

SHORT TERM SCIENTIFIC MISSION (STSM) SCIENTIFIC REPORT

This report is submitted for approval by the STSM applicant to the STSM coordinator

Action number: **CA16105**

STSM title: "Set up of the experiment to study user motivation in crowdsourcing of language learning resources".

STSM start and end date: 18/01/2020 to 25/01/2020

Grantee name: **Dr. Nina Gorovaia**

PURPOSE OF THE STSM:

The main purpose of this STSM is to study user motivation in crowdsourcing in the experimental setup. Users rarely report their behaviors truthfully in surveys, their responses are influenced by social desirability bias, they may not be aware or conscious of the reasons underlying their behaviors, and it is empirically challenging to collect a representative sample from the crowd. Experimental methodology partially resolves these issues by random assignment to different conditions, controlling variation to ensure that stimuli are similar, eliminating confounding effects like free-riding, risk-avoidance, group interaction etc. Furthermore, experimental methodology provides a high degree of control over the task, and allows to determine causal relationship between X and Y, which is an important concern for an empirical study.

I propose to set up a field experiment on one or two of the existing crowdsourcing platforms to study the relationship between user-motivation (extrinsic and intrinsic), task complexity, the quality/quantity of the output and intellectual property rights.

Working program:

1. Review of literature on conducted experiments studying motivation in crowdsourcing. The goal is to find motivational aspects that are relevant to language learning and incorporate them into the experimental setup. Specific emphasis should be given to tasks in language learning.
2. Refine the theoretical model to test and design the experiment (control groups, participants, tasks, rewards, recognition, choice of a platform).
3. Set up the experiment on one or two of the existing crowdsourcing platforms.

DESCRIPTION OF WORK CARRIED OUT DURING THE STSM:

Following the proposed work program, we reviewed and discussed literature using the experimental methodology in crowdsourcing as well as studies on motivation in the context of crowdsourcing. These studies were published in economic and management journals and were not explicitly focused on language learning. Apart from the more obvious distinction of extrinsic and intrinsic motivation, some studies highlight the importance of reputational and signalling motivational factors in markets working outside of a price system as well as overall network growth effects (Boudreau and Jeppesen, 2015).

The theoretical framework of the study is the property rights theory (Hart and Moore, 1990). The property rights theory explains how contractibility of the task affects subsequent rights of use of the intellectual property. It also describes the incentives for the creation of the task. Before the experiment can be set up on an existing crowdsourcing platform, it is necessary to design it.

Most of the work done during the STSM was devoted to the design of an experiment. Considering that we plan to set up the experiment for a language learning task, the participants of the experiment will be teachers of foreign languages. It is essential to leave sufficient freedom for teachers to design and create learning content, to allow a variance of the tasks so that we could assess their quality, quantity (number of words), as well as the degree of contractibility of produced learning content. The concept of contractibility is related to the concept of tacitness. Thus, the most straight-forward tasks are considered more contractible, while more original, less standard tasks are considered non-contractible.

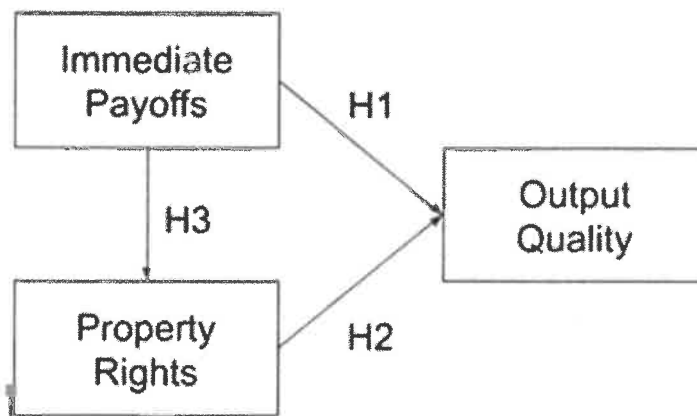
Furthermore, we plan to assess how contractibility of the learning content with respect to the choice of creative commons licenses. There are the following seven licences that regulate the conditions of use of the intellectual property will be used in the experiment:

- Freeing content globally without restrictions (CC0)
- Attribution (CC BY)
- Attribution ShareAlike (CC BY-SA)
- Attribution-NoDerivs (CC BY-ND)
- Attribution-NonCommercial (CC BY-NC)
- Attribution-NonCommercial-ShareAlike (CC BY-NC-SA)
- Attribution-NonCommercial-NoDerivs (CC BY-NC-ND)

We expect that the more non-contractible tasks will be positively associated with more restrictive licences, while contractible tasks will be positively associated with permissive licenses.

DESCRIPTION OF THE MAIN RESULTS OBTAINED

The main result of the work is the theoretical framework which details the experimental design.



We propose to test the following hypotheses in the experiment:

- Hypothesis 1: The higher the immediate rewards the higher the quality of output.
- Hypothesis 2: The higher the property rights the higher the quality of output.
- Hypothesis 3: The higher the immediate rewards the less the property rights.

FUTURE COLLABORATIONS (if applicable)

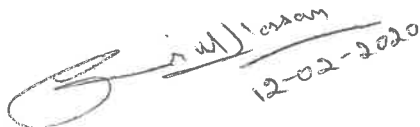
To complete the set up of the experiment, there is more work to be done on the choice of available crowdsourcing platforms. Existing crowdsourcing platforms impose certain restrictions on the tasks; therefore, it might be desirable to set up this experiment on a specific purpose platform that allows a maximum degree of flexibility, and that would attract the “crowd of teachers”.

On the other hand, the signalling and reputational motivations can be better tested on the existing platforms, where participants “signal” their skills and develop reputations that might allow them to find jobs or embark on more challenging projects. In conclusion, there is more work that needs to be done in regards to the choice of platform.

Finally, I would like to mention a very stimulating discussion with the Director of the Data Science Institute, Prof. Mathieu d’Aquin. The institute is very active in applying for research grants, and one of the projects that we discussed devoted to ethical investing — an investment fund which is considering investments in charities and organizations based on their ethical profile. While the first impression of an organization might be positive, machine learning methods might discover undesirable links that these organizations have to religious groups, political extremists, white supremacists etc. This information might not be transparent for an outsider, but with the help of machine learning methods, the links might be discovered through social media and traces that organizations leave in the Web. Additionally, to observing the connections that an organization might have, the algorithm could also predict the missing links once a sufficient database has been collected and verified.

The second project was regionally focused in collaboration with the Western Development Commission, Ireland. The data from WDC has almost 300,000 companies in the region, and the task is to learn and predict their future innovation activities. While not all the links and connections can predict innovative performance, some of the connections to other companies in the value-added chain, or universities and research institutions, or to companies in the same industry may indicate the existence of clusters and predict innovative activities. The project aims to make sense of the variety of connections that companies have and see which relationships contribute to which innovative activities.

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