Technological Forecasting & Social Change 123 (2017) 229–239

Contents lists available at ScienceDirect

Technological Forecasting & Social Change

An Intellectual Capital framework to measure universities' third mission activities

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ARTICLE INFO

Article history:
Received 30 November 2015
Received in revised form 22 December 2016
Accepted 29 December 2016
Available online 16 January 2017

Keywords:
Intellectual Capital
Third mission
University
Performance measurement
Indicators

ABSTRACT

Third mission activities of universities are related to the generation, use, application and exploitation of knowledge with external stakeholders and society in general. Third mission cannot be considered as a residual function but complementary to the other two missions of universities: teaching and research. Performance criteria for measuring the third mission stream of universities have now become crucial. The call for performance measures is also driven by the European policy framework such as the definition of Smart Specialisation strategies (RIS3) which highlight the key the role of universities in regional development. In an attempt to cover this gap, the paper proposes a new conceptual framework based on Intellectual Capital approaches to measure third mission activities of universities. The framework establishes a generic approach for systematically analysing third stream activities in universities. Moving from the third mission goals, it focuses on three interrelated areas: research, i.e. technology transfer and innovation, teaching, i.e. lifelong learning and continuing education, as well as, social engagement in line with regional and national development. A first exploration of the framework in four European universities approaching third mission performance is provided to discuss implementation opportunities. Finally, theoretical and empirical implications are discussed indicating avenues for moving ahead academic research.

1. Introduction

Since the 1990s, European universities have moved from focusing exclusively on the two core missions, teaching and research, to gaining a leading role in economic growth and regional development. This movement has been frequently described as "third mission" focusing on knowledge transfer, commercialization and innovation as third pillar of a university (Lambert, 2003; Laredo, 2007; Zomer and Benneworth, 2011). Although there is no general definition, third mission activities comprise three dimensions performed by universities in relation to external environments: technology transfer and innovation, continuing education and social engagement (E3M, 2010). The development of Silicon Valley and Boston's Route 128 in the US are seen as the prime examples of how universities can influence economic development (Bercovitz and Feldman, 2006; Etzkowitz and Klofsten, 2005). In Europe, the European Commission (EC) has fostered the concept of Smart Specialisation focusing on universities as key actors of economic and cultural growth in the modern knowledge society (European Expert Network on Economics of Education, EENEE, 2014; European Commission, 2014). Universities should hence align their strategies with other actors in the region and thus facilitate the technological and economic specialisation on the regional level (Romano et al., 2014).

The term "entrepreneurial university" (Clark, 1998; Etzkowitz et al., 2000; Gibb and Hannon, 2006) has been adopted to describe universities that effectively transcend their traditional mission by advance innovation and transfer technologies. A growing body of literature related to entrepreneurial universities and academic entrepreneurship equates these developments to the commercialization of science. Other research on university-industry relationships emphasises the role of university in regional systems of innovation as the primary driver of economic development (Bercovitz and Feldman, 2006; Guan and Zhao, 2013). These transformations of universities raise new challenges for their management and reporting tasks. Universities are addressing these challenges with wider managerial autonomy in return for increased accountability (Parker, 2011), with new assessment processes and systems to ensure

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[1] The views expressed are purely those of the author and may not in any circumstances be regarded as stating an official position of the European Commission.

http://dx.doi.org/10.1016/j.techfore.2016.12.013
0040-1625/

quality, and by improving or implementing performance measurement, management and reporting systems (Sánchez et al., 2009).

Although academics have already provided some metrics for measuring the third mission activities, so far no comprehensive measurement systems have been proposed which address both, the need to provide information for management and reporting of universities. University rankings also often provide information or indicators which serve as orientation and guide to build up measurements systems within universities. However, while several ranking systems exist for the first and second missions, the third mission lacks any cohesive methodology for describing what universities actually do in this regard (Montesinos et al., 2008). Empirical studies reveal that universities still lack specific information and tools to monitor and evaluate their performance on their third mission activities (e.g. Wright et al., 2004).

Measuring third mission activities cannot simply be conceptualised as a marginal term in contrast to teaching and research. On the contrary, the basic problem of analysing the third mission is that it entails a wide variety of activities. The challenge for universities will be to achieve a situation where community engagement is realised through the core activities of teaching and research and third mission is not regarded as a residual activity (Jongbloed et al., 2008). The convergence of research, teaching and innovation missions hence demands a different perspective to the traditional measures of performance applied for universities. The increasing pressure from the society forces universities to re-engineer their existing performance systems and to generate an environment of collaboration with industry and government. In this context, Etzkowitz (2016) also called for the development of metrics addressing the specifics of entrepreneurial universities.

