Rome wasn't built in a day … reflecting on time, intellectual capital and intellectual liabilities

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Abstract

Purpose – The purpose of this paper is to analyse, through a temporal lens and from a managerial perspective, the role played by intellectual capital (IC) and intellectual liabilities (ILs) "in practice" within the value creation and value destruction processes. In particular, this study is based on the following research question: to what extent are time and its attributes considered, measured, and discussed with reference to IC and ILs and their influence on financial capital (FC)? In order to achieve this purpose, the author has carried out a field study.

Design/methodology/approach – A field study method is adopted in order to understand IC and ILs "in action" from a temporal perspective.

Findings – This study highlights the relevance of time when IC and ILs are analysed from a dynamic perspective. In particular, the main findings are the following. First, it emerges that the time dimension of IC tends not to be measured due to the complexity of IC itself and to the lack of adequate accounting practices. Second, IC time is generally considered to be non-cyclical and random. Third, even if time is not measured, some companies talk about it and when this is done with regularity, time perceptions move from an individual sphere to a collective one and they become more and more reliable. Moreover, IC performance is perceived to be "distant" from FC performance: the succession of events and the time lags are difficult to define and quantify as the influence of IC on FC is mediated by several resources and events. Lastly, the value destruction process related to ILs tends to generate negative effects faster than the value creation one, especially with reference to the impacts of IC on FC.

Research limitations/implications – The main limitations of this study are twofold. The first is related to the methodology adopted and the related risks that the results may be subject to both interviewee and interviewer bias and interpretation. The second is related to the fact that the constructs to be discussed were not proposed by the firms but by the author, in order to make the results comparable.

Practical implications – This study contributes to the literature on IC and ILs "in action" and "in practice". Moreover, this study enriches the extant IC and ILs literature focusing on time, a variable that is generally assumed to be a natural unchangeable phenomenon that does not deserve attention. In particular, the findings highlight the different behaviours and perceptions that occur when IC and ILs are looked at through a temporal lens. Finally, this study pinpoints that value creation and value destruction processes seem to have different timings as it takes more time to create value than to destroy it.

Originality/value – In comparison to previous studies, this study does not focus on the positive and negative effects of IC separately, but combines the two issues, also comparing the value creation and the value destruction processes in order to offer a complete picture. Moreover, it adopts a temporal lens, which has been applied only with reference to IC but not to ILs as well. Finally, while the extant literature on ILs tends to investigate them from a theoretical perspective and adopting a static approach, this research investigates ILs empirically from a dynamic perspective.

Keywords Value creation, Time, Intellectual capital, Intellectual liabilities, Temporal lens, Value destruction

Paper type Research paper

Journal of Intellectual Capital
Vol. 16 No. 1, 2015
pp. 2-19

1469-1930
DOI 10.1108/JIC-02-2014-0018

1. Introduction

"Rome wasn't built in a day, but when it fell, it burnt in one". This adage, with its reference to creation, destruction, and time, provides a very apropos springboard for the discussion underlying this study. This paper builds on Giuliani (2013) to provide a different analysis regarding the intellectual capital (IC) value creation and value destruction processes. While that paper suggests there exist differences between value creation and value destruction processes in terms of connections, i.e. between (IC) dynamics and intellectual liability (IL) dynamics, it also offers the possibility of investigating the temporal dimension of the analysed value processes. Because of length and scope limitations, Giuliani (2013) did not develop this aspect previously. Consequently, the present study purports to investigate IC and ILs through a temporal lens (Ancona *et al.*, 2001a).

Within the IC discourse, the idea that IC has an important role in creating competitive advantages and a relevant influence on the organizational performance is dominant (Edvinsson, 1997; Stewart, 1997; Sveiby, 1997). Some scholars have highlighted that IC also has a negative or destructive side that tends to be overlooked, not only in theory but also in practice (Caddy, 2000; De Santis and Giuliani, 2013; Giuliani, 2013; Harvey and Lusch, 1999). This implies that (ILs) are "one of the most under-researched or, more realistically, avoided topics in the IC literature" (Dumay, 2013).

A lens that can be used to shed light on different aspects of IC and ILs is the temporal lens which puts time in the centre (Ancona *et al.*, 2001a). In fact, this lens allows the exploration not only of processes and practices, but also of the pace at which they move, the trajectory over time, what they align with, and the situatedness in time of a phenomenon. This perspective makes it possible to understand not only whether value creation and value destruction processes related to IC and ILs develop along different paths and with different intensities, but also whether they do so at different paces. In fact, some scholars have argued that it is not only important to understand what IC is and what it does, but also to investigate when IC does what (Giuliani, 2009; Giuliani and Skoog, 2012; Skoog, 2003). Although this stream of studies seems to be relevant, especially for analysing "IC in action" or "IC in practice" (Cuganesan, 2005; Dumay, 2013; Guthrie *et al.*, 2012), to date the time dimension appears to still be left out of discussions, both in the IC and in the accounting fields (Giuliani and Skoog, 2012); this implies that research designs or theories risk being temporally incorrect or incomplete and processes risk being misunderstood or misrepresented (Tuttle, 1997).

