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University Social Responsibility Technology-Based Model Through Social Appropriation of Knowledge*

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ABSTRACT

University Social Responsibility has the objective to not only demonstrate social and environmental impact of higher education institutions, but also provoke Social Appropriation of Knowledge at universities' network level. The social impact of universities can be reflected back on the relations they have with governments, non-profit organizations, communities, industry, and in environmental initiatives. Most of universities' interaction with the actors aforementioned are through service-learning, community-oriented projects, technology transfer, incubators, governments and non-profit organizations, amongst others which, through knowledge, benefit not only the students, but directly impact the actors as well. USR reports tend to concentrate on planned and directed actions to fill in reports, however the dynamics of the university lead to SAK spill over on other actors, and it must be seen as a fundamental part of USR. This research proposes a technology-based platform generated by a mixed methods and concurrent triangulation research developed in two phases. The first phase, QUAN-qual, will allow a base design which captures the dynamics of SAK in the context of USR, while the second phase, quan-QUAL, concentrates in the validation of the proposed prototype. The project aims to answer how different levels of information exchange, negotiation, and knowledge transfer occur in the SAK development of a dynamic Social Responsibility in university environments mediated by a technology-based platform.

*University Social Responsibility Technology-Based Model
Through Social Knowledge Appropriation

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CCS

• Information systems • Information systems applications • Collaborative and social computing systems and tools

KEYWORDS

University Social Responsibility, Social Appropriation of Knowledge, Higher Education, Educational Innovation, Social Impact.

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1 Context of USR regarding SAK

One of the biggest challenges regarding University Social Responsibility (USR) in the context of Social Appropriation of Knowledge (SAK), besides academic research, is the lack of technology-based platforms that can capture its dynamism. However, there are international, regional and local platforms designed to generate USR reports. The Global Impact Investing Networks (GIIN) is a solid international initiative to identify impact investment indicators that can be used in USR reporting, while aligned to the Sustainable Development Goals (SDGs) according to Huerta-Riveros and Gaete-Feres [1]. The World Impact Ranking is an initiative present in all five continents which not only promotes USR reporting aligned to SDGs but also publishes the list of "The 100 best universities in social impact" [2]. In Latin America, we find the Union for USR, a project which principles are adopted by over 180 universities in the region [3]. Also in Latin America, the Observatory of

Educational Social Responsibility releases a rank of the aforementioned universities regarding such principles [4]. Specifically, in Mexico a university that stands out because of its varied collaborative links generating SAK and its commitment to USR is Tecnológico de Monterrey, a major private university in the country according to The World University Ranking [5].

USR should not only be visible from a report regarding its social impact, but it must capture the dynamism of SAK while clearly identifying the stakeholders involved. Expecting USR to be visible in yearly reports reduces it to be no more than a requisite that rarely highlights the SAK, which is a fundamental function of a university. "The university has an important role in the knowledge society, it generates innovative environments and provokes new relations amongst stakeholders which need structural support to generate changing environments" [6]. Plus, USR is presented as added value to prospective students, who currently want to have real life experiences while following theoretical academic lines [7]. It is expected that a dynamic USR provides a competitive advantage, as the bigger its impact in the industrial, business, social, governmental or environmental areas is, the more it will place universities in higher ranking positions, not only in competitiveness but also in cooperation and social impact.

Regarding university relations, the Science and Technology Department of Mexico, CONACyT, presents a Strategic National Program of Technology and Open Innovation which identifies a penta-helix dimension of stakeholders that includes production and industry, government, community and social, environmental and academy regarding SAK [8]. Recently, USR complexity goes beyond learning-service and civic engagement and into incubators, technology parks, and technology transfer departments directly impacting society [9]. Yet there is not an open source project to dynamically link such efforts into USR. For that reason, it is worth questioning: How do the levels of information exchange, negotiation and knowledge transfer as USR develop in university environments regarding SAK while mediated by a technology-based platform?

