The Impact of Business Intelligence Systems on Management Accounting Systems: The Consultant's Perspective

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Abstract The use of Business Intelligence (BI) and Business Analytics for supporting decision-making is widespread in the world of praxis and their relevance for Management Accounting (MA) has been outlined in non-academic literature. Nonetheless, current research on Business Intelligence systems' implications for the Management Accounting System is still limited. The purpose of this study is to contribute to understanding how BI system implementation and use affect MA techniques and Management Accountants' role. An explorative field study, which involved BI consultants from Italian consulting companies, was carried out. We used the qualitative field study method since it permits dealing with complex "how" questions and, at the same time, taking into consideration multiple sites thus offering a comprehensive picture of the phenomenon. We found that BI implementation can affect Management Accountants' expertise and can bring about not only incremental changes in existing Management Accounting techniques but also more relevant ones, by supporting the introduction of new and advanced MA techniques. By identifying changes in the Management Accounting System as well as factors which can prevent or favor a virtuous relationship between BI and Management Accounting Systems this research can be useful both for consultants and for client-companies in effectively managing BI projects.

Keywords Business intelligence · Management accounting · Field study
Management accountants · Consultants

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1   Introduction

"Management Accounting (MA) is the process of identification, measurement, accumulation, analysis, preparation, interpretation, and communication of information that assists executives in fulfilling organizational objectives" [17]. In order to perform these activities the Management Accounting System (MAS) requires the contribution of the Information System which consists of "an integrated set of computer-based components" [13] involved in collecting, processing, storing, and disseminating information for decision making and control purposes [19].

Over the years, scholars have studied the relationship between the MAS and different kinds of Information Systems. Early studies aimed to unveil changes in the MAS due to legacy systems and ERP systems [4, 14, 26, 30] while, more recently, the academic interest has been directed toward analysis-oriented information systems, such as Business Intelligence (BI) systems and Big Data analytics, which are becoming more relevant due to companies' growing need for analysis of both structured and unstructured data. In order to contribute to the knowledge on the impact of BI systems on the Management Accounting System this research adopts a field study approach to explore possible changes in Management Accounting techniques and in the role of Management Accountants which can be fostered by BI implementation and use.

From a theoretical perspective, this study identifies those techniques which are influenced by the implementation of BI systems, unveils the nature of this influence, and sheds light on changes in Management Accountants' expertise due to the implementation of BI systems. Additionally, this study improves the knowledge about the process through which Information Systems affect the MAS by highlighting factors which can play a role in this process, either as reinforcements or obstacles to the impact of BI systems on the MAS.

Moreover, from a practical point of view, this study provides useful findings both for consultants and for client-companies involved in BI implementation projects by disclosing factors that should be exploited (levers) or prevented (barriers) in order to allow BI systems to produce changes in the MAS. Furthermore, this study can support management accountants who are looking for an improvement in the MAS of their companies by showing the contribution that a BI system can offer to different MA techniques.

2   Literature Review

Management Accounting Systems support managerial decisions by gathering raw data, processing, analyzing, and transforming it into information and then delivering the information to managers. In data gathering, storing, and analysis and in information communication MA is supported by the Integrated Information System (IIS).

The IIS can be defined as a "system of systems" [27] since it includes both ERP systems and analysis-oriented information systems, like the BI system. Despite ERP systems providing "a platform for accounting and control information to flow" [12], they are more concerned with transaction processing [3]. Moreover, according to Booth et al. [1], their role in supporting MA analysis for decision making is limited. Differently, Business Intelligence systems are specifically designed to provide "complex and competitive information to planners and decision makers" [22] and are perceived as an innovation in Management Accounting Systems [11].

Researchers have studied the relationship between the MASs and ERPs mainly exploring how ERPs impact on MA techniques and Management Accountants' role [4, 7, 14, 26, 30]. More in detail, researchers have identified changes in Management Accounting tools which existed before implementing ERPs and that can be considered "incremental" [7], and they have highlighted how ERPs help Management Accountants to develop new competences [4, 14].

Similarly, the research on the impact of analysis-oriented information systems on the MAS has focused mainly on changes in MA techniques fostered by BI systems [27, 31, 34]. BI systems are analysis-oriented information systems resulting from the combination of three elements [33]:

- The process for collecting, analyzing, and disseminating information from internal and external sources [21].
- The set of tools, technologies, and software products used in the abovementioned process [23].
- The knowledge, which represents the product of the process of data collection and analysis, and is embedded in the information disseminated inside the companies [33].