This study attempts to combine the aforementioned aspects, i.e. time, IC and ILs, in order to address the need for empirical investigations on IC (Cuganesan, 2005; Cuganesan and Dumay, 2009; Marr *et al.*, 2004) and ILs (Brunold and Durst, 2012; De Santis and Giuliani, 2013; Garcia-Parra *et al.*, 2009; Jääskeläinen, 2011; Mäenpää and Voutilainen, 2012) and to contribute to the call for qualitative research on the time dimension (Ezzamel and Robson, 1995; Hassard, 1996). Stemming from this, the aim of this paper is to analyse the role played by IC and ILs "in practice" within the value creation and value destruction processes, by adopting a temporal lens and a managerial perspective. In particular, this study is based on the following research question:

RQ1. To what extent are time and its attributes considered, measured and discussed with reference to IC and ILs and their influence on financial capital (FC)?

In order to achieve this purpose, the author has carried out a field study in the nine companies described and analysed by Giuliani (2013).

The structure of the paper is as follows. The next section proposes a brief review of the literature regarding time, IC and ILs and following that, the methodology is described. The subsequent section reports the collected empirics then attempts to interpret the findings and to develop the theoretical arguments of the study. Finally, some valuable insights are extracted and discussed to draw some conclusions and to outline a future research agenda.

2. IC and ILs under a temporal lens

Among the several perspectives from which IC can be observed, two main approaches, one static and one dynamic, can be identified (Meritum, 2002). While the former focuses on the stock of IC resources, investigating how they can be visualized and quantified by subscribing to the old adage "you can manage what you can measure" (Brännström and Giuliani, 2009; Edvinsson and Malone, 1997; Gröjer and Johanson, 1996; Mouritsen, 2009; Mouritsen and Roslender, 2009; Stewart, 1997), the latter is instead centred on flows, processes, rules, activities, and connections, i.e. on the value creation process (Cuganesan, 2005, p. 360; Cuganesan and Dumay, 2009, p. 1163; Marr *et al.*, 2004, p. 312).

Several scholars have highlighted that investigating IC dynamics makes it possible to understand how IC creates value, how it works "in practice" within organizations and within the capital market (Dumay, 2013; Giuliani, 2013; Guthrie *et al.*, 2012; Marr *et al.*, 2004; Mouritsen, 2006). The stream of research that adopts this perspective characterizes the recent developments of the IC discourse that focus on "what IC does", on "how it should be managed" and on the use of IC measurements with an increasing attention to critical and practice-based reflections (Guthrie *et al.*, 2012; Mouritsen, 2006). This is the perspective investigated in this study.

In the archaeology of IC, according to Bontis, the idea of IC, in general, and of IC dynamics, in particular, can be referred back to Galbraith who believed that IC means more than just a static intangible asset per se, but rather, represents an ideological process, a means to an end, an "intellectual action" (Bontis, 1998). Similar ideas can be found also in several of other studies where analysing IC was conceived also as an active process of value generation centred on knowledge. In other words, analysing IC can be considered a way of assessing a company's future prospects (Brooking, 1996; Edvinsson, 1997; Edvinsson and Grafström, 1998; Itami, 1987; Roos and Roos, 1997; Roos *et al.*, 1997; Stewart, 1997; Sveiby, 1997) and understanding the interactions among IC components and the linkages between IC and financial performance (Cuganesan, 2005; Cuganesan and Dumay, 2009; Fruin and Kaisha, 1997; Giuliani, 2013; Marr *et al.*, 2004; Murthy and Mouritsen, 2011; Roos, 1998; Spender, 2006). To some extent, the underlying idea of the studies mentioned was about raising awareness of the relevance of managing IC today in order to have better financial performances in the future, i.e. time lags emerge and time matters when one wants to control IC performance.

While there is widespread recognition of the inter-relationships between IC and its consequences for value creation, little empirical work has been conducted to offer additional insights useful for interpreting reality (Cuganesan and Dumay, 2009, p. 1183; Dumay, 2012, p. 12; Guthrie *et al.*, 2012, p. 79). In particular, the studies based on a dynamic approach tend to overlook the fact that IC can have "negative value consequences" (Cuganesan, 2005, p. 360), i.e. ILs can emerge (Abeysekera and Guthrie, 2004; Caddy, 2000; Garcia-Parra *et al.*, 2009; Giuliani, 2013; Harvey and Lusch, 1999). Some scholars argue that there is a lack of empirical research on ILs, as the extant studies are mainly theoretical (Garcia-Parra *et al.*, 2009). This implies that while some argue that the IC discourse is in its third stage, i.e. there is the need to study IC in

practice, the IL discourse appears to be still in the first stage, i.e. raising awareness (De Santis and Giuliani, 2013). Therefore, in order to fully understand the positive and negative effects of IC from a dynamic perspective, there is the need to develop more empirical analyses focused on the negative effects of IC.

