A New Pricing Model for Freelancing Platforms based on Financial and Social Capital

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Abstract: Over the freelancing platforms, there is usually disagreement on the price between project owners and freelancers. Usually project owners do not know what price to offer to have the project done with excellence within the allocated time, and freelancers do not usually know what price to offer in order to win the project in the competition. What we propose is to calculate and offer a realistic value to project owners based on financial and social capital. In this way, the company would be able to attract more clients with upscale projects, because 1) Both the project owners and freelancers become satisfied with the offered price, 2) There will be less negotiation on how much a project really worth, and 3) Have the clients more segmented, therefore the company can attract high value customers from the competitors. In our methodology, social capital is calculated via different approaches such as embedded resources. At the group level, capital represents some aggregation of valued resources such as financial resources as well as social connections.

1 INTRODUCTION

There has been much research in defining theory of social capital (SC) in physical communities. Prusak & Cohen (2001), Putnam (2000) and more have shown that social capital requires interaction among people in order to achieve common goals and understanding and build trust, and indicated that positive interactions among network elements could lead to social capital. Furthermore, SC could be developed when each member of the network or community thinks that they can meet expectations, and their actions will be reciprocated. Some items such as trust, expectations and obligations are very significant in developing social capital according to Putnam (2000). In collaborative environment, SC can be utilized for sharing tacit knowledge, better knowledge sharing, when trust among members is established. Individuals with well connections can benefit from shared value and support. Also, members with well connection usually offer support to other members due to sense of obligation. These have been all investigated in physical communities, however there is a lack of research in this regard within virtual communities, where most members barely know each other; therefore there is less sense of trust relationships. However, there are other variables involved such as being aware of each other background, nature of relationship, and community goals.

Although there have been many researches seeking to understand the nature and value of SC in physical communities, there have been very few to none research done to investigate SC in virtual communities. Unlike other forms of capital such as financial, human and physical capital, social capital relates to connections among people or members. The difficulty has been always how to translate this into dollar value. In fact, social capital could be translated into how to put value to connections among people. Portes (1998) indicated that individuals interacting in social networks seek to produce profit. This profit could be caused by three reasons including 1) facilitating flow of information, where social ties in some strategic locations could provide useful information about possible opportunities, 2) these ties could carry more valued resources due to their location (e.g. structural hole) or power asymmetry in decision making , and therefore carries a certain weight in the process of decision making, 3) social ties could reflect the agent's accessibility to resources through social networks, which adds to the individual's personal

capital. In this study, we propose to calculate and offer a realistic value to project owners based on financial and social capital.

2 THEORY DEVELOPMENT

Researches in literature have focused on significance of both resources and relations in social capital. Burt (1992) is the typical focus on location of individuals in a network and its relationship to social capital. Bridges indicate individual's competitive advantage in access to more and diverse information. In addition, strength of ties as shown by Granovetter (1973) is a well-known concept on network location measurement which indicates bridges usefulness. Other measures such as density, size and betweenness are also key elements specifying the social capital.

Another focus on how to measure social capital is via embedded resources. Wealth and power are indications of embedded resources in most communities (Lin 1999). Therefore, social capital could be analyzed by the amount of such resources that an individual or a community member has a direct or indirect relationship with. Embedded resources could be in one's ego network or via one's contacts used as helps such as in job search. Assuming that bridges link to different information, it will be useful if that information links to resources valued by individual. For example, a bridge helping an individual looking for a job to people who have strategic positions in the firm is more significant than bridging to other people who are members of a club.

As indicated in Table 1, the first approach to measure social capital is via measuring embedded resources. In this approach, measurement focuses on valued resources such as wealth, power, and status within one's ego network or contacts. These could be measured by 1) the range of resources among ties or distance between highest and lowest valued resources, 2) best possible resource in the network, 3) variety of resources, or 4) composition of resources. After all, these 4 measurements could be combined in one single factor, because they are highly correlated. Another approach or measurement strategy focuses on network locations to determine the social capital. Granovetter (1973) was first to express the notion of bridges in the strength of weak ties; afterwards Burt (1992) elaborated it by introducing notions of structural holes and constraints. Other measures such as size, density,

betweenness and centrality could be also used to specify the social capital.

Table 1: Two principal approaches in measuring social capital as assets captured by individual (Lin, 1999).