Regarding BI systems, they seem to be the "primary enablers of change in reporting and analysis, budgeting, non-financial, external and ad hoc management accounting and allocation of costs" [27] even if the nature of these changes has not been highlighted. Moreover Candiotto and Gandini [5] have suggested that the application of BI systems to existing Balanced Scorecards can improve the strategic management process and many authors have observed that BI systems can support the design, the calculation process, the analysis, and the visualization of the indicators of a Performance Measurement System [3, 6].

Researchers have also reflected on the potentialities of an advanced approach to Business Intelligence [9, 10], i.e. Business Analytics, in unveiling and verifying causal relationships in Performance Measurement Systems (PMSs) [31, 34]. Specifically, Business Analytics are considered a possible solution to the limited implementation and controversial effectiveness of PMSs. By identifying and proving causal relations among context factors, inputs, processes, outputs, and outcomes of PMSs [31, 34], Business Analytics could improve their effectiveness and consequently ensure a widespread adoption of PMSs in the world of praxis. However, no empirical evidence of such a positive effect for PMSs has been provided up to now.

Additionally, aspects related to MA techniques and Management Accountants' roles have been identified in non-academic studies on BI systems. In highlighting Business Intelligence "capabilities", Gartner analysts have considered reporting, predictive modelling and performance measurement as essential "capabilities" for BI solutions [29]. In this perspective, Management Accounting techniques such as reports, scorecards, and predictive analytics have been considered BI tools [32]. Concerning the relationship between BI and Management Accountants, it has been suggested that BI systems can change the traditional role of Management Accountants into a business partner role and release Management Accountants from preparing budgets, consolidations, forecasts, and reports [8].

To conclude, our current understanding of the impact of BI systems on Management Accounting is still limited [15]. The literature review carried out has shown that although it has been acknowledged that BI systems do influence MA techniques [27], "how" MA techniques change as a consequence of BI implementation and use is still an area open to research. Furthermore, while Business Analytics are believed to transform the Management Accountant's role [2] and to shift it towards a business partner role [16], no empirical evidence of such a change has been provided.

In order to fill these gaps and to contribute to the literature on BI system implications for Management Accounting, we asked: "How do Business Intelligence systems affect Management Accounting techniques and the Management Accountant's role?".

3   Design of the Study

In order to answer this research question, we conducted an explorative field study [14, 20, 28] involving consulting companies which had developed BI implementation projects in Italian companies.

Drawing from Lillis and Mundy [20], by field study method we mean a qualitative research method that involves "limited-depth studies conducted at a non-random selection of field sites, thus lying somewhere between in-depth cases and broad-based surveys" [20]. The field study method is suitable to deal with complex "how" questions and to offer a "wide and comprehensive picture of the phenomenon" [14]. More specifically, by including multiple research sites as a means for identifying patterns in the observations [20], it allows researchers to gather insights on a phenomenon of interest and on its present extension [28]. Moreover, this method is less structured in data collection than surveys and involves shorter, less intensive data collection on site than in-depth case studies [20].

Considering that our aim was to provide a wide and comprehensive picture of changes in MA due to BI systems and not an in-depth analysis of such changes, the field study allowed us to investigate a larger number of units of study than multiple case studies [20]. We chose not to conduct intensive case research focused on one

or on a limited number of companies on the grounds that "it may not capture the range of such perceptions and insights" [28].

We also considered the survey method to provide a general understanding of the impact of BI systems on Management Accounting Systems; nonetheless, we decided not to adopt this method: the scarcity of prior research did not allow us to develop a questionnaire in specific terms to guide empirical enquiry [14].

This study is based on the evidence collected from twelve Italian consulting companies specialized in BI implementation projects. We chose to focus on consultants rather than on client companies because of their experience in several BI implementation projects. Since consulting companies implement BI systems in several companies, they could have witnessed different reactions and impacts of BI systems on Management Accounting Systems.