Regarding the studies that consider both IC and ILs, the main conclusions they reach are as follows (Abeysekera and Guthrie, 2004; Brunold and Durst, 2012; Caddy, 2000; Claessen and Durst, 2011; De Santis and Giuliani, 2013; Garcia-Parra *et al.*, 2009; Giuliani, 2013; Harvey and Lusch, 1999; Kupi *et al.*, 2008; Mäenpää and Voutilainen, 2012). First, there is the need to consider both the positive and the negative dimensions of IC as they are equally relevant. Second, value destruction processes do not mirror value creation ones as they develop along different paths and with different intensities. Third, companies do not talk about ILs, and the "dark side" of IC tends to be left out of managerial discussions and therefore, ILs are not mobilized. Fourth, there is the need for a more in depth look at what ILs do within the organization in order to understand how ILs should be managed and therefore, controlled and minimized.

In approaching IC and ILs from a dynamic perspective, the time dimension assumes a relevant role as processes, flows and cause-and-effect relationships require time to be created and developed and they take place over time. More in depth, time seems to play a particularly relevant role in the IC field for at least the following reasons. To begin with, IC requires time to be created and developed and to generate value (Chaminade and Roberts, 2003). Also, timing is relevant in selecting the appropriate moment for an activity. In planning the managerial activity to be carried out to create and develop IC, management has to take into consideration the temporal dimension and the existing, natural temporal lag between the cause (the activity) and the effect (the creation/development of IC) (Mouritsen *et al.*, 2001). In addition, IC can be studied from a static approach, stressing the resources it is made of, or as a process, focusing on its dynamic aspects (Meritum, 2002). Therefore, viewing IC as a process means taking into consideration its life cycle, its changes over time and thus, the time variable.

Within the IC discourse, very little research has been carried out with reference to the temporal dimension. By way of example, Giuliani (2009) adopts a temporal lens in order to analyse IC as a process. In this investigation, he draws the conclusion that concepts, methods, and tools change over time and this can be due partly to the dynamicity of IC and partly to the different perspectives adopted to observe them. Quevedo and Roberts (2005) argue for time as the key parameter for value conversion from IC into FC. Moreover, they suggest that time, as a social construction, can create connectivity among IC resources and develop time coordination mechanisms across the knowledge production process, which is beneficial for converting knowledge into value. Skoog (2003) underlines that focusing on connectivity, regularity, and stability facilitates understanding and allocates attention to organizational value creation. The reason for this could be because these features also allow the inclusion of time in the discussions about the value creation process and the allocation of activities not only in space but also in time.

IC, ILs, and time also come into the picture when the attention moves from a measurement perspective to a financial valuation perspective. For example, valuation models based on the return on assets or discounted flows (income or cash) (such as the Knowledge Capital Earnings, the EVA, etc.) need to allocate inflows and outflows on a time axis and define a temporal horizon. In other words, there is the need to identify when IC investments will take place and when they will have their expected return. Moreover, both the estimation of the flows and of the discount rate should consider the

risks related to the enterprise, or to the specific resources, or to the investment (Andriessen, 2004; Giuliani and Marasca, 2011; Lev, 2001; Reilly and Schweihs, 1999; Sudarsanam *et al.*, 2006; Sveiby, 2004). Real option approaches can be considered "a more sophisticated approach to valuation" as they are able to "adequately or correctly address the complexities that IC-based competitive strategies engender" and to consider the range of options, provided by the ownership or the access to IC, that the management can exercise flexibly over time (Sudarsanam *et al.*, 2006, p. 292). Therefore, here, too, it is important to consider the value of expected flows, the length of deferral time, the risk rate, and the volatility of the return flows (Smit and Trigeorgis, 2006) and consequently, the real option approaches should enable managers to understand how IC works, along with its risks, its value creation potential, and its time dimension (Andrikopoulos, 2005; Bose and Oh, 2003; Chang *et al.*, 2005; Housel and Nelson, 2005; Sudarsanam *et al.*, 2006).

In short, the implementation of these approaches should stimulate management to consider and discuss IC, ILs, risks, and time. Unfortunately, from the analysis of the extant literature it seems that these IC valuation methods seem to be applied only rarely, in practice, for managerial purposes while they tend to be implemented on specific occasions for disclosure-financial purposes (e.g. for M&As, IPOs, a corporate finance operation, etc.).

In summary, it seems apparent that there is a need to bring time within the IC discourse, especially from a managerial point of view. This study tries to do just that, observing IC and ILs through a temporal lens from the managers' perspective, i.e. it tries to focus on the managerial temporal aspects of IC and IL dynamics.