Focus	*Measurements*	*Indicators*
Embedded resources	Network resources	Range of resources, variety of resources, composition
	Contact status	Contacts' occupation, authority, sector
Network locations	Bridge to access	Structural hole, structural constraint
	Strength of tie	Network bridge, intimacy, intensity, interaction

3 ANALYSIS

In order to estimate intangible assets, we have determined a set of explanatory variables which influence on financial and social capital. There are input variable selected such as book/set value, net income, market value, number of customers (for each freelancer), and profit per freelancer or project (for each project owner). We finally choose those variables which significantly influence the output of the financial network. From the other side, defining the effect of social capital on some individual outcome SC(i), we develop a linear model for the total capital (Siderska, 2017). We show each ego network information set by ego(i), and each individual independent variable is denoted by X(i). An individual's expectation of the average financial capital represented by E(F(i)|Ego(i)) is made conditional on ego network i information set Ego(i), whereas the expected social capital per ego network is represented by E(SC(i)|Ego(i)). Total capital per network node is obtained as below:

$$Capital_i = a + b\,Xi + c\;E(F(i)|Ego(i)) + d\;E(SC(i)|Ego(i)) + \varepsilon i \qquad (1)$$

where Ego network entails all the network information such as degree centrality (project owner's number of previous/current connections), betweenness, size and density. The only method that ensures the best choice of a set of input variables is to try all the possible sets of variables and all the possible types of network architecture. After all, some input variables are adopted among all for the construction of the model. Finally, the calculated value including both social and financial capitals will be utilized as a proxy for the price of a new project.

4   DATA AND MEASURE

We contacted the company, Freelancer.com, to collect data for a reasonable sample of project owners and freelancers. At the time of writing this proposal, freelancer.com has almost 25 million registered users and about 12 million posted jobs. Types of jobs range from IT, website design, product sourcing and manufacturing, data entry, business services and marketing, language translation, sales and marketing, and engineering and science. *Freeleancer.com* website says: "We have experts representing every technical, professional and creative field, providing a full range of solutions: Small jobs, large jobs, anything in-between, fixed price or hourly terms, Specific skills, cost and schedule requirements. Just give us the details of your project and our freelancers will get it done faster, better, and cheaper than you could possibly imagine. Your jobs can be as big or small as you like, and be fixed price or hourly. You can even specify the schedule, costs, and milestones."

There is usually disagreement on the price between project owner and freelancer. Usually project owners do not know what price to offer to have the project done with excellence within the allocated time, and freelancer does not usually know what price to offer in order to win the project in the competition. What we propose is to calculate and offer a realistic value to project owners based on financial and social capital. In this way, the company would be able to attract more clients with upscale projects, because

1.   Both the project owners and freelancers become satisfied with the offered price.
2.   There will be less and less negotiation in regards to how much a project really worth or take time.
3.   Have the clients more segmented, therefore the company can attract high value customers from the competitors like upwork.

We measure project value based on different variables including relevant projects sold value, and the value of individuals who have completed those relevant projects. At the same time, we measure freelancer value, based on both financial and social capital, i.e. how much in dollar was the value of the relevant project sold, and what is the social capital of that freelancer within the ego network.

We compute the network measures by creating a social network topology of the projects and individuals using a two-mode affiliation network.

Examples of affiliation networks that have been studied in the past include e.g collaborations among Broadway artists (Uzzi and Spiro, 2005) and co-authorships (Newman, 2004), in which the groups to which actors belong are respectively the groups of actors appearing in a single show or the groups of authors of a scientific article. Following the same approach, we create an adjacency matrix.

We compute a measure of how well connected the freelancer is in the network. There are several approaches to computing the centrality of individuals in networks. Different measures should be more or less appropriate depending on the assumptions made (Borgatti, 2005). Some centrality measures account only for geodesic paths like closeness and betweenness, whereas the eigenvector measure does indicate that the traffic will not only flow via shortest network path.

5   CONCLUSION

In this study we aim to calculate the financial and social capital within freelancing platforms, and specifically we focus on the website of freelancer.com, and attempt to determine both the offered project and freelancer values based on social and financial capital within the affiliation network. Social capital could be calculated via different approaches including embedded resources or network locations. At the group level, capital represents some aggregation of valued resources such as financial resources as well as social connections. There are different measures associated with network location of individuals within the network including centrality, betweenness, size, density and more. In order to estimate the intangible asset, we have determined a set of explanatory variables which influence on financial and social capital. There are input variable selected such as book/set value, market value, number of customers (for each freelancer), and profit per freelancer or project (for each project owner).

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