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From Understanding to Use and Compete: A translational Platform for Business Transformation

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FROM UNDERSTANDING TO USE AND COMPETE: A TRANSLATIONAL PLATFORM FOR BUSINESS TRANSFORMATION

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Abstract

This article discusses a translational cycle and a translational platform which have been designed in the context of the FutureEnterprise project, a European Commission funded support action. One of the main strategic axes of the FutureEnterprise project is related to a specific focus on translational research activities, aiming to bridge academic and industrial research with Internet-based entrepreneurship and digital business innovation. The term ‘translational research’ appeared in Pubmed illustrates, for the first time around 1993 to identify the “translational gaps”, hindering the transformation of discoveries in the life sciences into improvements having societal profit from basic research. As for the management research, translational issues have been pointed out as relevant and critical factors within Academy of Management (AOM) research community, identifying two types of translational challenges for an effective impact of management research on practice: a “lost in translation” (fail to find the right way to transfer research results in the practitioners language, understanding, and needs) and “lost before translation” (fail to identify an appropriate and systematic translation process as the one leading from “bench to bedside” in life sciences). The contribution presented in this article aims to face the challenges of ‘translational research’ in the context of technology management and innovation from a design science stance, thus identifying key constructs further developed through a translational platform which represents the resulting IT artifact (existing MOOC) from a “tool view”.

Keywords: Translational research, MOOC, Future Enterprise, Digital Platforms, Design Science, Digital Enterprise, Entrepreneurship.

1 Introduction

In this article we discuss a translational cycle and a translational platform which have been designed in the context of the FutureEnterprise project, a European Commission funded support action. One of the main strategic axes of the FutureEnterprise project is related to a specific focus on translational activities, aiming to bridge academic and industrial research with Internet-based entrepreneurship and digital business innovation. The contribution presented in this article aims to face the challenges of ‘*translational research*’ in the context of technology management and innovation from a design science stance (Hevner, March, Park, & Ram, 2004; March & Smith, 1995; Simon, 1996), thus identifying key constructs further developed through a translational platform which represents the resulting IT artifact from a “tool view” (Orlikowski & Iacono, 2001; Weber, 2003).

The article is structured as follows. First, background and motivations for the research are discussed along with an analysis of the MOOCs on web and digital business skills that are currently offered. Then, the research method is introduced before the FutureEnterprise translational cycle and platform are presented. Finally, conclusive remarks and future work discussion end the article.

2 Background and motivations

The debate on the role and difference among types of research has been at the centre of policy debate since the end of second World War, when the ideological stance on the pure value of basic science has been coupled with the idea of being it a necessary condition for technological advance as applied science, resulting among others from the reception of the 1945 Vannevar Bush report “Science-The Endless Frontier; A Report to the President on a Program for Postwar Scientific Research” (see the discussion in Stokes, 1997). This position has been questioned and challenged among others by Stokes (1997) with the identification of a quadrant model of scientific research along two main questions concerning research inspiration: is it a quest for fundamental understanding? Are there considerations of use? Thus what has been there called the Pasteur’s Quadrant was made up by pure basic research, pure applied research, use-inspired basic research (guided by technological needs), pointing out the role of the latter as well for creation of new disciplines and inspiration for basic research.