As this analysis focuses on IC and ILs from a managerial perspective, time will be approached from a management accounting/control point of view. In management accounting studies, time is mainly considered in terms of how to account for time in order to understand time horizons (Chow *et al.*, 1996; Van der Stede, 2000), time frames (Butler, 1995), time lags, dynamics, and processes (Anderson-Gough *et al.*, 2001; Mouritsen and Bekke, 1999; Nandhakumar and Jones, 2001; Quattrone and Hopper, 2005) and consequently, to be able to manage time adequately in the organization so as to gain competitive advantage (Huy, 2001; Rämö, 2002). Time therefore tends to be seen as an important management tool which is both an information system (speed, punctuality) and a decision parameter (time savings and sequencing of activities) (Giuliani and Skoog, 2012).

In adopting a temporal lens, it is first important to focus on the aspects that will be relevant for this analysis, i.e. the concept of time and its attributes.

A first conception of time is the "natural" one which is the clock time. Examples of this quantitative perspective are "time free", longitudinal, "time lags", and "time horizon" studies (Ezzamel and Robson, 1995). Clock time progresses linearly, is homogeneous, quantifiable, irreversible, and is subject to a unitary interpretation – an hour is an hour, anywhere, anytime (Anderson-Gough *et al.*, 2001). This view depicts time as a resource that can be measured, used, traded and consequently, managed by "hard systems" such as accounting that can allocate time (budgets) for meetings and interactions (Skoog, 2003). A typical tool used for capturing clock time is the time sheet.

Besides the concept of quantitative time, there is the one of social or qualitative time, that is, a concept of time in which personal and subjective experience plays a primary role. In other words, qualitative time can be considered a social construction based on individual and collective perceptions: one hour may be either very short or very long, depending on one's mood and on the intensity of conscious experiencing. In this case,

more than measuring time it is important to think and talk about it (Ancona *et al.*, 2001b; Bergmann, 1992; Butler, 1995).

Going beyond different types of time, it is important to acknowledge two further crucial dimensions of social time: cyclical and non-cyclical time (Minati, 2005). The concept of cyclical time stresses the idea of recurrence and repeatability: things still come and go, but they eventually come again, in identical or highly similar form. The non-cyclical view of time applies when non-repeating processes occur and thus new paths of development can be recognized: the future is considered to be undetermined and different from the past. Within this approach it is possible to discern two sub-approaches to time: the linear one, where time tends to be considered a sequence of stages (past, present, and future), and the random one, that is characterized by the idea that time is ruled by chance and is consequently, unpredictable (Minati, 2005).

In this study, three specific attributes of time are particularly relevant: duration, succession, and pace/intensity. In fact, since causal maps will be used as a tool for this investigation, from a psychological and social standpoint, time plays a major role in the identification of cause-and-effect relationships (Ancona *et al.*, 2001b; Birnberg *et al.*, 2006). In fact, regarding the identification of the linkages, some argue that the identification of cause-and-effect relationships are influenced by the order of the events (the cause occurs before the event), by the duration (events with similar duration are often identified as linked one another) and by their magnitude-intensity (events with similar intensity are often identified as linked to one another) (Birnberg *et al.*, 2006; Granger, 1969; Nørreklit, 2000).

The concept of "duration" applies to the persistence of an event over time and to the interval between two events (Wittmann, 1999). Duration is relevant for time management and for accounting for activities (time needed to develop an activity). It can be measured by objective approaches (time sheets) or the timing-without-a-timer models which reconstruct time by reference to the amount of information processed and stored. In this second case, if there is no "hard data", time is subjective and thus, socially constructed through discussions (Nørreklit, 2000; Skoog, 2003).

The concept of "succession" relates to the identification of events in their temporal order (Wittmann, 1999). As stated earlier, succession is relevant for ordering events over time and for supporting the identification of cause-and-effect relationships. With this regard, some authors have pointed out that making reference to succession to identify relationships can be misleading, as it can mean that two unrelated events are perceived as linked other than temporally (Lagnado and Sloman, 2006). Moreover, this approach can be faulty if the linkage between two events is not linear co-influential , as often occurs in organizational contexts (Giuliani and Skoog, 2012).

Pace (or intensity) regards the perceived "speed" of time, i.e. how fast a succession of events occurs (Wittmann, 1999). The idea of pace is often referred to that of time lags, i.e. the period within which an action in the context of one dimension will have an effect on another. Knowledge of time-lag effects is essential because it permits management to use performance measures in nonfinancial performance to forecast future financial performance (Huang *et al.*, 2009).

Time lags, even if relevant within the analysis and visualization of value creation processes and for the interpretation of performance indicators, tend not to be analysed in depth and consequently, causal models and maps are often temporally biased (Gollob and Reichardt, 1987; Johanson *et al.*, 2006; Mitchell and James, 2001; Nørreklit, 2000). Time lags can be analysed using either quantitative-statistical approaches or qualitative ones. A critique of the former approach, which can include longitudinal as

well as cross-sectional analyses, is that they often do not consider the effects a variable can have on itself, the prior values of other variables and the length of the time interval under exam (Devaraj and Kohli, 2003; Gollob and Reichardt, 1987; Mitchell and James, 2001). With reference to qualitative approaches, some argue that, even if not accounted for explicitly, time lags can be socially constructed through discussions and regular application of accounting practices and thus, they are naturally built into several accounting tools such as causal maps (Bukh and Malmi, 2005; Skoog, 2003).