Consulting companies were selected using purposeful sampling [24]. Starting from "Gartner BI magic quadrant 2015"[1] we focused on BI vendors which were positioned in the "leaders" section: Sap, Sas, Oracle, IBM, Microstrategy, Microsoft BI, Qlik, Tableau, and Information Builders. We considered leading vendors because they were top performers in the Business Intelligence market. Therefore, we assumed that their solutions were the most widespread and that the BI consultants who implemented leading solutions probably managed a high number of implementation projects.

It is worth highlighting that in our study, BI vendors' solutions did not represent the units of analysis. Specifically, we focused our attention on leading vendors in order to select specific consulting companies to be contacted for participation in our research. In this regard our study is different from those that consider leading vendors as a starting point for comparing BI analytics tools (from different vendors). For instance, Sherman [32] adopted this starting point to suggest which BI analytics tools suit specific companies' "use cases".

From a methodological point of view, through leading vendors' websites we identified BI consulting partners in order to build a sample of consulting companies officially recognized as BI implementation experts. It is worth underling that for one of these leading vendors, Tableau, it was not possible to identify any consulting partners since Tableau's website did not disclose information on them.

Considering the overlapping cases, 109 companies were identified and were contacted via mail. Out of the 109 identified organizations, ten participated in the research; eleven declined to participate, while eight companies declared that they were involved in mergers and acquisitions, so they could not contribute to the study, or the companies either no longer existed or could not be found on the Web. The remaining 79 companies did not answer. Out of the ten companies that accepted to take part in the research, two were Oracle partners, two were Sap partners, four were Sas partners, one was a Qlik partner, and one was a

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[1]Gartner Magic Quadrant for BI and Analytics Platform provides an overview of the relative positions of BI vendors. BI vendors' position in the table depends on their capability to execute their stated visions and to perform against Gartner's market view. According to Gartner, four types of technology providers are identified: leaders, visionaries, niche players, and challengers.

Microsoft BI partner. Therefore, the consulting partners of some of the leading BI vendors were missing. In order to consider at least one consulting company for each BI leading vendor, the results of the desk research were integrated with four additional consulting companies suggested by some informed Italian scholars and consultants operating in the fields of Management Accounting and Business Intelligence. We considered these additional consulting companies because, although they were not recognized as official consulting partners by leading BI vendors, they actually implement BI solutions developed by leading vendors.

These additional four consulting companies were asked to take part in the research and two of them accepted. Nonetheless, it was not possible to identify consulting partners for IBM, Microstrategy, or Information Builders. In the end, a total of twelve consulting companies participated in the field study.

We used the semi-structured interview to gather data [18, 25] because it allows the interviewer to ask for clarification and to carry out in-depth exploration of emergent issues [35]. In this study, consultants that managed BI implementation projects were interviewed via Skype, by telephone, and also face-to-face. Interviews were conducted in the early months of 2016 and lasted approximately 60 min each. They were tape-recorded and then transcribed for analysis. Respondents were interviewed on the organization of BI implementation projects, on the reasons why companies implement BI solutions, on the changes in MA techniques and Management Accountants' roles which occurred as a consequence of BI implementation, on the factors that may have favored or hindered the abovementioned changes, and on the effects produced on the MAS by BI systems.

Post-communications with the respondents helped the authors to ensure the accuracy of the collected data.

4 Findings

The interviewees were asked to give information about some preliminary issues concerning the number of BI implementation projects they had managed in their experiences as consultants, the size of their client companies, the sector they belong to, and aspects concerning the organization of BI projects in client companies.

In Table 1 the number of BI implementation projects managed by each consulting company is shown: most of the companies managed from 20 to 100 projects while some of them (B, E, and F) worked on fewer than 20 projects. This happened when the interviewed consulting company was a start-up or had only recently developed a business unit for carrying out BI projects.

Every interviewee claimed to have managed from a minimum of 10 to a maximum of 100 BI projects and all together, the consultants had an overall experience of more than 300 projects.

Moreover, 75% of the consultants provided information about the size and the sector of client companies. The interviewees stated that companies that had

Table 1 Number of BI projects managed

Consulting company	Number of BI projects
A	40
B	7
C	30
D	20
E	10
F	15
G	21
H	Several dozens
I	20
L	N.a.
M	More than 100
N	40

undertaken a BI project were medium-large organizations which operated predominantly in the energy, telecommunication, banking, and insurance sectors.

As far as the organization of BI implementation projects is concerned, the consultants were asked to provide information about people in client companies who played the roles of the promoter and the sponsor and about the composition of the team in charge of the BI project. Moreover, they were asked to explain what role that management accountants had in the above-mentioned projects.

