Journal of Cleaner Production 153 (2017) 275–286

Contents lists available at ScienceDirect

Journal of Cleaner Production

journal homepage: www.elsevier.com/locate/jclepro

Does intellectual capital promote the shift of healthcare organizations towards sustainable development? Evidence from Italy

Caterina Cavicchi*, Emidia Vagnoni

Department of Economics and Management, University of Ferrara, 11, Via Voltapaletto, 44121 Ferrara (FE) Italy

ARTICLE INFO

Article history:
Received 10 February 2017
Received in revised form
21 March 2017
Accepted 26 March 2017
Available online 28 March 2017

Keywords:
Intellectual capital
Sustainable development
Healthcare organizations
Sustainable healthcare

ABSTRACT

Scholars recently urged for research able to unlock the link between sustainable development (SD) strategy and intellectual capital (IC) at the organization level. In line with this call, the present paper aims at investigating strategic planning for sustainability within healthcare organizations (HCOs), and the role that IC plays in SD. Indeed, this latter has been claimed to be a potential enabler of Italian HCOs' shift towards SD which is a major challenge posed by international institutions. Focusing on IC assets that emerged from the institutional context, the authors designed a model of "Sustainable Intellectual Capital for HCOs" and conducted a survey of a sample of General Directors (GDs) of Italian hospitals. The aim was to determine: whether GDs were adopting formalized SD strategies, the kind of organizational positions that managed sustainability issues, the sustainability projects/actions adopted, and the effect of IC in incentivizing those initiatives. The results showed that the majority of GDs had adopted a formalized sustainability plan in which informal and/or occasional structures or collegial bodies dealt with sustainability. Finally, a stochastic ordering test showed an alignment between the GDs who attributed higher relevance to information and communication technologies and advanced technologies for sustainability and the adoption of formal sustainability strategy. Further research should deepen the role of connectivity among different assets for SD. The developed model of sustainable IC for HCOs can support healthcare managers to test the contribution of IC assets to sustainability.

1. Introduction

The United Nations Sustainable Development Goals firmly stressed the need to promote healthy lives and wellbeing for all populations (United Nations General Assembly, 2015). In this context, healthcare organizations (HCOs), such as hospitals and local health authorities, are responsible for guiding a shift toward sustainability, which includes a more equitable provision of care and prevention to reduce costs of unnecessary treatments, improving the efficiency of the system, and the reduction of the environmental impact of their structures; indeed, social responsibility should guide the governance of HCOs (Brandao et al., 2013). In other words, hospitals have to: evolve considering the impacts of the healthcare setting and workplace on hospital populations, act as change agents to enforce healthy behaviors, and develop training and research on health promotion while empowering health services (Pelikan et al., 2001). In the Italian healthcare context, it is claimed that intellectual capital (IC) management can have a role in the shift toward sustainability (Botturi et al., 2015; Lavalle et al., 2015). However, when focusing on the literature about the role of IC for sustainable development, research mainly discussed the business sector, and was routed to investigate the effect of green IC on the competitive advantage of these organizations (see for example Chen, 2008; Yahya et al., 2014). Models of green IC, such as the one of Chen (2008), have thus been shaped by the conceptualization of IC that identifies human, relational and structural capital as the main dimensions of intellectual capital. This taxonomy originated with the MERITUM project (2002), a European project aiming at setting general guidelines on intangibles' measurement and disclosure, and found consistent application in healthcare studies (Habersam and Piber, 2003; Evans et al., 2015). Based on this taxonomy, human capital is defined "*as the knowledge that employees take with them when they leave the*

Abbreviations: HCOs, healthcare organizations; SD, sustainable development; IC, intellectual capital; PHS, public healthcare system; ICT, information and communication technologies; GDs, General Directors; NPC, non-parametric combination.

* Corresponding author.
E-mail addresses: caterina.cavicchi@unife.it (C. Cavicchi), emidia.vagnoni@unife.it (E. Vagnoni).