According to the extant literature, in order to analyse time adequately, another dimension (also assumed by some as an attribute of time) has to be considered: space. In fact, space and time are usually seen as complementary aspects that need to be considered in order to understand reality (Mouritsen and Bekke, 1999; Quattrone and Hopper, 2005; Takatera and Sawabe, 2000). Within the social sciences, such as accounting, time, and space play a major role because events, societies, organizations, etc., need to be located on specific coordinates; they are, typically, three spatial dimensions (length, width, height), and one temporal dimension (time) (Llewellyn, 1994). In accounting, the relationship between time and space is particularly important as "accounting does not reflect reality but constructs it by providing particular forms of organisational visibility and power–knowledge relations" (Quattrone and Hopper, 2005, p. 737). In other words, in the qualitative conception of time, time is a matter of perception and it is influenced by the context in which a person is located. Thus, accounting can be seen as a time-space ordering device or as a way of representing and, to some extent, constructing time and space (Quattrone and Hopper, 2005). This view contrasts with the quantitative one that assumes that "time elapses in a sequential way in all societies" and consequently, space is not relevant (Bergmann, 1992, p. 123).

In summary, this study focuses and reflects on how time is conceived and on how time attributes are perceived, in practice, within IC value creation and value destruction processes.

In comparison to previous studies, this study does not focus on the positive and negative effects of IC separately (Garcia-Parra *et al.*, 2009; Guthrie *et al.*, 2012), but combines the two issues, also developing a comparison between the value creation and value destruction processes in order to offer a complete picture. Moreover, it adopts a temporal lens, which has been applied only with reference to IC but not to ILs (Giuliani, 2009; Skoog, 2003). Finally, while the extant literature on ILs tends to investigate them from a theoretical perspective and adopting a static approach (Caddy, 2000; Garcia-Parra *et al.*, 2009; Harvey and Lusch, 1999), this research investigates ILs empirically from a dynamic perspective.

3. Design of the study

This study tries to answer two calls: the first is the one for case studies that are useful for analysing IC "in action" (Cuganesan, 2005) or "in practice" (Dumay, 2013) while the second is the one that requires a qualitative analysis of time (Ezzamel and Robson, 1995; Hassard, 1996). Thus, this research adopts the field study method to investigate how companies perceive when IC does what.

The field study method can be considered a research design that embraces a relatively small number of companies, as opposed to a wide-ranging survey or intensive case enquiries in two or three companies (Kaplan, 1986; Roslender and Hart, 2003; Scapens, 1990). Developing and administering a questionnaire was rejected as unlikely to produce the necessary level of detail or depth of insight required regarding managerial time perception. Intensive case research was also rejected on the grounds

that, despite its demonstrated capacity to provide rich accounts of practice and provocative insights, it may not capture the full range of such perceptions (Roslender and Hart, 2003). By analysing several organizations, it becomes possible to understand whether an emergent finding is simply idiosyncratic to a single case or consistently replicated in several cases (Eisenhardt, 1989; Eisenhardt and Graebner, 2007).

This explorative study is based on the same research methodology described in Giuliani (2013): the same nine cases were analysed, the same managers were interviewed and the same research protocol was followed. In fact, this analysis represents the second step of the investigation proposed. Furthermore, while the analysis reported by Giuliani (2013) was dedicated to the investigation of the linkages between different IC components (human capital, structural capital, relational capital) and their intensity with reference both to the value creation and to the value destruction processes, this study uses the IC value creation and value destruction maps as a springboard for a discussion of their temporal dimension as they are considered useful cognitive aids for managers to understand IC "in action" (Cuganesan, 2005; Cuganesan and Dumay, 2009; Kaplan and Norton, 2003; Marr *et al.*, 2004; Skoog, 2003). In fact, these maps represent a powerful tool for gaining insight into how organisational resources are used to create value and for having a more complete picture of what IC does (Cuganesan, 2005; Cuganesan and Dumay, 2009). This analysis was carried out immediately after the completion of the previous one described in Giuliani (2013).

The discussions about time were divided into two segments of varying length. The first segment was dedicated to talking about the extent to which management measures and talks about time. Here, the questions regard how time is approached and how duration, succession, and IC-related time lags are perceived. The second segment was instead devoted to the analysis of the time dimension of ILs and of the value destruction process, with particular reference to the analysis of how managers perceive time in this context, compared to the time dimension of IC and value creation process. In all, the idea was to have a "conversation" about the context and about how managers perceive time with reference to the drawn map.

The interviews lasted anywhere from one to two hours, depending on the complexity of the context and of the busy schedules of the respondents.

Notes were taken during all the interviews. After each one, the interview material and notes were examined to remove incomplete and ambiguous information. Contrasting perspectives were highlighted and, where necessary, confirmation of perspectives was requested from participants in order to ensure that it was the perspectives of those being studied which were being presented. Post-interview communication with the respondents helped the author to ensure the accuracy of the data.