The academic work related to measure the intangible assets and Intellectual Capital (IC) of universities, which is rooted in the accounting and management literature, offers a new perspective to measure and capture third mission activities of universities. The intangible assets and IC constitute the largest proportion of universities' assets (Ramírez Corcóles et al., 2011; Sánchez et al., 2009; Secundo et al., 2010). This implies that "in such organisations the value of IC should be measured in terms of its direct or indirect social value" (Castellanos and Rodriguez, 2004, pp. 479–480). Since the 2000s some attempts have been made to apply IC models in universities and research centres especially in European Countries, e.g. Leitner et al. (2014) for Austria, Ramírez and Gordillo (2014) for Spain and Veltri et al. (2012) for Italy. However, there is hardly any literature dealing with how to capture third mission activities of universities from an IC perspective.

With the aim to cover this gap, this paper builds on previous research on IC management in universities and, particularly, on a maturity model for IC management (see Leitner et al., 2014; Secundo et al., 2014, 2015; Veltri et al., 2014) and proposes an integrated and comprehensive framework to assess the third mission performance of universities. The innovativeness of this approach is that it addresses both, the need to reveal information about the results but also to provide information about the enablers and resources required to meet the intended outcomes. This is a fundamental task when developing management control or performance measurement systems (PMS) which should enable organisational learning and reveal interdependencies as advocated in the literature (e.g. Pidd, 2012).

Adopting an IC perspective also allows differentiating between input, process and output measures as proposed in the performance measurement literature (Bowland and Fowler, 2000) in order to systematically capture the different forms of IC (Guthrie et al., 2006) considered as important to fulfil third mission activities. At the same time, the proposed framework accounts for the third and the fourth stage of IC research (Dumay and Garanina, 2013; Guthrie et al., 2012), which is a more performative approach, aimed at analysing how IC works in organisations, how it manifests itself, and how people, processes and relationships are mobilised in relation to it (Cuganesan, 2005; Cuganesan et al., 2007; Dumay, 2009; Mouritsen, 2006).

The goals of this exploratory study are twofold. Firstly, we identify the most relevant third mission activities for which indicators are defined, regardless of the typology of a university. Secondly, an attempt is then made to measure the third mission activities in terms of IC indicators. An examination of the proposed framework is realised through a cross case comparison among some European universities adopting third mission indicators to align their strategic planning to the emerging society needs, hence contributing to regional development. We thereby contribute to the management control and reporting literature for universities and address the abovementioned need to develop metrics for entrepreneurial universities (Etzkowitz, 2016).

The remaining of the paper is organised as follows: Section 2 provides the background to understand why measuring third mission is relevant in the context of European universities moving toward innovative models. Section 3 presents the research approach and methodology. Section 4 proposes an integrated and comprehensive framework to assess the third mission performance of universities taking into account an IC perspective. Section 5 discusses some implementations in European universities and, finally, Section 6 concludes the paper and emphasises the added value of the framework proposed, its limitations and ways of moving forward.

2. Literature background

This section aims to shed some light on how to measure performance of the third mission activities of the university from an IC perspective.

2.1. Performance measurement systems for university's third mission

In general, the concept of the third mission encapsulates many of the rising demands on the university to take a more visible role in stimulating and guiding the utilization of knowledge for social, cultural and economic development. According to Rothaermel et al. (2007), third mission refers to activities and assets of an entrepreneurial university such as technology transfer, university licensing, science parks, incubators, university spin-offs. Hsu et al. (2015) remarked the key role in the transfer of university technology to industry through a multitude of mechanisms including launching technology-oriented start-ups, providing collaborative research, contract research, consulting services, technology licensing, graduate education, advanced training for enterprise staff, exchange of research staff, and other forms of formal or informal information transfer with the external industry environment. As Görason et al. (2009) remark, the interpretation of what type of functions should be included in the content of the third mission varies considerably among countries and different contexts. In Germany the focus is on technology transfer from universities to enterprises, while in Latin American third mission includes a broader concept of extension of the university to serve community needs.

The strategic perspective of measuring third mission performance as essential element to activate the dialogue inside universities and between their environment and society has been highlighted by many researchers (e.g. Dolence and Norris, 1999; Taylor and Massy, 1996). Despite the increasing interest in looking for processes and strategies to accomplish the third mission aim within higher education institutions, universities lack specific information and tools to monitor and evaluate the overall entrepreneurial performances (Wright et al., 2004) and, in particular, third mission activities. The university entrepreneurial orientation and third mission need an overall evaluation that goes beyond the specific aspects such as the financial returns to a given intellectual property portfolio, to consider a wider social and economic benefits such as the diffusion of knowledge, the creation of intangible assets behind the new venture process and the contribution to employment for social, cultural and economic development.

In this perspective, performance measurement systems (PMS) reveal a very useful and powerful tool that needs to be contextual to these core missions and aims to meet the demands of an array of stakeholders (Redford and Fayolle, 2014). A PMS devoted to measure the overall university's entrepreneurial orientation should contemplate the different views and expectations of every involved stakeholders, by considering