Yet, besides the investigation on the roles and types of research an increasing interest has risen by both academics and managers as well as entrepreneurs around *technology transfer (TT)*, whose definition strictly depends on the disciplines considering it (Bozeman, 2000; Reisman & Zhao, 1991; Zhao & Reisman, 1992): for example, management literature associates TT to competitive advantage and considers it as the transfer of specialized know-how, either patented or nonpatented, encompassing a sustained relationship between actors, e.g., enterprises; whereas social science and anthropology research link TT to diffusion of innovation or cultural change (Zhao & Reisman, 1992). As for innovation, in general, we can define it as the implementation of a new idea that leads to a change in practice in order to create some kind of value (Link & Siegel, 2007), referring either to the output or the process itself. Consequently, research on TT has produced evaluation models to understand the effects of this multifaceted phenomenon such as, e.g., the *Contingent Effectiveness Model* (Bozeman, Rimes, & Youtie, 2015; Bozeman, 2000). As pointed out by Bozeman (2000) the effectiveness of technology transfer should consider diverse determinants, including characteristics of the *transfer object, agent* (e.g., the nature of the institution, its history, and culture), *media* (e.g., patents, copyright, personnel exchange, spin-off, etc.), *recipient* (e.g., physical technology, scientific knowledge, design process) as well as the conditions related to the *demand environment*. However, the technology transfer effectiveness can have different meanings (e.g., market or political impacts) as actually has the definition of technology itself (Bozeman, 2000), spanning from “configurations” of processes and products/services to common sense view of technology as “tool” (Orlikowski & Iacono, 2001).

Nevertheless, however the efforts for linking TT to societal benefits and Public Value (see, e.g., Bozeman, Rimes, & Youtie 2015), the as pointed out by Bozeman et al. (2015) most of the studies on TT have focused on the United States (US) laboratories and research centres, transfer from university settings, multi-organizational research centres, consortia (thus, mainly international relations and owner technologies), or non-linear technology transfer (considering, e.g., relationship between university, industry, an government actors; open innovation; open source).

Taking the above issues into account, we now consider translational research as a potential complement to TT perspective, focusing specifically on the above mentioned types of research and gaps among them. The term '*translational research*' appeared in Pubmed illustrates, for the first time around 1993 (van der Laan & Boenink, 2012) to identify the "translational gaps", hindering the transformation of discoveries in the life sciences into improvements having societal profit from basic research. Among others, it is worth mentioning the following definition of translational research by Rubio et al. (2010) :

Translational research fosters the multidirectional integration of basic research, patient-oriented research, and population-based research, with the long-term aim of improving the health of the public. T1 research expedites the movement between basic research and patient-oriented research that leads to new or improved scientific understanding or standards of care. T2 research facilitates the movement between patient-oriented research and population-based research that leads to better patient outcomes, the implementation of best practices, and improved health status in communities. T3 research promotes interaction between laboratory-based research and population-based research to stimulate a robust scientific understanding of human health and disease.

As for the management research, translational issues have been pointed out as relevant and critical factors by Shapiro, Kirkman, & Courtney (2007) within Academy of Management (AOM) research community, pointing out two types of translational challenges for an effective impact of management research on practice: a "*lost in translation*" (fail to find the right way to transfer research results in the practitioners language, understanding, and needs) and "*lost before translation*" (fail to identify an appropriate and systematic translation process as the one leading from "bench to bedside" in life sciences).

Taking the above issues into account, we argue that among the key factors for translational processes there is education and, particularly today, instruments for higher global distance education such as Massive Open Online courses (MOOCs) are worth considering for promoting digital business orientation and web entrepreneurship skills (Alvertis et al., 2015). In what follows we discuss figures and insights on this phenomenon.

2.1 Massive Open Online courses (MOOCs)

What is the current offering for training and education focused on web and digital business skills and capabilities? That's the question guiding the survey the authors conducted in the late spring 2015. The research and analyses have been carried out along five macro-topics, suitable to provide the learning building blocks for a digital entrepreneurship curriculum:

- Business Strategy
- Entrepreneurship
- Innovation
- Management of Technology and Information Systems
- Social Studies of Technology

The choice aims to allow the identification of the "education seeds suitable" to provide the necessary skills and capabilities for entrepreneurs facing the systemic challenges posited at different levels by each domain. Also, the selection has been based on dimensions such as

- *Openness* (“Type of access” and “Fee for certificate” attributes) and
- *Accessibility* (“Main Language”, “Other Language”, and “Subtitles” attributes).