The most valuable answers are reported and commented on in the next section.

4. Investigating IC and ILs in practice through a temporal lens

Investigating IC from a dynamic perspective can be problematic as it is perceived to have a complex nature and multiple connections with the other organizational resources. Within the nine companies investigated different positions could be identified. In the analysis of the empirics, the investigation will develop as follows. First, a focus on "accounting for time" will be proposed; then some responses regarding time and its attributes will be discussed; finally some reflections about time, ILs and value destruction will be offered.

Regarding how time is approached, these responses are worthy of note:

> We talk about the role of IC in our value creation process […] Of course the time dimension is relevant but we do not measure time and time-lags and we do not talk about them systematically […] (Motor SpA).
>
> It is difficult to "translate" our perceptions into a time number like number of months, years, etc. When we talk about time we tend to keep it on a more 'qualitative' level (short term, mid-term, long term): it's easier […] (Comunica SpA).
>
> Even if we do not measure time, the time dimension is clear in our mind […] we have to consider it when we prepare the budget or the business plan […] (Pack SpA).
>
> We know there is a relationship between intellectual capital and financial capital but we cannot define its importance. Ours is a big company and therefore direct cause-and-effect relationships are difficult to identify […] moreover the effect of intellectual capital on financial capital and vice-versa is mediated by several elements and this makes it very complicated to give you an answer […]. Finally, we do not have data that allows us to have a clear and objective perception of the connections; probably in smaller companies it would be easier […] (Tech SpA).

None of the companies interviewed measure the time dimension of IC, which they tend to keep, instead, at a qualitative-subjective level. This aspect is consistent with the results obtained in other fields that support the view that time, generally, is neither explicitly nor systematically measured (Ezzamel and Robson, 1995; Giuliani, 2009; Nørreklit, 2000). The tendency, therefore, is to consider time as a fact, a variable that enters as "a convenient marker or as one among many independent variables in a multivariate regression" (Aminzade, 1992, p. 457). In partial contrast with the results obtained by these scholars, it must be pointed out that even if time is not measured, and even if different managerial behaviours can be identified, companies do tend to consider time and talk about it. For example, Tech believes it is almost impossible to have a reliable perception of IC time, Motor talks about time occasionally, while Comunica and Pack talk about time systematically, albeit in different ways (number of months/years vs time ranges) and opinions about the reliability of their perceptions of time. In conclusion, the time dimension of IC processes usually is not measured but can be the object of managerial discussions as it can represent a data input of a wider accounting process, such as budgeting.

The reason for this non-measurement is not the irrelevance of the time dimension, which is instead perceived as a relevant variable, but the difficulties inherent to systematically measuring the time dimensions related to IC activities. This clearly emerges in the narratives from Tech, a company that would like to measure time, i.e. adopt a quantitative-objective conception of time, but believes that it is not possible. In other words, it seems that time measurement is a problem without any "good" solutions. Time sheets, for example, a typical tool for measuring time, are generally not appreciated or they are perceived to be non-applicable or unreliable when it comes to non-routine activities such as the IC-related ones (e.g. marketing, R&D, etc.). As one manager said: "It takes a lot of time to fill in time sheets […] people don't like them […]. they can work in administration or in production where they do almost the same things every day […]" In addition, the data collected from Comunica offers a different perspective regarding IC and time measurement. In this company the difficulties of the "translation process" of reality into representative and reliable numbers are highlighted. In summary, the reasons for not measuring the temporal dimension of IC could be related to the lack of adequate methods and tools and to the difficulties of interpreting the data.

In terms of effects, not measuring time implies that the time dimension is generally not objective but subjective, constructed by the managers on the basis of their experiences and personal perceptions. Thus, when IC is approached the time dimension tends to rely on discussions, memories, and perceptions, rather than on "hard data" (Ancona *et al.*, 2001b; Butler, 1995). In this case, the analysis of the time dimension of IC can be affected by the "subjective time paradox": hours rich in experience that seemed, at the time, to fly past seem, in retrospect, to have lasted a long time, while hours that seemed unending at the time appear short in retrospect (Poppel, 1997). Consequently, the "constructed" time dimension can be different from the "real" one and potentially the "numbers" emerging from time sheets can be perceived as not representative of the reality (the "translation" problem described by the managers of Comunica). This also confirms the findings obtained by Skoog (Skoog, 2003) who argues that regularity, i.e. regular measurements and regular discussions, makes it possible to gain a more and more precise understanding of the time dimension that becomes "clear in our mind", as one manager at Pack said.

As concerns the attributes of time, it is first possible to investigate the duration. As mentioned, companies tend to measure the duration only of some specific activities, mainly related to production, design, etc. The only IC activities that tend to be measured are the ones related to human capital such as training hours, on-the-job training hours, etc.:

> We don't measure the time we spend talking to customers, developing databases or designing a new product […] It is too complicated and it would take too much time […] (Pack SpA).