http://dx.doi.org/10.1016/j.jclepro.2017.03.175
0959-6526/

firm", including "the knowledge, skills, experiences and abilities of people"; structural capital represents "*knowledge that stays within the firm at the end of the working day"*, including *"the organizational routines, procedures, systems, cultures, databases"*, and relational capital defined by *"all resources linked to the external relationships of the firm, with customers, suppliers or R&D partners"* (MERITUM, 2002, pp.10–11). With reference to the contribution of IC to sustainability of HCOs, at the current state of the art we assist at fragmentary studies that looked at single assets' role for sustainability successful implementation, while the whole effect of these assets for organizational performance is left unexplored (Evans et al., 2015), despite connectivity has been considered relevant for IC contribution to organizational performance (Habersam and Piber, 2003). In addition, sustainable healthcare has been mainly deployed by the use of the Triple Bottom Line approach, developed by Elkington (1999) for business organizations; this model focuses on social, economic and financial dimensions of sustainable development and in HCOs has been adapted considering the peculiarities of the sector (Jameton and McGuire, 2002). This calls for an extension of IC conceptualization, that should be inclusive of social and environmental capitals within organizations to unlock the potential contribution of these assets for society and ecosystem (Allee, 2000). Studies such as Mertins and Orth (2012)'s paper, although based on private sector organizations, are in this sense pioneering as they focus on an integrated perspective between sustainability (composed by social, economic and environmental dimensions) and IC management. Indeed, the adoption of innovation (which is a component of intellectual capital) in flexible healthcare structures was depicted as fundamental to HCOs' sustainability strategy planning and implementation (Worley, 2012); nevertheless, studies about the link between IC and strategy and between IC and organizational performance are highly recommended by scholars (Vagnoni and Oppi, 2015; Lev, 2014), as well as research that can deepen the functioning of IC practices within public sector organizations (Dumay and Garanina, 2013; Guthrie and Dumay, 2015). Moreover, IC management for HCOs' sustainability represents an interesting field of research being HCOs knowledge-intensive organizations that need IC to comply with their mission. For these reasons, the study, based on a quantitative data analysis, aims at investigating sustainability planning in the Italian public healthcare system (PHS), the role of IC in prompting sustainability initiatives and its association with sustainability strategy adoption. IC's contribution to sustainable healthcare is analyzed espousing the definition of SD in healthcare where the TBL has been conceptualized by goals of health care services' quality (social dimension), cost control (economic dimension) and environmental impact reduction (environmental dimension) (Jameton and McGuire, 2002). For the purposes of the paper, sustainable intellectual capital is defined as *"the sum of knowledge that contribute to implement sustainable development projects in healthcare organizations, where sustainable development is composed by social, economic, and environmental dimensions"*. This way, using the MERITUM (2002) conceptualization of IC, a sustainable intellectual capital model for HCOs was defined categorizing IC assets that emerged from the investigated institutional context (the Italian healthcare service) as potential contributors to SD. Then, a stochastic ordering test was conducted to verify if GDs attributing higher importance to IC assets for implemented sustainability projects were also the ones adopting sustainability strategy within their organizations. The contributions of the work are several: first, it aims to analyze the role of IC for sustainability management purposes as recommended by the literature calling for research on the link between IC and strategy (Lev, 2014; Vagnoni and Oppi, 2015). Second, it enables the creation of a Sustainable Intellectual Capital framework that can be used by healthcare practitioners as a reference to think about assets that can contribute to implement sustainability within their structures and processes. Third, the use of the developed framework can be of help to discuss connectivity among different assets, as different combinations of assets can facilitate or hinder the shift of HCOs towards sustainable development.

The paper is structured as follows. Section 2 discusses the challenge of sustainability in the Italian public healthcare context, and the role of intangibles in addressing the challenge. Section 3 presents an overview of the scarce research on the relation between IC and SD in the private and public sectors. Section 4 presents findings from a review of the literature on the contribution of IC to the sustainability of healthcare and then proposes a framework: Sustainable Intellectual Capital for Healthcare Organizations. Section 5 presents the research methodology of the study. The results are presented in Section 6 and some conclusions are drawn in Section 7.

2. The challenge of sustainability in the Italian healthcare context: a role for intangibles

In 2015, the Italian Senate produced a document titled "Consultation on the sustainability of the healthcare system" ("*Indagine conoscitiva sulla sostenibilità del Sistema Sanitario*") in which the sustainability of the PHS was presented. In the report, the Senate outlined the main criticalities the Italian PHS should address to achieve sustainability. The containment of healthcare spending, the deficit of some Regions' balance sheets for which repayment plans were issued (De Belvis et al., 2012), and the periodic block of turnover for healthcare professionals (France et al., 2005) were depicted by the Italian Senate (Senato della Repubblica Italiana, 2015) as possible causes of high disparities in the provision of services by the regional healthcare systems of the Italian PHS. The economic crisis also affected health expenditure: health expenditure per person decreased by 3.5% in 2013 and 0.4% in 2014 (OECD, 2015). Moreover, an increased citizens' copayment on drugs (De Belvis et al., 2012) and an increase in requests for private health services were the main consequences of a system not designed for quality and efficiency (Senato della Repubblica Italiana, 2015).

Examining these issues, some scholars indicated that IC, especially social capital (the combination between human and relational), could help lift the healthcare system out of the crisis (Lavalle et al., 2015). Indeed, IC contributes to public and private organizations' value creation, organizational performance and competitive advantage (Edvinsson and Sullivan, 1996; Allee, 2000; Lerro et al., 2014; Vagnoni and Oppi, 2015). Especially in nonprofit organizations, such as HCOs, IC has been claimed to help these entities in a) achieving financial sustainability in front of diminishing public funding, and, b) complying with their social mission, in particular nurturing the relations with stakeholders (Pirozzi and Ferulano, 2016) that count on healthcare professionals' competences. Therefore, *New Public Management* policies in the public organizations' contexts have pushed HCOs to be competitive through efficiency, accountability, transparency and quality of services (Habersam and Piber, 2003). Although studies of IC in healthcare organizations are of low number, the research setting deserves a deeper examination, as IC management can support HCOs in facing these emerging performance challenges (Sillanpää et al., 2010). However, IC management in HCOs is quite tricky for several reasons (Evans et al., 2015): first, it requires to overcome the divide existing between disciplines (e.g. clinic and management knowledge) to function; second, top management and professionals' workforce instability can prevent the organization to accumulate and progress in competences' development; third, HCOs are characterized by high volumes of tacit and explicit