As for the openness dimension, the selection starts by considering Massive Open Online Courses (MOOCs), that are online courses for an unlimited participation and open access via the web, such as videos, readings, and problem sets as well as interactive user forums. MOOCs provide the chance for certification by international, often high ranked, academic institutions.

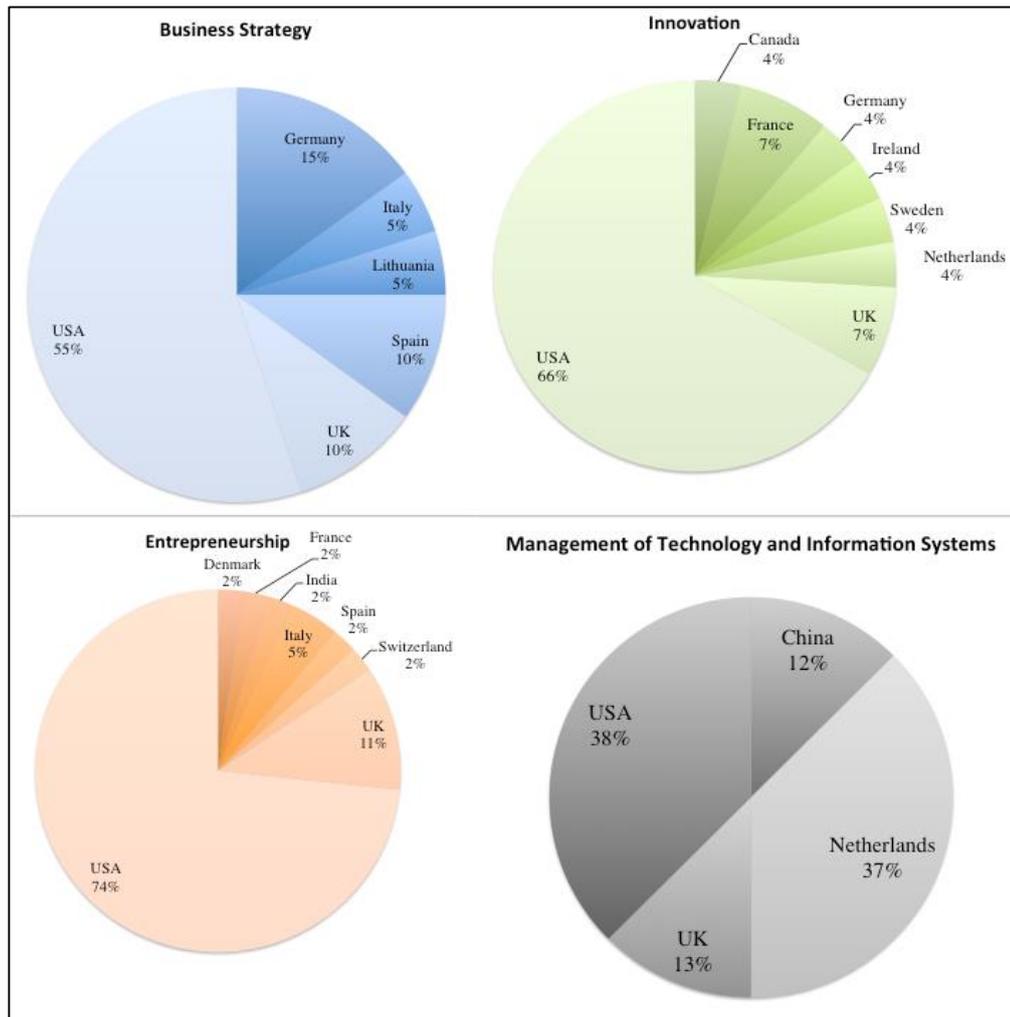


Figure 1. Offering per country per macro topic (%).