> We don't keep track of the time spent in these kinds of activities, we don't need this data. It would also be difficult to measure and to judge if the time spent for some kinds of activities […] there is no benchmark and each situation is different […] it is difficult to judge if the time spent for obtaining an order or for completing an R&D project or for developing a database is too much or too little […] (Tech SpA).

Once again, idea that measuring time is "too complicated" returns and the lack of "appropriate" or "convenient" methods and tools to map activities characterized by high variability re-emerges. For example, some managers pointed out that they take care of a lot of activities that can be referred to several processes and/or several customers and thus an analytical mapping of these activities is not considered worthwhile as the efforts put in would most likely far outweigh the benefits derived. The only IC activities which are measured by their duration are the ones that are traditionally monitored by specific accounting or managerial systems such as the training hours per employee that are reported within the human resource management systems, the design activities that are monitored by the production performance system, etc. Thus, the idea is not to measure time for IC management purposes but for other aims.

The evidence gathered from Tech highlights not only the complexity related to the data collection but also the difficulties associated with the interpretation of the data; not having a benchmark or a standard makes it difficult to understand the effectiveness of the activity in terms of time consumption. In other words, even if it were possible to account for IC time, the interpretation of the measurements would be particularly problematic as IC activities are often non recurrent and cannot be standardized (Cuganesan, 2005; Marr *et al.*, 2004). Here again is the notion that measuring IC time can be a problem without any "good" solutions.

With reference to successions, pace, and time lags, the following statements were made:

> Having structured processes and procedures is essential for our business and so we have to invest in them constantly […] We also have several consolidated customers […] If the market falls like now and governments change some laws, you can have the best processes and customer portfolio but your financial performance decreases […] Sometimes you make an investment and it has some effects, not when you planned them, but sooner or later and you do not know exactly why […] We need IC to play on the market but there are too many elements that affect its impact on FC, also from a temporal perspective […] (Pack SpA).
>
> We believe that investing in IC is important but we cannot be sure whether, when and to what extent these investments will have their effects […] (Motor SpA).
>
> It's difficult to talk about the temporal dimension of IC […] we usually measure and talk about other time-lags (e.g. time to market, production time, delivery time, etc.) […] (Energy Spa).
>
> It takes a lot of time to develop a new product, acquire a new customer, etc. In the last few years, due to the market pressure, we had to increase the speed of our processes to be competitive […] (Comunica SpA).

From these narratives, the following aspects are worthy of note. First, the effects of IC activities tend to be considered difficult to predict (or even assumed to be unpredictable). This idea of unpredictability recalls that of "non-cyclical" time, i.e. IC generates its effects following a non-linear (or random) temporal path (Minati, 2005).

Second, all the interviewed companies are aware of the existence of time lags between IC activities, IC performance, and FC performance, even if these lags are not measured and often not adequately understood. The problem is to understand whether time lags are not measured because companies are not aware of the succession of the events (i.e. what to measure) or whether managers do not understand because they lack measurements. This can be considered a problematization of the managerial adage "you can manage what you can measure" from a temporal perspective (Catasús *et al.*, 2007).

Third, IC and FC are perceived to be "distant" in time and space as the effects of IC on FC are mediated by several elements. In particular, the fact that IC performance does not directly influence the financial performance of the company and that the IC performance is determined by the combination of several IC resources and activities confirms that IC needs time to be developed and to influence the firm's overall performance (Chaminade and Roberts, 2003). What emerges here is that the time lag between IC and FC is not the result of a single cause-and-effect relationship, but the result of a combination of several time lags related to different cause-and-effect relationships.

Fourth, even if all companies do not measure IC time lags some of them tend to talk about this issue and consequently, time becomes a social construction (Ancona *et al.*, 2001b; Ezzamel and Robson, 1995; Huy, 2001; Lee and Liebenau, 1999; Rämö, 2002). More in depth, talking about time allows it to move from an individual sphere (the one of the person who measures or audits it) to a collective-social sphere which requires the achievement of a consensus (Lagnado and Speekenbrink, 2010). In order to reach this stage and have a clear perception of a phenomenon, it is not enough to talk about it but it is necessary also to talk about it regularly (Anderson-Gough *et al.*, 2001; Skoog, 2003). These aspects are very evident in Pack, where time is discussed in two recurrent accounting processes, i.e. in budgeting and in planning. Both these processes are in fact collective (they involve several people in the organization) and cyclical (the budget and the plan are periodically prepared or updated). This could be the reason why the managers of Pack believe that the time dimension is "clear" in their mind while in the

other companies where managers do not talk about time systematically, the temporal dimension is perceived with a degree of uncertainty.

When the discussions moved from the processes of value creation to those of value destruction, i.e. to ILs, the complexity increased as this was a topic often not considered:

> We do not know what can happen if one item decreases. We have never considered or discussed that […] (M-Utility SpA).
>
> Our risk management system does not consider ILs […] We monitor personnel turnover, customer satisfaction, the working environment but we do not discuss them in terms of ILs or of risk indicators […] (Tech SpA).

