focusing, on the one hand, on the acquisition of resources and, on the other hand, on the discovery of opportunities we have been able to reconcile the conflicting findings on the beneficial or detrimental effects of structural holes. We found that the number of structural holes has a positive effect on opportunity, but that it has a negative impact on an entrepreneur's ability to acquire resources. Thus, firms that operate in an environment that is rich in opportunities benefit more from structural holes, because these facilitate the recognition of opportunities, than firms that operate in a stable environment.

Because the purpose of networks for firms who operate in the latter environment has to do more with the acquisition of resources, we found that structural holes have a detrimental effect on resource acquisition. In this kind of environment, closure is more important. In fact, for most firms, both recognizing opportunities and acquiring resources are important, and the former benefits from networks that are rich in structural holes, while the latter is helped most by closure. Thus, we found firms need both at the same time. This contingency approach is also helpful in extending the insight provided by Soda et al. (2004) on the temporary advantage of structural holes. We have shown that these network benefits relate to opportunity recognition in the handloom industry and that, once opportunities are recognized, other network characteristics, such as closure and strong ties, come into play to exploit them.

Our study confirms the finding of another study (Bruderl and Preisendorfer, 1998) on the importance of strong ties in the mix of weak and strong ties. We add to existing studies by showing the mechanism that connects strong ties to a positive performance. Strong ties play a crucial role in the resource acquisition process, which is one of the key entrepreneurial processes affecting a firm's performance. The mobilization of tangible resources in the handloom sector in India (like yarn, dyes and zari) is a local phenomenon. Most resource providers either have outlets in their local area or visit master weavers frequently. In some cases, master weavers themselves could be the local agents for the resources. When this is the case, the resource providers and master weavers know each other through repeated interactions and local embeddedness and strong ties are necessary to gain access to the resources for longer credit periods.

Human capital such as experience, professional skills and language skills, has a direct and a mediated effect on the resource acquisition and opportunity recognition. We have found that master weavers with higher levels of experience can mobilize more resources. However, this experience has a detrimental effect on opportunity recognition. When we add the role of social capital, an interesting phenomenon emerges. The negative effect of experience on opportunity recognition is fully mediated by network constraint, implying that the direct effect of experience on opportunity recognition vanishes. Experience leads to higher levels network constraint or closure, while closure has a negative effect on opportunity recognition.

Increasing experience reinforces the tendency among entrepreneurs to work with similar others (Kim and Aldrich, 2005), thereby creating a closed network. This tendency is known in the literature as homophily (McPherson et al., 2001). We add to existing knowledge by drawing a distinction between two key entrepreneurial processes, which allows us to show that the homophily principle has unintended consequences when it comes to opportunity recognition. Thus, the formation of a 'strategic network' by entrepreneurs with growing experience implies a need for them to break away from their tendency to socialize with similar others and to get in touch with people outside their immediate circle of experienced network ties.

A surprising result of our study is the negative effect of skills on resource mobilization. An explanation for this finding is the operationalization of skills, which is focused on the skills of weaving and designing. Master weavers with high levels of weaving skills have often worked for a long period as a weaver under another master weaver. It may be that such a weaver is less skilled in managing a firm and as such does not have the skills that are needed to mobilize resources. In addition, the impact of skills is also partially mediated by social capital. Weaving and designing skills lead to more structural holes, which are not beneficial when it comes to the acquisition of resources.

The third human capital variable is the number of languages spoken. We found that master weavers who speak more languages identify more opportunities. Naturally, considering the fact that India is divided into states mostly along linguistic lines, master weavers who can speak more languages are able to travel longer distances and reach different geographical markets, which will improve their chances of identifying opportunities. In addition, the languages effect is partially mediated by social capital. Speaking more languages increases a master weaver's ability to connect to different communities and thereby to develop structural holes, which is exactly what we have found. In addition, master weavers who increased their structural holes are better able to discover new opportunities. This finding extends the work by Oh et al. (2004), by explaining how the number of languages spoken, mediated by structural holes, may improve a master weaver's performance. In the study by Oh et al., the dependant variable is the performance of ethnic firms. The underlying mechanism explaining the way social capital leads to a better performance is not addressed, while our study suggests that the beneficial effect of speaking more languages on structural holes increases a master weaver's ability to recognize opportunities, which is one of the key entrepreneurial processes affecting performance.

An important issue is what the optimal network characteristics of firms in the handloom sector are. The network characteristics can be seen as a combination of structural and relational embeddedness. We found that structural holes are

needed to recognize opportunities and strong ties are needed to facilitate resource mobilization. This is a characteristic of the network structure of firms in the handloom sector in India. This finding is different from the two stylized network characteristics found in Rowley et al. (2000), who found that firms operating in a traditional, sector such as the steel industry, benefit most from having a dense network and strong ties, while structural holes and weak ties are most beneficial to firms in an innovative and changing sector like the computer industry. Our finding is a mix of those two stylized network characteristics and it fits the handloom sector in India.

Our findings may be generalized to include all craft-based industries. Entrepreneurs in craft-based industries, such as the handloom industry, require networks that need to satisfy both highly differentiated and uncertain demand conditions and mobilize local resources (Cohen, 1998; McAuley and Fillis, 2005; Paige and Littrell, 2002). We found that entrepreneurs in craft-based industries benefit from structural holes when it comes to recognizing opportunities. Often, these opportunities are found outside the local environment and structural holes help connect to potential customers in other communities. At the same time, entrepreneurs in craft-based industries have to build strong ties, and their trust-based characteristics play a central role in the mobilization of local resources.

9. Limitation and future research

One of the main limitations of our study is that the data is cross-sectional in nature. Longitudinal data would show how networks of entrepreneurs evolve over time, as well as how the weak ties of entrepreneurs become strong ties. It would highlight the conditions under which an entrepreneur becomes locked into these strong relationships and how these locked-in situations in turn influence his ability to recognize opportunities and mobilize resources. Similarly, longitudinal studies may show how such entrepreneurs who find themselves in such a situation manage their networks in an attempt the find a way out.

It is important to understand what kind of information flows through the networks to an entrepreneur and how this information is processed in a bid to identify opportunities. It is of interest to see how an entrepreneur uses his network in search of the resources that are beyond his control. We have found that there are indirect effects between the independent and the dependent variables; specifically, we have found that the structure of a network is affected by human capital-related variables, which in turn has an influence on how resources are mobilized and opportunities recognized, which ultimately affects the performance of a firm. To identify the exact relationship between all the variables, statistical methods like structural equation modeling may be used.

Due to the logistical limitation of this study, we were only able to examine the large handloom clusters. A study involving smaller clusters may help shed light on how entrepreneurs in larger and smaller clusters manage their networks, and on whether the pattern of networking and the causal mechanism with regard to performance are similar. In our study, we have combined all handloom-related experiences, which could to some extent explain some of our counter-intuitive findings. Future research could separate experiences into experiences in running a master weaver business, experiences as a weaver and experiences with regard to other handloom-related activities. Furthermore, we have looked into successful master weavers. There is a significant amount of churn in handloom industry, as a number of successful enterprises seem to become less successful or even fail. It would be valuable to analyze the networks of failed master weavers, to see whether they were drastically different from the successful ones or whether such failures are the result of the above-mentioned 'locked-in' effect.

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