Accordingly, MOOCs represent an opportunity for entrepreneurs and enterprises willing to acquire skills and expertise they lack in a flexible and, in most cases, cost effective way. Besides the (obvious and expected) utilisation of popular search engines (such as Google), the authors thoroughly searched in relevant and/or dedicated portals and repositories for relevant MOOCs and courses. The list of the aforementioned sources can be found below:

- OpenEducationEuropa (www.openeducationeuropa.eu/en/find/moocs)
- KhanAcademy (<https://www.khanacademy.org/>)
- OpenupED (<http://www.openuped.eu/courses>)
- Udemy (<https://www.udemy.com/>)
- Udacity (<https://www.udacity.com/>)
- P2PU (<https://p2pu.org/en/>)

- Coursera (<https://www.coursera.org/>)
- edX (<https://www.edx.org/>)

The research resulted in the documentation of one hundred (100) courses (see <http://futureenterprise.eu/education-seeds>) leading to interesting insights presented in what follows (see also Figure 1). Among the considered macro topics, the most popular is “Entrepreneurship” by far, appearing in almost half of the cases (45 out of 100 cases). “Innovation”, “Business Strategy” and “Management of Information Technology” appeared 27, 20 and 8 times respectively. Considering the offering per country per macro topic (%), it is worth noting that UK is the only country (apart from the USA) covering all the macro topics. As for other European countries that cover more than one macro topic, the different focus of Germany (“Business strategy” and “Innovation”), Italy (“Business strategy” and “Entrepreneurship”), France (“Entrepreneurship” and “Innovation”) and the Netherlands (“Innovation” and “Management of Technology and Information Systems”) are worth noting.

2.1.1 Structure

Many of the identified courses are closed, as they were a one-off endeavour. There is a small number of cases that repeat after a substantial period of time. It is interesting to note that a large number of cases do not have specific dates; they are open and stakeholders are welcome to take the course whenever it is suitable for them. There is a case, though, of a relevant MOOC on Digital Enterprise by the Digital Business Academy that is restricted from a geographic perspective as it is available to UK residents only. Another important insight is that, although relevant courses exist for more than a decade, the majority of the reported cases took (or takes) place from 2014 onwards.

Regarding their structure, for most of the reported cases, a detailed overview of the course’s structure is provided to the prospective student, including the titles of both the sections and the subsections. In most of the cases, the courses are structured in four (4) to eight (8) sections, usually recommended to be followed on a weekly basis. It is also worth reporting that almost all courses have an introductory session as the first one, or a session providing an overview of the upcoming ones.

2.1.2 Providers

As for the organisations delivering the courses, universities seem to be the most active type of organisation by far; a result that was, however, expected as such initiatives totally fall in their interests and everyday activities. There was also a significant number of cases that were offered by individuals, without the support of a specific organisation. These individuals appeared to be of various different backgrounds: entrepreneurs, former professors, innovation managers, former senior executives etc. With regard to the gender issues, it is worth noting that in our sample, only 4 out of 100 courses target specifically women (namely: “Make It Happen: Empowering Women for Success”, “Organizing Your Effort For The Ladypreneur”, “Positioning For Profit For The Ladypreneur”, “Women in Leadership: Inspiring Positive Change”), and mainly from institutions based in the USA.

In the cases where the courses were distributed by universities and organisations and not by individuals, there were rare occasions where the name of the instructor was not given. On such cases, it was considered adequate to indicate the name of the organisation or university by which the instructor will be drawn. Along these lines, it is important to note that organisations and individuals from the USA are particularly active in the domain, whereas, in the EU, universities play the leading role in the distribution of these courses. Considering the xMOOC market. Notwithstanding competitors as edX, FutureLearn, Udacity and Udemy, Coursera, founded in 2012 by computer science professors Andrew Ng and Daphne Koller from Stanford University, is actually the most diffused and used platform with 13,254,433 users from 190 countries enrolled and offered more than 1041 courses from 119 institutions (<https://www.coursera.org/> - last accessed on May 29th, 2015).