We defined the promoter as the person who decides to implement BI systems in order to support his/her decision-making process and/or activity. In this regard, line managers were identified as promoters by 75% of the consultants even if this role was also played by top managers and by people from the IT area or from the areas which are directly supported by the BI system. Line managers promoting BI projects mainly belonged to the sales and marketing area, the management accounting area, or the IT area.

As for the sponsor, he/she supports and legitimizes the BI project in the client companies. According to the majority of the consultants, this role was played by people holding managerial positions of which most were top managers. Only consultants from companies B and D provided further details on this point: both of them took part in projects in which the sponsor was the client company's CEO or CFO.

In order to manage BI implementation projects, client companies tended to create dedicated teams, as observed by 75% of the interviewed consultants. These teams were mainly composed of the promoters and professionals from the IT area.

Finally, in the preliminary phase of the interviews, the consultants were asked to describe the role that management accountants had in BI implementation projects. According to 75% of the consultants, management accountants took part in BI implementation projects and in many cases they played a role as promoters. One of the reasons why management accountants promoted the introduction of BI systems was due to the limitations of existing management accounting techniques, as

underlined by the consultant from company E: "*they need specific information which cannot be provided by existing management accounting tools*". In contrast, the remaining consultants explicitly declared that management accountants did not take part in the projects and some of the interviewees did not provide any answer to this question.

The structure of the remainder of this section is as follows: Sect. 4.1 presents the reasons why companies implement BI systems, focusing on those which are related to Management Accounting. Section 4.2 describes changes in Management Accounting Systems due to the implementation and use of BI systems. Section 4.3 illustrates the levers and barriers which can respectively favor or hinder the changes in the MAS due to the BI. Finally, Sect. 4.4 discusses the effects that the implementation and use of the BI produce on the MAS.

4.1 Reasons to Implement BI Systems

Several reasons drove companies to implement a BI system. Here we comment only on those that seem to be related to Management Accounting. According to the interviewees, client companies had implemented BI systems in order to achieve an improvement in information timeliness and information reliability. Concerning information timeliness, BI systems were implemented by companies "*to have information when it is necessary and not after a long time*", as suggested by the consultant from company E, or so that decision makers could "*take decisions at the right moment*" (consultant from company C). Regarding the need to improve reliability, it can be due to the fact that, without BI systems, data could be manipulated by data owners, as one consultant highlighted: "*I mean, the old way of preparing reports involved individuals who actually produce reports have the possibility to rig reporting contents*".

Other reasons related to MA, referred to information gathering and analysis, were outlined by consultants from companies E and G, who suggested that BI systems were implemented in companies to perform analysis on new dimensions or to enrich the stock of information provided by the existing information system: "*the Management Accounting people needed certain information and the tools they got were not able to produce this information or to provide a satisfactory level of detail*".

Additionally, three consultants reported that BI systems were implemented to support cost accounting practices on new cost objects. As argued by the consultant from company G, "*these [BI] tools were used to accurately account for costs and revenues with the possibility of allocating them to cost objects such as the bus line, which is a cost object in public transport, in order to understand which lines result in a profit and which ones result in a loss*".

4.2   Changes in Management Accounting Systems

In this section changes in Management Accounting techniques and the Management Accountant's role are analyzed.

It is worth highlighting that not all consultants observed changes in MA. A few of them (17%) declared that their experience with BI projects to support the controlling function was limited and consequently, they could not properly answer this part of the interview.

Concerning MA techniques, the consultants observed how the implementation and use of BI systems had an impact on existing MA techniques and how it fostered innovation in the companies' MAS by introducing advanced MA techniques. Specifically, changes in existing MA techniques were observed in reporting and budgeting practices while, if we consider advanced MA techniques, the Performance Measurement System was the most common technique introduced thanks to the implementation of the BI system.

Regarding managerial reporting, BI systems had an impact on the reporting content by introducing new dimensions of analysis and enriching information. As suggested by the consultant from company G, the reporting content became flexible since it could be customized according to specific decision makers' needs: "*before, the report was very static, I mean, it could be prepared in just one way. Now we play with some dimensions and we realize the great benefit of playing with these dimensions*".

