Intellectual Capital Disclosure and Information Systems, Smart Technologies and Digitalization

Chapter 4 - Intellectual Capital Disclosure and Information Systems, Smart Technologies and Digitalization

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1. Introduction

The purpose of this chapter is to analyse the relationship between Intellectual Capital (IC), Smart Technologies and Digitalization. In particular, if we consider the information system process, composed of data collection and storage, data modelling and analysis, and communication, we decided to analyse the last phase of this process, focusing on Intellectual Capital Disclosure (ICD).

Since the late 90's, a number of influential articles and reports have considered the impact of developments in Information and Communications Technologies (ICTs) on corporate disclosure, highlighting how these developments have changed the ways that companies relate to their shareholders (Beattie and Pratt, 2003). Furthermore, many authors (e.g. Striukova et al., 2008; Dumay and Tull, 2007) encourage the use of specific corporate reporting channels different from annual reports, which companies could exploit to disclose better IC information. The new view of the emerging innovations in ICTs is called the "digital reporting era" and it is changing the ways in which companies relate to their stakeholders (Ghani et al., 2009; Hoffman and Mora Rodríguez, 2013).

Digitalization and smart technologies have affected internal communication as well as the external ones, and can blur the borders between organizations and ecosystems, acting as facilitator/catalyst of the IC research fourth stage. Corporate communication can be considered part of governance systems and deals with all communication activities of internal and external coordination as well as interest pronouncement for stakeholders (Hauer et al., 2018).

To understand the importance of improving ICD through digitalization and smart technologies, it is necessary to realize that the 21st century society is a mass data community for which information is the most valuable asset and fundamental determinant for action (Kuś and Pypłacz, 2019). Having information extends access to other resources and allows companies and their stakeholders to take action to improve the current state.

However, organisations appear reluctant to voluntarily disclose their valuable IC because they are not aware of how to gather data and report them (Schaper et al., 2017) and they do itonly if required by their regulatory context (Dumay and Tull, 2007). As stated by many authors, *"using technology can facilitate such a shift"* (La Torre et al., 2018). According to Bonsón and Escobar (2006), the variables affecting the spread of companies' voluntary disclosure by the internet are: having been audited by one of the Big Four accountancy firms; the company's activity being in the financial sector; company size.

Recent studies reveal how it seems to be relevant to continue to investigate the digital era effects on ICD, as well as its contribution to reveal new approaches and opportunities for disclosing IC strategies and outcomes (Cuozzo et al., 2017). The lack of an established academic background on this specific subject represents our main research motivation and highlights opportunities for theoretical and practical contributions. Therefore, starting from these considerations, we perceived a need for an analysis of the potential role of digitalization in driving ICD. This theoretical gap inspired us the following research questions: *How could digitalization become an avenue for ICD and enhance it? What enablers and obstacles arise from digitalization and are the most prominent in driving ICD?*

Our study has an exploratory purpose, with the twofold objective of: (1) clarifying the relationship between Smart Technologies, Digitalization and ICD and (2) exploring the potential of technology to improve ICD through a preliminary systematization based on literature.

Previous research questions leaded our research process towards the development of a preliminary framework on enablers and obstacles of digitalization on ICD, which considers internal and external stakeholders. In doing so, we aim to provide a better understanding of the use of digital channels and tools in ICD processes and their effects on information flows from and to the organizations.

The research is based on a qualitative approach. We conducted a preliminary literature analysis in order to achieve our objectives. In accordance with our research proposition, we outline a framework to systematize and describe enablers and obstacles arising from digitalization in ICD.

The chapter is structured as follows. The following section is devoted to the review of the literature on the enablers and obstacles arising from digitalization and smart technologies for external and internal stakeholders. Section 3 presents our framework. Finally, the last section discusses our theoretical and practical contributions, together with the limitations and future opportunities of research.

2. Enablers and obstacles arising from digitalization for external and internal stakeholders

In this section, we present the literature about the enablers and obstacles regarding ICD and digitalization from the two perspectives under investigation: external and internal stakeholders.