The paper offers a section of theoretical approach to University Social Responsibility in the context of Social Appropriation of Knowledge regarding Technology-Base Models which will be fundamental to sustain and structure the Research Design. Following the proposed Hypothesis, a section of Research Objectives and Goals will be presented and after the Research Approach and Methodology. All Information Sources regarding the methodology will be listed before Data Collection and Information Analysis. In the last part of the paper there is a Current Status of the Dissertation, the Expected contribution as well as the Conclusions.

2 Context of University Social Responsibility regarding Social Appropriation of Knowledge and State of the Art

2.1 University Social Responsibility (USR)

USR needs to be backed up by transparent systems reflecting bottom-up dynamics generating social impact engagement from universities. Following the fourth industrial revolution paradigm it is important to redefine the role of higher education by specifically identifying the contribution of universities towards society, visualizing through SAK [10]. A responsible university must "do research and benefit society, despite it seems to fall short regarding social impact" [11].

The lack of systematization in linked academic projects from the universities impedes to grasp the importance of higher education in society. For example, Huerta-Riveros and Gaete-Feres discover in the GIIN regarding social responsibility, that from the universe of 7,650 institutions generating systematic social impact reports, only 1.17% corresponded to universities [1]. In the words of Vallaey's "USR should be dynamic relations" and questions himself: How could we generate new networks to help external stakeholders to build new knowledge and processes? [12]. USR must go beyond written reports to demonstrate that higher education and academic curiosity are a fundamental part of the development of human knowledge.

2.2 Social Appropriation of Knowledge (SAK)

SAK play up as the ideal medium to identify the spillover of knowledge generation from universities to the rest of society. SAK happens in different environments and some authors state that despite the importance of higher education in society, it seems to be an inability of the universities to deal with real world problems, concluding that "it looks that the challenge to mobilize knowledge... between the university and society is that it must be the possibility to form interdisciplinary teams" [13]. Despite the main function of the university being to form students, the fast-changing technological environment (referred to as Moore's Law) requires that higher education happens more often in real contexts.

SAK complex forms must be observed in all its dynamism considering social, historic, cultural and geographic factors to encourage the self-generation of simple structures from the local to the global as a viable option for the natural differences and complexities of the contexts [14]. Similarly, Ramírez-Montoya and García-Peñalvo identify the importance of topics and institutional repositories, as fundamental elements in the development of SAK [15]. Then, SAK can successfully happen in new socio-cultural and scientific contexts due to the digitalization of current scientific knowledge [16]. In that line,

“open science provides the possibility of a shared co-construction” [17]. Promotion of knowledge appropriation and knowledge transfer are two fundamental elements in higher education. Thus, a project systematization that digitally maps out and links simple, self-generated, bottom-up dynamics from the universities is of great need. University projects and experiences are adaptable to different contexts and local forms, while integrating repositories usually on open licenses that allow to see the value and generation of SAK from the higher education.

2.3 Technology-Based Models for SAK for Universities

There are different technology-based models for SAK in relation to university external stakeholders. The “internet plays an important role as it has fundamentally changed our economic and practical realities regarding knowledge distribution” [18]. Following are some examples of university platforms regarding SAK. UNIBILITY is a guide that identifies the main relation in cooperation between universities and NGOs is service-learning approaches [19]. Europe Engage, on its part, maps the service-learning efforts to promote student civic engagement [20].

UNESCO proposes efforts to integrate TOT (Transfer of Technology) from “science and technology parks” promoting SAK as technology transfer to industrial, business or non-profit parks that can be fully or partially belonging to universities [21]. There are many other initiatives based on open access from universities such as OpenCourseWare, MERLOT, OpenLearn, MORIL, Opencontent, OpenER, PROMETEUS, RELPE, CLARISE o REDALYC that allow external open access for learning [21]. Despite the plethora of repositories organized by academic areas, few provide dynamic or interactive spaces that go beyond an open information offer not yet visualized as USR.

3 Hypothesis

The hypothesis for this dissertation is that Social Appropriation of Knowledge from universities directly impacts their development of University Social Responsibility and can be mediated through a technology-based platform.