Budgeting was also influenced by the implementation and use of BI systems. Most of the consultants who noticed changes in budgeting practices stated that BI systems could provide IT support for each phase of the budgeting process. As one consultant explained: "*when we talk about Business Analytics we mean not only to provide [IT] tools, but also to provide applications for preparing, managing, and monitoring budgets*". Worthy of note is the fact that BI systems required the implementation of a workflow to support the budgeting process. In this way, the latter became structured, rationally organized, and consequently faster than before. As reported by the consultant from company E, BI systems allowed client companies "*to prepare a raw version of budgets by loading actual data, adopting a rough formula to modify them by adding 20%, for example, and finally, distributing all these data sheets to agents. Then, the data sheets are gathered and consolidated. And all this process is managed via web. Before, we sent excel files via mail, excel files came back […] Moreover, concerning the process of budget revision, once it was quite approximate but now it can be managed in a structured way. Therefore, all the process of budget creation was surely made faster and more rational*". Nonetheless, the illustrated change did not necessarily occur and the logic underlying the budgeting process may have not been modified, as reported by the consultant from company H: "*this tool [BI] is useful to centralize information and to provide a front end to access data but the logics at the base of the [budgeting] process are not modified*".

The consultants highlighted also the relationship between BI systems and PMSs. More specifically, the BI implementation seemed to precede the introduction of the Balanced Scorecard (BSC), which was considered a sort of evolution of the BI system itself. In this regard, the consultant from company B noticed that: "*generally, when we [consultants and clients] decide to implement the BSC, the BI system already exists. Therefore we seek an evolution; we want to raise the bar*". BI systems enabled companies to take real time data from the information system to measure indicators "*in an automatic or semi-automatic way*". More in detail, the automatic calculation of indicators made it possible to get a dynamic BSC which was frequently updated with fresh data, as reported by one consultant: "*consulting companies promoted this kind of projects [BSC implementation] but they had great trouble making them work because several of them are not manageable without the software. The Balanced Scorecard cannot work without data. Moreover, it cannot be a photograph, it should be prepared everyday [...] real time data should be gathered and used to do frequent analysis and to do tests*".

According to the consultants, the Management Accountants' roles also changed as a consequence of the BI system implementations. In particular, the interviewees observed that the implementation of BI systems allowed Management Accountants to reduce the time spent in routine activities, such as data gathering or preparing reports, and consequently, this allowed them to devote more time to performing analysis. As one consultant reported, "*...what changes is the allocation of time among activities. More time is allocated to data analysis than to data control because most of the data control is performed by the system*".

Moreover, the consultants explained how the implementation of BI systems pushed Management Accountants to improve their knowledge on the company business. Nonetheless, it is worth highlighting that one consultant observed that the enhancement of those Management Accountants' competences which were referred to company business occurred (only) when the management accountant was the promoter of the project.

4.3   Levers and Barriers to Changes in Management Accounting Systems

The consultants were also asked to identify the factors that favor or hinder the changes in the MAS. In this regard, it is worth underlining that over a third of the consultants did not answer the questions about levers and barriers to changes in the MAS nor did they report the factors which were related to the implementation of the BI in the company rather than to the changes in the MAS.

According to the consultants, a strong top management sponsorship of BI implementation projects and the need to manage a high volume of data were relevant factors in favoring changes in the MAS. Specifically, top manager sponsorship was indicated as a lever to changes in the MAS by most of the consultants.

Concerning the barriers to changes in the MAS, the fact that individuals who gathered data were "jealous" of their data was considered by most of consultants to be a factor that hindered the changes in the MAS. More specifically, individuals considered themselves "data owners" and therefore, they were reluctant to share data, as noted by the consultant from company E: "*sometimes there is the problem of jealousy, I mean, the feeling that the data is mine and I want to control it before it is delivered to others*". Other barriers identified were the fact that the users of BI systems did not easily understand what the benefits produced by the BI were and that people from the IT department could show resistance to the implementation of BI systems.

4.4 Effects on Management Accounting Systems

In order to unveil any other possible effects of BI on MA systems, besides asking specific questions on changes in the MA techniques and in the Management Accountant's role, the consultants were asked whether they had noticed any positive and/or negative effects on the MAS and if so, what kind of effects they had observed.