2.1. The external stakeholders' perspective

ICD is almost always considered an information mechanism mainly for the outside and beyond the annual report (Pisano et al., 2017). ICD literature is mainly concerned with value creation from a financial perspective, and focuses on an external financial value creation and on the discussion of the external benefits for organizations (Cuozzo et al., 2017), because market value is considered as an expression of a firm's IC (Chen et al., 2005).

Recent studies (Lardo et al., 2017) argue that firms try to achieve results by ICD to increase their popularity and, consequently, to create new value. This research is based on evidence that ICD, and its components, can improve the financial performance of companies and the value of its employees. The identification of intangible assets and the communication of their value seem to be viewed as a key competitive driver (Eustace, 2000). These studies are usually based on "Grand Theory" (Dumay, 2012; Llewelyn, 2003). This theory states that ICD is important for investors because it improves their decision making and it disciplines management and boards with positive economic rewards (Andriessen, 2004; Zarowin and Lev, 1999).

Also the Dumay's theoretical study (2016) reveals how authors need to abandon reporting and instead concentrate on "disclosure", that represents how an organisation makes public what "was previously secret or unknown", so that all stakeholders understand how an organisation takes into consideration ethical, social and environmental aspects. ICD is important to investors and other stakeholders because they expect these types of disclosures from a company (Dumay, 2016).

Despite the importance taken by ICD for external users, the impact of smart technologies and digitalization on ICD with regards to the effects on external users has not yet been well investigated (Dumay and Guthrie, 2017).

In general, experts perceive digitalization to play a significant role in the development of disclosure to the outside (Hauer et al., 2018). Currently most researchers tend to highlight the enabling factors of technologies, highlighting how these produce a positive effect on the ICD as a mechanism mainly for the outside.

These studies mainly focus on social media and social networks as new crucial technologies for the IC growth (Falkowski, 2014). In recent years, it seems that firms have embraced the social networks to optimize interpersonal collaborations and transversal knowledge flows with their stakeholders. ICD can benefit from using social media in a variety of ways ranging from fruitful communications, helpful suggestions within online communities to posting videos or documents. Social networks allow capturing knowledge from employees and disseminating it to the other members of the social network communities who can reuse it to add value, improving firms' product and process innovation. Social networks are considered "collaborative tools" to foster knowledge sharing, boost interactions between organizational and the stakeholders and promote innovation (Turban et al., 2011). Also other studies (Dalmasso et al., 2018; Berraies and Chaher, 2014) found that the use of social networks develops a radical innovation in the companies, by promoting the flow of knowledge and the creation of new relationships. Berraies and Chaher (2014) also stressed that interactions between internal and external actors promote strategic knowledge, particularly: the development of new information and communication technologies, new methods, new suppliers of raw materials and the response to the market or competitive needs.

Starting from all these considerations, recent studies (Lardo et al., 2017) highlight also how companies are needed to hire social media experts that are able to develop, coordinate and manage digital communication strategies.

Literature has also focused on the economic and financial effects that these technologies produce. Over two decades ago, companies began to consider the relationship between intangible assets, such as human and relational capital and market value. Several researchers (Gerpott et al., 2008; Sullivan, 2000; Williams, 2001) have considered the disclosure of intangible assets and IC as an integral part of a company's value creation process from a market perspective.

This link now appears to be strengthened by the use of social media. In general, literature reveals that social media networks can create strong relationships among external stakeholders, and this establishes connections that can be transformed into economic returns for the company. In this way, the social media revolution seems to be contributed to developing the value of the company, and it has led to a full range of new distribution channels on various digital platforms, increasing the value of the relationships between companies and their stakeholders (Hamil and Chadwick, 2010).

2.2. The internal stakeholders' perspective

If we focus on the perspectives of the internal stakeholders, we can see some different enablers and obstacles arising from digitalization and smart technologies.