2.1.3 Audience

Almost all of the reported MOOCs and online courses targeted a very broad spectrum of stakeholders, including: Entrepreneurs, (Innovation) managers, Business analysts, Students, SMEs, Enterprises, and IT literate employees. Only single cases focus on specific audiences such as R&D departments of enterprises, young and/or female entrepreneurs; an interesting case is the MOOC that the Digi-fem project women is developing, shown in Table 1 with other European Union (EU) funded projects that develop MOOCs focused on web and digital business skills and capabilities.

Name	Description
<i>Digi-fem</i> (http://digifem.eu/project-description/)	The Digi-fem project is going to develop a MOOC, targeting young women (from 18 to 38 years), NEETs, “with fewer opportunities”, with or without entrepreneurial activity, willing to be integrated in the labor market.
<i>Digistart</i> (http://digistart.unidemi.com)	The Digistart project is developing a collection of MOOCs aimed at motivating young entrepreneurs. A special section will focus on encouraging women to become online entrepreneurs by harnessing the use of the internet for expanding small home-based businesses into global enterprises.
<i>Flite</i> (http://flite-proj.cenfim.pt)	The Flite project is developing a course on “Entrepreneurship and Innovation” (currently at Pilot 2), allowing to learn about entrepreneurship in 50 hours over an 8 week period. Working in teams, the course participants should produce a business plan to form a startup company using the Business Model Canvas (Osterwalder & Pigneur, 2010)
<i>Heinnovate</i> (https://heinnovate.eu)	The project does not develop a MOOC per se, but provides self-assessment tool for Entrepreneurial Higher Education Institutions.
<i>InvestHorizon</i> (http://www.investhorizon.eu/online_courses.aspx)	InvestHorizon provides on-line courses as podcasts on launching the campaign - setting up the company structure, managing investor, managing and closing a financing round.
<i>LEAD - e-Leadership Skills</i> (http://www.eskills-lead.eu/home/)	LEAD is going to develop training materials focused on creating value from ICT such as cloud computing, mobile, social technology and Big Data. The programs will address key SME e-leadership skills gaps and demonstrate effective teaching of these. This especially includes competences required to initiate and guide innovation through ICT in an SME or start-up context.
<i>Lean LaunchPad Pilot</i> (http://www.europeanlaunchpad.com/)	The project provides entrepreneurship courses for the following areas : <ul style="list-style-type: none"> - <i>Open Disruptive Innovation(ODI)</i>: 6 weeks on-line training and dedicated on-site classes as follow-up; - <i>eHealth and Active&Healthy Ageing</i>: 10 weeks on-line training and dedicated on-site classes as follow-up. - <i>Future and Emerging Technologies</i>: 10 weeks on-line training and dedicated on-site classes as follow-up. It focuses on educating entrepreneurs on lean management in Europe.
<i>VET4STARTUP</i> (http://www.vet4startup.eu)	The VET4STARTUP is developing a MOOC (Massive Open Online Course) for start-uppers, with animated videos in 3 modules about the mind-set and skills needed to design an enterprise.

Table 1. Relevant EU funded projects that develop MOOCs

Moreover, most of the MOOCs are offered in English and without subtitles. The second most popular language is Spanish, while also localised courses (e.g. in Ukrainian, Chinese, French, Portuguese) have been also identified and reported.

Finally, as the financial cost of the reported MOOCs and courses is concerned, most of them are free of charge. The same stood for the certificate they offered; however, it is interesting to note that there are courses that did not deliver any kind of certification to those completing the course. Contrary to that, all courses are accompanied by a specific price offered a certification (included in the price). As a general conclusion, business and entrepreneurial activity concerns the vast majority of people and that could not be missing from the increasing presence of MOOC's on web, where there is abundant offer of courses around the fields of entrepreneurship and business. Furthermore, there is lack of a MOOC which integrates, in a single course, the key issues related to the three core macro topics for entrepreneurs in order to understand the trends impacting on business (Business Strategy), what are business models and how they can enforce innovation, the opportunities of open innovation (Innovation), together to value creation issue (Entrepreneurship). A closer offering could be one similar to what the Lean LaunchPad Pilot project provides, however not structured as a single MOOC, focusing on lean management and requiring still the attendance of diverse dedicated even if connected programs; thus requiring an engagement not always accessible in terms of availability of time and resources by the business learners.

