Private Enterprise Development in Low-Income Countries

Peer Networks and Entrepreneurship: A Pan-African RCT

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Do business interaction and exchange of ideas among peers foster entrepreneurship? Connecting almost 5,000 entrepreneurs from 49 African countries we find that peer interaction indeed has a positive effect on the submission of business proposals and their entrepreneurial quality, but only under suitable conditions (e.g. if interaction is carried out in groups of the same nationality). This suggests a subtle interplay of interaction and diversity, thus highlighting that peer-networking mechanisms need to be carefully designed to deliver their large potential.

Introduction

Socio-economic growth and development is largely about innovation and innovation is closely linked with entrepreneurship. Successful innovation and entrepreneurship feed on underlying peer networks which allow for an interplay of forces supporting cooperation, learning and competition among peer entrepreneurs. Cooperation is often based on trust and familiarity among peers. Learning and creativity is enhanced by peer diversity and new information. Competition can occur among close peers competing for funding or on the same product markets, but it can also be a motivating source for innovation. How can these forces be reconciled and effectively harnessed in an optimal peer network? How important is peer heterogeneity in an entrepreneur's network? Can a broad, easily implementable and flexible virtual network enhance innovation and entrepreneurship? How does the structure of communication affect cooperation, trust, learning and competition? And how do these ultimately affect entrepreneurship and innovativeness?

Context and Methodology

To shed some light on the previous questions, we set up a large-scale Randomized Control Trial (RCT). The experiment was packaged as a continent-wide entrepreneurship context named Adansonia, which offered to entrepreneurs across Africa, access to an online business course, the opportunity to network with fellow entrepreneurs and to have their business plans reviewed by venture capitalists, which then led to the possibility of being funded. The name Adansonia (the genus of the trees known as baobab) was inspired by an African proverb: *"Knowledge is like a baobab tree, no one individual can embrace it all."*

Figure 1: Picture of outreach campaign in Kampala, Uganda

The Adansonia project was advertised through social media campaigns, targeted events and a wide network of stakeholders operating in the African entrepreneurial ecosystem. The outreach efforts resulted in the enrolment of 4,958 participants from 49 African countries almost exclusively from Sub-Saharan Africa with the majority from West Africa (53%). Overall, the sample of entrepreneurs recruited represents the rising entrepreneurial middle-class of Africa. In the total sample, 31% are female, 80% have a university degree, 90% have savings in a bank account, 63% already have a business, and 55% are employed. On average, participants have slightly more than 5 years of work experience and are 30 years old.

The experiment itself lasted for about two and a half months (May-August 2017) and consisted of three main interventions. Firstly, all the entrepreneurs got enrolled in an online entrepreneurship course ad-hoc developed by Bocconi University. The course guided the participants through different phases ranging from business ideation to the implementation and presentation of a business plan to venture capitalists. The completion of this course was an essential requirement for the submission of entrepreneurs' business proposals at the end of the experiment.

Secondly, the treated entrepreneurs, randomly sampled in groups of 60, had access to different types of peer interactions according to three different sub-treatments that tested two forms of peer interactions versus the control group, i.e. entrepreneurs that did not have access to any interactions but only to the business course. These two forms of peer interactions are: (i) face-to-face interactions, in which 6% of the treated entrepreneurs met regularly for three hours every two weeks in the premises of a partner institution in Kampala, Uganda; and (ii) virtual interactions, in which 94% of the treated entrepreneurs interacted through an ad-hoc customized open-source Internet-based platform. This second treatment arm was further divided in virtual-within interactions where entrepreneurs interacted with peers of the same nationality (thereby limiting the heterogeneity of the groups), and virtual-across interactions where the heterogeneity across entrepreneurs was enhanced having groups formed by individuals with mixed nationalities in proportion to their frequencies in the overall population.

Thirdly, at the end of the experiment all the participants completing the online course, from both treated and control groups, submitted business proposals that were graded by an independent panel of 15 African professionals. Figure 2 provides a schematization of the experimental design.

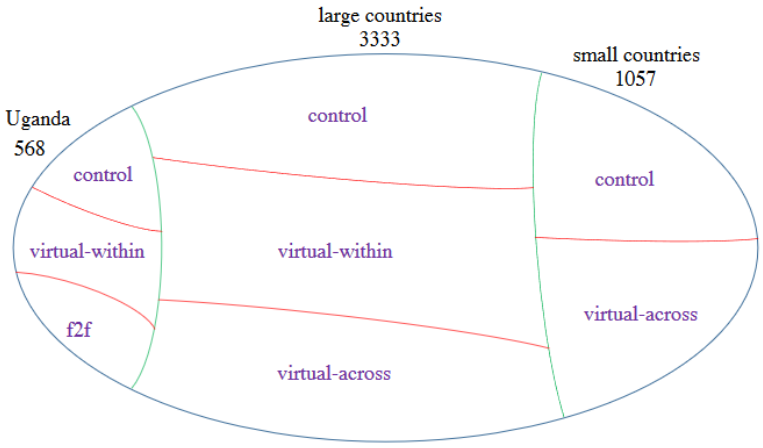

Figure 2: Experimental design: schematic representation of the randomization

Impact on Innovation and Entrepreneurship

The rich design of the Adansonia project allowed us to gather a unique dataset and measure a wide range of outcomes and mechanisms that shed some light on the role of peer networks on innovativeness and entrepreneurship.