The interactivity characterizing ICD through digital tools highlights the potential active role of ICD users in the communication process. They are able to select the information according to their specific purposes, but they also act as providers of precious additional data for firms. In so doing, internal stakeholders contribute to the strategy (re)formulation process. This becomes possible because of the bidirectional nature of digital channels (Holland, 2005) and their ability to generate Big Data. According to recent literature, Big Data, digital revolution, and social media are drastically changing decision making processes. In fact, processing large volumes or wide varieties of data allows firms to derive business value from them, when strong internal capabilities to bridge up ICT and data with decision making is available (Ransbotham et al., 2015). This ability transforms Big Data into Business Analytics (BA) (Davenport, 2007), which enables better forecasting and smarter decisions in areas that were previously dominated by intuition rather than data and rigour. Growing evidence suggests that leading BA users achieve higher returns compared to their competitors (Brynjolfsson et al., 2011). Other Authors (Raffoni et al., 2018) focus on BA based on Big Data and underline how this could enrich management control systems, particularly in terms of performance evaluation, goal communication and strategy formulation. Malmi and Brown (2008) emphasize the need to adapt management control systems to the digital revolution of the business environment. Using controlled experiments, companies can test hypotheses and analyse results to make more data-driven investment and operation decisions. In sum, recent studies highlight that the new digital context is changing communication for internal purposes too, and especially management accounting (Arnaboldi et al., 2017).

3. A systematization of enablers and obstacles arising from digitalization in ICD

The analysis of the literature provided in the previous sections has highlighted that only few articles explore corporate ICD in the light of changes in technology and, more in detail, how these innovative communication channels become drivers for IC value (Dumay and Guthrie, 2017). Generally speaking, experts perceive digitalization to play a significant role in making digitalized disclosure more flexible and faster, easier to be found and cheaper. Furthermore, most researchers tend to highlight the enabling power of technologies for external users, while we mentioned the importance for internal purposes too.

On the bases of these considerations, in the following sections we propose a systematization and a description of *enablers and obstacles arising from digitalization in ICD*.

3.1 Enablers arising from digitalization in ICD

Digital channels and tools differentiate from traditional ones by a number of characteristics, which overlap the critical success factors for an effective ICD process. We refer to the following features, which constitute enabling factors in our conceptual framework:

- **interactivity**, i.e. the possibility for users to play an active role in the communication process, as well as the opportunity for firms to capture from the interaction precious additional information for management purposes. This becomes possible because of the bidirectional nature of digital channels. This also meets Holland (2005) emphasis on the dynamic elements of interaction and learning as fundamental characteristics of disclosure;
- **dynamicity**, in fact while traditional annual reports provide backward-looking information and static reports, digital platforms and solutions can disclose updated information and also receive instant feedback from stakeholders, making the communication more dynamic. La Torre et al. (2018) highlight the importance to go beyond static and periodic reporting towards a more dynamic and relevant disclosure for stakeholders;
- **personalization**, because the same set of information can be created to meet a plurality of information needs. Thanks to digital tools' features, users can navigate and retrieve customized disclosure, indeed. Therefore, this turn out to be calibrated for different audiences;
- **effectiveness** and **flexibility**, because digitalization enables innovative communication tools and firms can then set up the most proper frame to open wide windows into their IC and can follow flexible and customized communications strategies. Electronic forms of reporting allow reporting users to select information they are more interested in (de Villiers et al., 2014, p. 1046). Furthermore, visualization, which includes various techniques for creating images, diagrams, and animations favoured by digital tools, can deeply add to the intelligibility of information. These factors impact on the perceived usefulness and ease of use of digital tools, which are suggested to be important drivers of technology acceptance models (King and He, 2006);
- **timeliness** of digital channels and **easy access** to an open arena, since digital channels offer instant, one-to-many communication that bypasses traditional media and allows firms to broadcast their intended messages to a large network of stakeholders. To sum up, data is available in real-time and can be used faster, easier and more efficiently;
- **efficiency**, because processes are expected to become standardized within IC disclosure and this generates time-saving. Furthermore, if data are available in real-time and can be used faster, easier and more efficiently, this reduces the uncertainty that stems from information asymmetry between managers and external investors and stakeholders. Finally, digitalization can reduce overlapping and double activities, for instance data enter activities avoided thanks to synchronization;
- **measurability**, i.e. the ability to promptly measure users' responsiveness and interactivity to IC communication;
- **mobility/availability**, which makes information highly accessible from a multitude of users and from a large number of devices. Information becomes available when, where and how everyone prefers;
- **networked communication**, which enables improvements of the relationships with the plethora of stakeholders in the ecosystem;
- **visibility**, that companies can leverage to create and strengthen the corporate image and reputation. Digital channels and tools are particularly suitable for creating an agile, flexible and modern picture of the business and, in doing so, to advance the corporate image. This leads to an integration between accounting and marketing activities.