3 Method

The research presented in this article adopts Design Science perspective (Hevner et al., 2004). Accordingly, the activities typically making up the steps of a Design Science research *building, evaluating, theorizing on and justifying* artifacts. The work presented in this paper concerns the identification of translation model with constructs (key factors and gaps) and a cycle representing the sequence related to their performativity (*building*). Thus, the article discusses the early stage of a design science research.

4 The translational cycle and platform

Taking the above issues into account, the FutureEnterprise consortium has designed a *Translational Cycle* which enabling “use-inspired basic research” (van der Laan & Boenink, 2012). The cycle is made up of three steps (Learn, Network and Compete) aiming to enforce solutions to translation gaps as follows (see Figure 2).

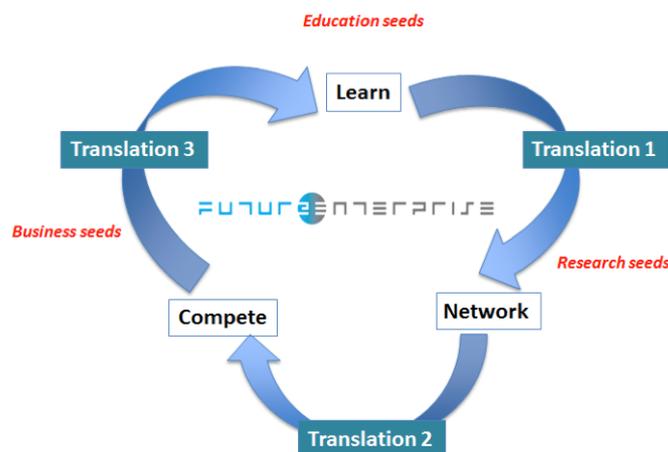


Figure 2. *The Translational Cycle*

Web or Digital Entrepreneurs (WDEs) are supposed to use *education seeds* as well as the *FutureEnterprise MOOC* to improve, extend, or consolidate their capabilities and skills in the *Learn*

step. The latter aims to provide a better understanding of what is actually available from research projects in the digital technology innovation domain (*Translation 1*). Thus, in the *Network* step, the WDEs can identify and contact suitable partners (*Research seeds*), fitting the opportunities identified for their entrepreneurial projects. This implies a common understanding of the resources, goals, and perspectives of the potential partners willing to design common new entrepreneurial projects (*Translation 2*). It is worth noting that between the considered translation steps a two-way interaction and feedbacks can happen, in order to align knowledge results from projects to the available academic education seeds.

Subsequently, the Web or Digital Entrepreneurs can either compete together with common products/services or participate to ideas competitions or crowdfunding initiatives promoted by international institutions/organisations such as, e.g., Kickstarter¹ or Innocentive (*Compete* steps). Both new common products/services and new ideas imply the design, identification, and adoption of innovations to business models actually available on the market and by the participants (*business seeds*). Also in this case a two-way interaction and feedbacks can happen (*Translation 3*). The flow adopted within the cycle encompasses what in translational research is mentioned as “backwards translation”, that is the results produced in a specific stage of research has to influence and be “feedback” to earlier phases of the cycle. It is worth noting that the above mentioned steps have a corresponding implementation as the core components of a translation platform that represent the IT artefact resulting from the design science research. Specifically the platform is implemented through the *FutureEnterprise Lab* discussed in what follows and shown in Figure 3.