4 Research Objectives and Goals

The study will analyse the dynamic components of USR linked to SAK through university practices in relation to the penta-helix (productive-industrial, governmental, community-social, environmental and academic) and the mediation levels of information exchange, negotiations and knowledge transfer of social responsibility, with the objective of proposing a technology-based model to systematize the dynamism of USR.

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1. Analyse theoretical-conceptual advances of SAK and USR through mapping and systematic literature reviews.
2. Evaluate different USR practices in university environments to determine if SAK cases are registered in USR reports.
3. Triangulate SAK and USR data linked to the penta-helix and the measuring of level of information and negotiation exchange and knowledge transfer regarding social responsibility in universities.
4. Propose a technology-based model which integrates the dynamics of SAK with the objective to develop USR.

5 Research Approach and Methodology

For this research a usage of mix methods and concurrent triangulation design by Creswell is planned, while dividing the research in two phases [23]. The first phase will have an emphasis on QUAN-qual and the second phase will be quan-QUAL. The instruments of the first phase will include a Likert scale for students as well as interviews and focus groups with penta-helix stakeholders. With that data a technology-base prototype will be developed, piloted and validated during the second phase.

The second phase also comprises Likert instruments for students and observation rubrics as well as stakeholder interviews. The data produced in the second phase will be used to improve the prototype. It is worth mentioning the increasingly frequent usage of mix methods in social sciences and digital education contexts [24].

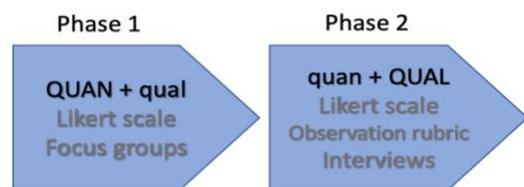


Figure 1: Research design

5.1 Population and Sample

The population will be university students in all disciplinary areas of Tecnológico de Monterrey. The sample will be random with a “triangulation of information regarding qualitative aspects” [25]. Directors and administrators from the university are considered to have specific interviews. After, a random sample of the given stakeholder groups will be used within the context of mixed research going beyond qualitative and

quantitative data collection to be integrated during specific phases of the project.

5.2 Variables

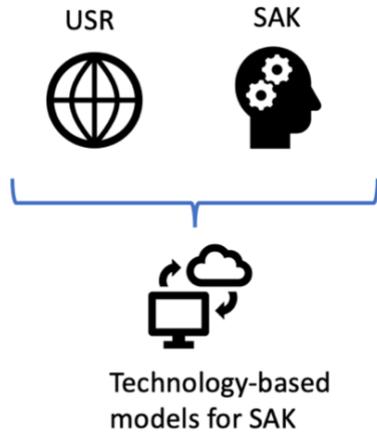


Figure 2: Core concepts

5.2.1 University Social Responsibility

According to Valleys “USR is necessary to legitimate the university and the knowledge, however if it becomes “fashionable” it is because the university is in a legitimate crisis, at the same time as science”. [26]. Unstoppable changes and the evolving context of technologies and open source advancements provokes the need to re-think the role of education in this new context by mapping the specific social impact of SAK from the university figure.

5.2.2 Social Appropriation of Knowledge (SAK)

SAK is understood as a provoked “social process, where under a reflexive manner, diverse actors in the network exchange, combine, negotiate and dialogue around knowledge” in a context of relations and information exchanges, necessities, service-learning, technology transfer or science [27].

5.2.3 Technology-Based Models for SAK in Universities

Technology advancement is an opportunity for social engagement however, it needs a reflexive analysis. Regarding the usage of technology in our society is expected that “the development of public policies as a creation and diffusion mechanism of the collective... means the awareness of being a citizen in a more digitally connected world” [28].