3.2 Obstacles arising from digitalization in ICD

Organisations embracing digitalization face also important challenges and risks which turn out in potential obstacles to ICD digitalization. We aim to contribute to the literature by identifying the followings:

- **lack of digital human talent and skills** to organize, analyse and exploit data (Ransbotham et al., 2015). From this perspective, training is essential in getting people to accept innovation and to implement it. They need competences about technology devices and applications and on integration between different devices in work settings. Training can be formal and controlled by the organization or informal, e.g. based on personal experience exchange. This can be facilitated by social networks like LinkedIn and Twitter;
- **resistance to change** and adaptation in human resources (Chen et al., 2009), because all organisational changes' may cause uncertainty, due to necessary restructuring and the way such changes are communicated and internalized by employees. Not all of them are aware of the benefits of technology and some may distrust technological tools;
- **cultural barriers**, which influence the adaptation to digitalization. If there is a culture of use, this would encourage others to use innovative digital channels and tools. Hence, a cultural change is needed before such tools catch on with IC information users. Low individual computer experience and innovativeness can represent obstacles to the use of digital tools (King and He, 2006), since they restrict people perceptions of technology and their flexibility towards technological changes;
- **low level of standardization** of information and communication flows, which makes digitalization more complex. Standardization is particularly hard when information refers to IC elements, given their undefined nature by definition; as a consequence, digitalization becomes even more challenging. To be converted into a digital format, information has to be objective, simple and clear;
- **lack of digital assets**, i.e. technological resources constraints, when infrastructures (optic fiber, devices, hardware, software, etc.) are not adequate;
- **legal aspects**, which refer to the fair and secure use of data in digitalization, from the law and regulation point of view. Protection, privacy and security of sensitive data during their collection, storage and transfer can be relevant issues and require specific protocols, measures, and investments, to avoid security failure, information leakage, hackers attacks, etc. Furthermore, gaps in the regulatory framework still exist and sometimes laws are not sufficiently clear and adequate;
- **difficult balance between disclosable and undisclosable information**, in order to preserve strategic information secrecy and avoid to jeopardise key sources of competitive advantage, like distinctive knowledge, competences and resources;
- **involuntary disclosure**, as a dark side of digital channels and tools, when negative aspects are made public and dangerously impact on stakeholders and investors' perceptions about the firm integrity and values.

3.3 A framework for enablers and obstacles from the internal and external stakeholders' perspectives

An awareness of enablers and obstacles to ICD digitalization can help to improve this process, avoiding pitfalls. The enablers included in our framework reinforce the theory that digitalization and smart technologies can blur the borders between organizations and ecosystems and, then, act as catalysts of the fourth stage of IC management. On the other hand, some important obstacles also arise.

The following figure summarizes how enablers and obstacles identified in our framework (i.e. our first dimension of analysis) overlap alternatively with external or internal users of digital tools for ICD (i.e. our second dimension of analysis). In Figure 1, the overlaps are highlighted by the grey areas, relative to both dimensions.