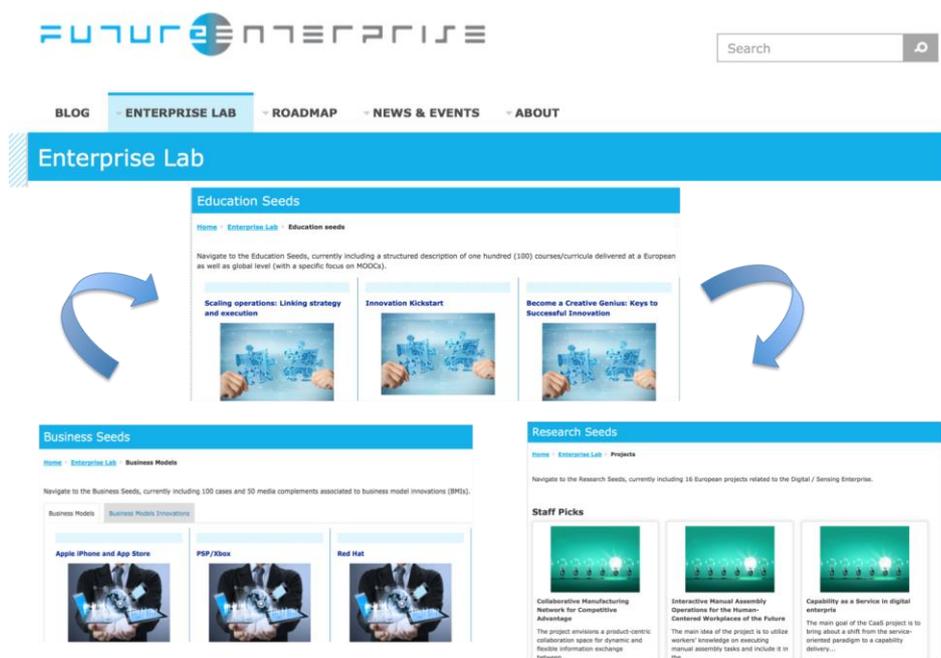


Figure 3. The Translational Platform

The translational cycle, as well as its associated steps and seeds, provide a framework for learning from best practices as they continuously emerge from research. Taking these issues into account, adopting, for example, a structuration theory perspective (Giddens, 1984) as theoretical lens, the translational cycle together with the FutureEnterprise Lab translation platform may be considered as the *rules* and *resources* (a *structure* in the structuration theory perspective), medium and outcome of

¹ <https://www.kickstarter.com/>

business innovation practices, mutually enacting enterprises and entrepreneurs (agents in the structuration theory perspective) diverse innovation systems.

5 Conclusion and future work

This article has discussed a translational cycle and translation platform which have been designed in the context of the FutureEnterprise project, a European Commission funded support action. The contribution is framed under a design science perspective and method, aiming to face the challenges of ‘*translational research*’ in the context of technology management and innovation. The translational cycle and platform they aim to provide a ground for inspiration of innovative new business ideas based on defined research outcomes, the latter considered a potentially effective mechanism to attract the long-lasting interest of potential young entrepreneurs and SMEs, as well as for the business digital transformation of large enterprises. It is worth noting that for the facilitation and homogenization of the laws and regulations among the various EU countries regarding cross-border entrepreneurship, the FutureEnterprise seeds may provide a better knowledge of the requirements for diverse business model innovations (Massa & Tucci, 2014) made available, e.g., by the digitalization of business (Tilson, Lyytinen, & Sørensen, 2010; Yoo, Henfridsson, & Lyytinen, 2010; Yoo, 2013), thus choosing the better business solution fitting the actual legal and juridical environment.

However these potential benefits, the limitations of the presented research concern the evaluation by the target users, which will be developed through focus groups, surveys as well as crowd based assessment initiatives. Thus, future work will concern the completion of the remaining steps actually characterising a design science research, that are *evaluating*, *theorizing on* and *justifying* artifacts.

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