A large number of consultants (75%) reported that the MAS took advantage of BI systems. Specifically, BI positively affected the quality and timeliness of information by improving the level of detail in data analysis, reducing errors, and improving timeliness in the processes of data gathering, data processing and information reporting. Moreover, the interviewees also highlighted another positive effect produced by BI systems on the MAS, i.e., the fact that, thanks to BI systems, the data was no longer ambiguous and was no longer owned by individuals from different areas. In this regard, one consultant observed that "*data has become a company asset. It is no longer necessary to ask for data from different areas since the data gathering process is automatic*".

Lastly, while half of the interviewed consultants declared that they had not observed any negative effects on the MAS, the rest either remained silent on this aspect or identified factors which were negative for the company as a whole, so they were not related to the MAS. However, it is important to observe that consultants are official suppliers of this kind of IT solution and therefore, their point of view in this regard may have been influenced by their role, as suggested by one of them: "*I actually cannot identify any negative effects, but maybe I am not impartial because I produce BI systems and I sell them*".

5   Discussion and Conclusions

In this paper we have explored how Business Intelligence systems affect Management Accounting techniques and the Management Accountant's role. To address this research question, we conducted a field research involving Italian BI consulting companies.

Our research contributes to the literature on the impact of BI systems on Management Accounting [15] in several ways. More in detail, this study improves the understanding of the influence of BI systems on MA techniques and contributes to filling the gap concerning the impact that BI systems have on the Management Accountant's role. Finally, this study provides insights on the process through which BI systems affect the MAS by highlighting factors that can favor or hinder changes in MA techniques due to BI system implementation.

Concerning the influence of BI systems on existing MA techniques, first, our study confirms the role that BI systems play in fostering changes in budgeting and reporting practices [27]; second, our research contributes to explaining how these techniques change. More specifically, as far as the budgeting process is concerned, while its underlying logics do not seem to change, the introduction of workflows (driven by the BI) makes the process more structured, more rational, and faster. With reference to changes in the reporting practices, our evidence shows how the BI can affect the reporting content. By implementing BI systems, reports can be customized according to decision makers' needs and can be enriched with new dimensions of analysis. The observed changes can be considered "incremental" since they represent an improvement in existing MA techniques but not a shift in the underlying logics of the MAS.

Additionally, our findings make a contribution by providing empirical evidence on the role that BI systems have in improving the strategic management process [5]. More specifically, BI systems foster the implementation of an advanced MA tool, i.e., the Balanced Scorecard. Even if we cannot conclude that this radical change is brought about exclusively by the BI implementation, we can argue that, by favoring the introduction of this kind of MA technique, BI can contribute to changing companies' MA logics, which become more strategically oriented.

Furthermore this study sheds light also on how BI systems contribute to the calculation process of PMS indicators. First, by getting real time data, BI systems affect the quality of data used in the calculation process; second, by allowing companies to calculate indicators in an automatic way and updating data contained in the Balanced Scorecard, BI systems affect the way the calculation process is carried out.

As far as Management Accountants are concerned, in the literature it has been highlighted that BI systems can affect the Management Accountant's role [2, 8, 16]. In this regard, our study provides empirical evidence on how this transformation can occur. More in depth, by developing business-oriented competences and devoting more time to business analysis, Management Accountants can carry out more "value-added" activities and their role shifts towards that of a "business partner".

Our evidence suggests that these changes cannot occur without a strong top management sponsorship of BI implementation projects and that, conversely, the reluctance of individuals to share "their" data is a factor that prevents modifications in the MAS. While top management sponsorship and the reluctance of people to share their knowledge/information have been amply studied in managerial literature, here we show how these factors are, respectively, the most relevant lever and barrier in the process through which BI deploys its potentialities for MA development.

Additionally, our results suggest that the overall effect of BI systems on the MAS is positive. More specifically, improvements in information quality and timeliness were pointed out by the interviewed consultants as positive effects on the MAS while, on the contrary, no negative effects were identified. However, it is important to underline that the interviewed consultants were official suppliers of BI solutions and that, therefore, their point of view and their silence in this regard may be influenced by their role.

In conclusion, it is necessary to highlight the major limitations of this paper. Our research was focused only on the consultants' perspective and the analysis was limited to the Italian context. In order to overcome these limitations in the future it could be interesting to explore client companies' perspectives. Moreover, a similar analysis can be carried out in different countries in order to identify possible cross-country patterns.

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