5.3 Instruments

The instruments to be used during the research design are:

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5.3.1 Likert Scale

A Likert scale applied to students in order to analyse their perceptions and social responsibility practices according to different levels of information exchange, negotiation and knowledge transfer in university environments (Variables: SAK and technology-based model)

5.3.2 Interview

Interviews applied to university directors and administrators in order to locate their experience in USR and SAK (Variables SAK and USR).

5.3.3 Focus Group

A focus group formed of stakeholders of the penta-helix in order to locate key elements to be part of the technology-based model for USR (Variables: USR and technology-base model).

5.3.4 Observation Rubric

An observation rubric used to locate student’s practices when logging into the prototype model (Variables: USR and technology-based model).

5.3.5 Stakeholder interviews

Stakeholder penta-helix interviews developed to value the technology-based model. (Variables: USR and technology-based model).

6 Information Sources

6.1 University Students

In order to analyse perceptions and social responsibility practices, students will be interviewed and observed while working with the technological design for validation, students experience is fundamental in the process of SAK.

6.2 University Directors and Administrators

In order to know their perspectives regarding social responsibility and the importance of SAK to validate the information in these topics though concurrent triangulation method.

6.3 Penta-helix Stakeholders

In order to know their ways and best practices regarding SAK (industrial-productive, governmental, civil society, environmental and academic), as well as their current perception of USR.

6.4 Artefacts

USR reports will be used as examples for platform design. Repositories of universities, non-profits in order to identify how university projects are developed, technology transfer

products in order to understand university transferences regarding SAK, and similar artifacts in order to validate the information through triangulation.

6.5 Digital Material

Digital media will be used as reference material in order to access academic information such as websites, project websites, partner and stakeholder websites.

7 Data Collection and Information Analysis

7.1 Data Collection Diagram

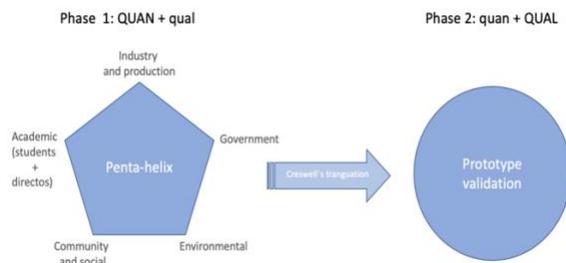


Figure 3: Data collection diagram

7.2 Analysis of information

A concurrent method QUAN + qual will be used as there is data collection regarding USR and SAK from students, directors, and stakeholders of the penta-helix, all simultaneously though different and diverse instruments, quantitative and qualitative [29]. Once collected, all the data under each construct and under different instruments, SPSS will be used to analyse quantitative data and Atlas Ti to analyse qualitative data in order to be triangulated for reliability and validity. Previously using the “triple entry diagram” there will be a separate validation of each construct according to its literature analysed at the beginning of the project [30]. After triangulation is done the result-based design will be structured into a technology-base model for SAK and that can be used as a systematic method of USR projection. The second phase of this research proposal is to validate the technology-based prototype. In this phase a Quan + QUAL approach will consist of student interviews analysed with SPSS and on the results of the observation rubric designed to validate the prototype [31]. During the same second phase there will be stakeholder interviews and interviews to directors in order to triangulate the information gathered. All data collection will be done according to the ethics code of the British Educational Research Association, following strict consentment standards and privacy of data as responsible members of the community [32].

8 Dissertation Status

Up to now there has been a mapping of the core concepts as well as work in progress of a Systematic Literature Review. Further along will be the instrument design and validation.

9 Expected Contribution

It is expected to provide a solid technological-based platform, open source, in which universities can keep track of the dynamics in the context of SAK to geographically visualize and measure the social impact from universities to society. The penta-helix stakeholders prove to be an excellent group of beneficiaries from university activities in the knowledge society which directly benefit from universities.

10 Conclusion

The proposed platform is a dynamic visualization of USR beyond an annual reporting, it is expected to develop competitive advantages amongst universities that choose specific real-life experiences to back up theoretical knowledge. It reflects the happenings regarding active projects with external stakeholders into real-life experiences for students and professors alike.

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