Figure 1- Enablers and obstacles to ICD digitalization for external and internal users

1st dimension: Enables vs Obstacles to ICD digitalization		2nd dimension: External vs Internal stakeholders	
	Enablers	**External users**	**Internal users**
	interactivity		
	dynamicity		
	personalization		
	effectiveness and flexibility		
	timeliness and easy access		
	efficiency		
	measurability		
	mobility/availability		
	networked communication		
	visibility		
	Obstacles	**External users**	**Internal users**
	lack of digital human talent		
	resistance to change		
	cultural barriers		
	low level of standardization		
	lack of digital assets		
	legal aspects		
	disclosable and undisclosable		
	involuntary disclosure		

If we focus on the impact on external stakeholders, more overlaps with enablers emerge. As a consequence, we believe that digitalization mainly facilitates IC disclosure and, hence, it also allows a wider spread/dissemination of valuable knowledge outside company boundaries, in favour of the entire community of stakeholders who co-exist in the ecosystem. In doing so, digitalization and smart technologies contribute to IC exploitation. This phenomenon emerges as an additional magnificent consequence of the usage of digitalization and smart technologies for IC disclosure purposes. While less overlaps concerns external stakeholders and obstacles. However, cultural barriers on the use of digital technologies still exist, as well as a common scepticism about privacy protection issues.

If we focus, instead, on internal users, more obstacles appear to be relevant. Some of them mainly refer to organizational aspects, like the lack of digital talent reported by numerous studies, as well as the existence of cultural barriers against digitalization and staff resistance to change. Other obstacles concern insufficient digital assets, like investments in digital infrastructures and standardization along the information system process. Finally, the balance between voluntary and involuntary disclosure can be very challenging. However, thanks to the instant feedback from stakeholders and the Big Data that they provide just by making use of digital channels and tools, companies have access to precious inputs to renew their IC generation process. Digital and smart solutions enable organisations to gather information through the interconnection between IC disclosure providers and users. This information can be used by companies to create and strengthen their IC elements. Furthermore, it can be used for strategic decisions and corporate marketing activities. Therefore, a virtuous circle originates: digital media can even become strategic external sources for IC identification and, in turn, positively contribute to new IC creation.

4. Concluding remarks

A first aim of this research was to clarify the relationship between Smart Technologies, Digitalization and ICD. A second aim was to explore the potential of technology to improve ICD through a preliminary systematization based on literature.

To achieve our objectives, the chapter proposes a preliminary framework providing a systematization of enablers and obstacles to ICD digitalization for external and internal stakeholders.

Our framework highlights enablers generated by digitalization of IC disclosure, which lead to a wider dissemination of valuable knowledge inside and outside a company's boundaries, in favour of the entire community of stakeholders, internal and external. This meets their expectations and needs for flexible, interactive, multidirectional and timely approaches, technologies, and infrastructures to acquire, process and disclose data and information.

Our analysis confirms different information needs of external stakeholders compared to internal ones. While external stakeholders require reliable and timely information about companies' IC to guide their behaviour, internal stakeholders need to share and process large volumes and a wide variety of data to contribute to the strategy (re)formulation process.

This study makes theoretical and practical contributions. For researchers, it contributes to the extant literature that seeks to better understand the relationship between ICD and digitalization, by adding further theoretical insights to the existing studies regarding ICD.

Practical implications of the study are essentially related to the clarification of which are the main obstacles faced by firms, underlining the key and critical aspects to overcome. In particular, our results suggest that additional investments are necessary to enhance the digital talent of human capital and to break down cultural barriers against digitalization that still exist. Therefore, education and training could represent critical success factors to be embedded in the firm's strategy.

Additional efforts should also reinforce digital assets in the form of digital infrastructures. On the basis of the obstacles to ICD digitalization still existing, we recommend using a mixed structure of communication tools and channels.

Furthermore, the integration of the technologies used for the internal and external disclosures could reduce the obstacles for the two categories of stakeholders (external and internal) and also enrich the factors enabling ICD.

The implementation of these practical contributions could determine several benefits for companies, e.g. each stakeholder can access on demand a large volume of information in their particular area of interest, and companies could improve corporate image, competitive advantage and their market value. Therefore, we can state that digitalization and smart technologies can blur the borders between organizations and ecosystems and, then, act as catalysts of the fourth stage of IC exploitation and management.

Our study is only a preliminary analysis. Future research could improve the model and test it empirically.

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