Using the rate of business proposal submissions as an indicator of performance, we find, in general terms, that an intermediate level of familiarity between peers spurs innovation. In particular, in Uganda, where face-to-face interactions also occurred, participation in these meetings increased the submission rate by 15 percentage points with respect to the control group base of 55%. Similarly, virtual-within interactions among large countries also show a positive treatment effect with a submission rate that is 4.8 percentage points

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higher than the control group base of 58%. In contrast, virtual interaction across nationalities do not have a significant impact on the rate of submission of business proposals.

Concerning the other important measure of performance, the quality of the business proposals (as graded by African professionals in a 1-5 scale), we found a positive response to the treatment, but only for the participants in the virtual-within treatment arm. The strong effect of face-to-face interactions on the rate of submission seen in the Ugandan sample does not appear in the quality of the business proposal. Likewise, no significant effect is identified in the interactions that occur in groups of mixed nationalities. Combining the results on the rate of submission of the business proposal and their quality it appears that only virtual interactions among entrepreneurs with the same nationalities lead to a positive result on both outcomes.

Exploring further the role of virtual peer interactions in large countries, we look at how group characteristics, exogenously imposed by randomization, affect the rate of submission and the quality of business proposals. Interestingly, we find that the average ex-ante quality of peers and their average experience do not affect the rate of submission, whereas they have a negative impact on the quality of the business proposals submitted by the entrepreneurs even when a strong positive effect of virtual-within interactions persist. This result may be caused by discouraging feedback coming from experienced and higher quality peers.

But how do the endogenous peer interactions arising within each group affect the rate of submission and the quality of the business proposals? To answer this question, for each group we constructed its network structure, i.e. the communication links between each pair of entrepreneurs. Figure 3 shows an example of the social network structure for a virtual-within interaction group in Nigeria. Each node represents an entrepreneur, the weight of the link represents the amount of information exchanged between each pair of entrepreneurs.

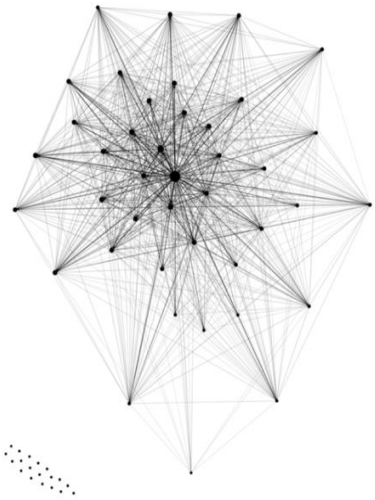

Figure 3: Peer network for a virtual-within interaction group based in Nigeria

On the base of these network structures, we estimated the effects of bilateral interactions on the rate of submission and quality of business proposals. Interestingly, peer interactions show a strong positive effect on the rate of submission of business proposals only in the virtual-within groups and a strong positive effect on the quality of the business proposals in the virtual-across groups. We conjecture that this result is due to the tension between familiarity and trust versus heterogeneity and creativity that interactions between entrepreneurs of the same nationalities versus entrepreneurs from different nationalities entail. Following this line of argument, interactions between peers with the same nationality should encourage submissions, while interactions between peers of different nationalities should enhance the quality of the business.

To better understand the findings so far described and their implications, we have initiated an on-going systematic semantic analysis of the content, sentiment/encouragement and audience of all the messages exchanged on the virtual platform. The main insights gained so far are that messages are either business or sentiment oriented and that entrepreneurs with a high quality of their business proposals write messages with strong business content, low sentiment and targeted to specific peers. Moreover, to understand how different types of communication influence different network structures we construct separate networks measuring the intensity of the interaction by weight of the messages in business or sentiment content. Interestingly, and perhaps surprisingly, we find that in either case peers' influence is similar. This suggests that entrepreneurs tend to balance symmetrically business communication and sentiment communication in every bilateral link they establish. Hence, although the communication occurs on a virtual platform it resembles features of non-virtual interactions where business-like discussions are balanced by sentiment-like messages.

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Policy Implications

Our research suggests that large-scale virtual interactions may be effective in promoting innovation and entrepreneurship, while allowing for a feasible implementation with reasonable operating costs. At the same time, the success of implementing virtual networks appears to reside in finding a delicate balance between peers' diversity and familiarity as a positive or negative impact depends on the context of the interaction and the scope of the analysis (e.g. group- or link-based). Under the specific circumstances of our intervention, intermediate levels of peer diversity arise as the most effective to foster innovativeness and entrepreneurship. The reason appears to be that network peer effects are stronger in stimulating innovativeness when a group is relatively homogeneous and in improving the quality of the business when the group are very diverse. Hence we suggest that, in general, effective policy interventions need a careful design that takes into account entrepreneurs incentives to interact and create networks as well as the specificity of the ecosystem in which they operate.

Moving Forward…

The immediate next step of our project is to delve further through the 140,000 messages sent on our virtual platform to unfold, with the help of systematic semantic analysis, the sentiment and contents of the peer interactions enriching the conclusions we drew so far.

Nevertheless, our work provides just a glimpse on the role that virtual social networks and peer communication can play for innovativeness and entrepreneurship, and ultimately for economic development. Widening the scope of the research would require a greater understanding of the mechanisms and incentives that are behind peer networks and identifying the ones that affect the most the relevant outcomes, always tailored to the specific features of different entrepreneurial ecosystems.