This confirms previous studies that show that managers tend to not talk about ILs and to adopt an optimistic perspective (Brunold and Durst, 2012; Giuliani, 2013). This could appear to be a "paradox" for companies are aware of the relevance of IC, but they do not talk about the risks related to IC or even if they are aware of the existence of ILs, they do not monitor them. The magmatic nature of IC/ILs and the difficulties connected to the design and interpretation of measurements related to ILs (De Santis and Giuliani, 2013) appear to be hindering factors to overcoming such a situation where managers have a head-in-the-sand attitude.

By introducing the time dimension within the IL discourse, some additional considerations emerged. The most representative ones are reported below:

> Destroying things is much easier than creating things […] (Comunica SpA).
>
> In these last 3 years of crises we have lost wealth that took us much more time to accumulate (Bank SpA).
>
> It is much easier to destroy something than to develop it. It takes years to build competent employees or consolidated relationships but it takes very little time to lose them because an employee decides to change his job or to retire or because your customers change their mind and you are not their favourite because of a new competitor or because you make a mistake and the effect of these situations can be dramatic […] (Electro SpA).
>
> It is already difficult to think about time-lags within the value creation process […] thinking about them with reference to ILs risks being just a mental exercise, taking numbers from the sky (Energy SpA).

From these narratives it emerges that the value destruction process tends to generate negative effects faster than the value creation one, especially with reference to the impacts of IC on FC. In fact, in general, the time lags related to the negative value consequences are perceived to be shorter than the ones referred to the positive ones. This finding enriches the discussions about ILs, where the time variable is overlooked (De Santis and Giuliani, 2013), and the ones about time lags within organizational value creation processes and time in accounting (Chambers, 1989; Ezzamel and Robson, 1995; Giuliani and Skoog, 2012; Johanson *et al.*, 2006; Mouritsen and Bekke, 1999; Nørreklit, 2000; Quattrone and Hopper, 2005).

5. Conclusions

The aim of this paper was to analyse the role played by IC and ILs "in practice" within the value creation and value destruction processes, by adopting a temporal lens and a managerial perspective. In particular, this study is based on the following research question:

RQ1. To what extent are time and its attributes considered, measured, and discussed with reference to IC and ILs and their influence on FC?

The main findings are the following. First, it emerges that the time dimension of IC is generally not measured due to the complexity of IC itself and to the lack of adequate accounting practices for grasping the temporal aspects of the value creation process. In other words, IC time tends to be approached from a qualitative perspective. Second, IC time is generally considered to be non-cyclical and random, i.e. the time dimension of the effects of IC activities is generally considered difficult to predict or even, unpredictable. Third, even if time is not measured, some companies talk about it and when this is done with regularity, time perceptions move from an individual sphere to a collective one and they become more and more reliable. Fourth, IC performance is perceived to be "distant" from FC performance: the succession of events and the time lags are difficult to define and quantify as the influence of IC on FC is mediated by several resources and events. Fifth, the value destruction process related to ILs tends to generate negative effects faster than the value creation one, especially with reference to the impacts of IC on FC.

These findings have both theoretical and practical significance. This study contributes to the literature on IC "in action" (Cuganesan, 2005; Cuganesan and Dumay, 2009; Marr *et al.*, 2004) and IC "in practice" (Dumay, 2012, p. 12; Guthrie *et al.*, 2012, p. 79) incorporating the idea that IC can create but also destroy value. Moreover, this study enriches the extant literature about IC and ILs focusing on time, a variable that is generally assumed to be a natural unchangeable phenomenon that does not deserve attention. In particular, the results highlight the different behaviours and perceptions that occur when IC and ILs are looked at through a temporal lens (Giuliani, 2009; Giuliani and Skoog, 2012). Finally, this study pinpoints the different time perceptions of the value creation (IC) and value destruction (ILs) processes as they are different not only in terms of connections and intensity of the linkages (Giuliani, 2013), but also in terms of time, i.e. "Rome wasn't built in a day but when it fell, it burnt in one".

This study presents two main potential limitations. First, the results can be affected by the typical limitations of the design adopted for the study, that is, that a statistical generalization is not possible and that the results may be subject to both interviewee and interviewer bias and interpretation. Nevertheless, considering the exploratory nature of the study, one might be able to make an analytical generalization on some aspects. Second, as the author supplied the constructs for analysis (categories of capital, definitions of IC and ILs, etc.) and conducted the semi-structured interviews, the results could have been affected by the interviewer. This approach can be justified by the fact that the aim of this study was not to fully analyse IC "in action" but only to focus on the time dimension. It is the author's view that having but a few simple elements to consider helped interviewees to talk about what they considered most relevant and allowed the researcher to develop inter-firm comparisons.

This study calls for more IC and IL research carried out by adopting a temporal lens in order to understand when IC and ILs do what. In particular, future research avenues could consists in the analysis of how accounting can represent the IC time dimension and how IC measurement practices can contribute to the construction of time perceptions.

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