

## Audit of a Competitive Intelligence Unit

Héctor Izquierdo Triana, José Luis Fernández & Eva Ballesté

To cite this article: Héctor Izquierdo Triana, José Luis Fernández & Eva Ballesté (2017) Audit of a Competitive Intelligence Unit, The International Journal of Intelligence, Security, and Public Affairs, 19:3, 214-241

To link to this article: <http://dx.doi.org/10.1080/23800992.2017.1384679>



Published online: 08 Nov 2017.



Submit your article to this journal [↗](#)



View related articles [↗](#)



View Crossmark data [↗](#)



## Audit of a Competitive Intelligence Unit

Héctor Izquierdo Triana<sup>a,b</sup>, José Luis Fernández<sup>c</sup>, and Eva Ballested<sup>d</sup>

<sup>a</sup>Department of Finance Management, Universidad Pontificia Comillas, Madrid, Spain; <sup>b</sup>Department of Information and Control, IE Business School, Madrid, Spain; <sup>c</sup>Department of Business Administration, Universidad Pontificia Comillas, Madrid, Spain; <sup>d</sup>Department of Finance Management, National University of Distance Education, Madrid, Spain

### ABSTRACT

The Spanish business environment associates the function of competitive intelligence (CI) to customer-focused marketing area. The fact that competitive intelligence is not seen as a high value-added tool in terms of security, technological vigilance, and strategic vision makes us ask ourselves if Spanish companies realize that CI is an essential source for improving competitiveness and verify if companies have implemented this function appropriately. This article proposes a review of the CI implementation process in Spanish companies. This research work provides an audit of processes carried out with the objective of identifying areas of improvement not only in the implementation but also in the sustainability of the intelligence programs so the reader can audit a function in terms of sustainability of the program. According to this research, the scope of the auditory work in CI is in initial phases, more centered on the auditing of resources than intelligence, the focus of the audits in CI is based on the measures of product control and usability for clients and the implementation of CI audits in Spanish companies as a way of strengthening and legitimizing CI units. Finally, based on the results and needs of the study, we propose a CI auditing process.

### ARTICLE HISTORY



Received 5 June 2017  
Revised 19 September 2017  
Accepted 20 September 2017

### KEYWORDS

Competitive intelligence;  
economic intelligence;  
internal audit; evaluating  
intelligence; business  
strategy

## Introduction

The Strategic and Competitive Intelligence Professionals (SCIP) define competitive intelligence (CI) as “the process of monitoring the competitive environment and analyzing the findings in the context of internal issues, for the purpose of decision support” (Strategic and Competitive Intelligence Professionals, 2011). The implementation of the culture of competitive intelligence in the Spanish business environment has seen significant development over the last decade, as indicated in the works of Arcos (2010) and Velasco and Arcos (2012) and in the research of Du Toit (2015) and how CI has developed as an academic subject field. This development has allowed entrepreneurs to learn to conceptually decouple CI from other concepts such as industrial espionage (West, 2001; Attaway Morris, 1999).

**CONTACT** Héctor Izquierdo Triana  [hizquierdo@faculty.ie.edu](mailto:hizquierdo@faculty.ie.edu)  Calle Pastrana, nº 21, 28027 Madrid, Spain. Color versions of one or more of the figures in the article can be found online at [www.tandfonline.com/usip](http://www.tandfonline.com/usip).

© 2017 Taylor & Francis

CI has evolved to a synergistic integrated CI in an integrated intelligence synergy model, including the methodical collective from different intelligence pools as economic intelligence, business intelligence, customer intelligence, competitive technical intelligence, and competitor intelligence, (Bulger, 2016).

As senior managers in different Spanish companies identify CI as a strategic business tool, they will incorporate employees with specific training in the units considered appropriate, as in other countries that are implementing CI in the last decades, such as Canada (Calof & Breakspear, 1999), Portugal (Santos & Correia, 2010), South Africa (Sewdass & Du Toit, 2014), (Strauss & Du Toit, 2010), Latvia (Cekuls, 2010), or Israel (Barnea, 2016).

As Colakoglu (2011) and Nasri (2012) have shown, the CI process influences the quality of information and how this information subsequently influences strategic benefits expansion in companies. Examples of company programs and actions include Boeing, Dupont, and Royal Dutch Shell Group (Calof & Smith, 2010; Calof, 2014b). However, the Spanish entrepreneur can see that the implementation of CI in his country is relatively recent and he has certain clear expectations of the return sought (Gaidelys, 2010), (Chi & Yan, 2011), but he does not know how to implement it, the first hindrance to its success.

A second weakness in the success of implementation is in the lack of professional experience of those trained in the area in Spain. Only in recent years are the first cohorts of graduates trained specifically in this field of study entering the labor market, making it difficult to advise senior management in relation to how to implement this strategic tool (CI) in the organization.

A third weakness in the implementation is the size of Spanish companies. Figures for March 2017 from the Spanish Ministry of Industry, Economy, and Competitiveness show the distribution of employment by company size as follows: 18% self-employed, 18.7% micro-companies (1–9 employees), 17.8% small (10–49 employees), 14.2% medium (50–249 employees), and 31.3% large (250 employees or more) when the CI activity among small medium enterprises is different as in the large companies (Groom & David, 2001).

A fourth weakness is that, as demonstrated by Deloitte (2012) in collaboration with ESADE, the audit function in Spain is implemented in six of every ten companies and is mostly developed by internal staff in teams of less than five, with one of the biggest challenges being their independence within the organization and their hierarchical status dependent on the bodies of governance of the company.

Gilad (1989) established the performance of an audit with satisfactory results as a necessary step to consider the implementation of CI a success and Dubois (1995) also explained the contribution of the information audit

to decision making. The audit became an essential tool because, on one hand, it tries to test the health of the intelligence activity of the company and the appropriate execution of strategic decisions, and on the other, it serves as an official record of the degree of implementation. In other words, the process asks the company what they need rather than what is needed to make the proper decisions because asking only what is needed delivers the assets to face current situations and does not give a company firm view of how they can perform against market competition and in the development of new markets that do not yet exist. It means to include metrics for measurement of installment as maturity model (Lackman, Saban, & Lanasa, 2000; Liebowitz, 2006) and the establishment of ROI metrics not only for the function but how it relates to the company's bottom line

Along this line, this article has the objective of ascertaining the degree of implementation of CI audits in Spanish companies and the factors that contribute to the success or failure in their performance, with the aim of contributing to the effective implementation of the process.

According to the studies, it is necessary to create a sustainable model of CI, not only its creation but its sustainability. Therefore, we need to measure the effectiveness of CI units. However, it is difficult because they are not always based on solid indicators of return of investment (ROI) metrics. We believe that if the CI units are properly audited and the conclusions of the CI auditing are positive, it will help in the way of strengthening and legitimizing CI units for the top management.

Audit reports are reported directly to the audit committee, which is made up of members of the board of directors. Gilad (1989), Fuld (1991), and Herring (1999) have claimed that the CI reports should report directly to the top management and be independent from the rest of the company, however it does not always happen in the companies. To answer the questions "How much did you lose by not getting an important contract? Was it because you didn't have enough information about your competitor?" (Kahaner, 1996, p. 31) or "How do you know when you have enough information?" (Sharp, 2009) are difficult because there are probably many reasons for not getting this contract. However to show that the CI unit is working properly and is useful even when it cannot quantify the profit, it helps in the necessary support from the top management to have a CI unit in the company.

Performing an audit, especially in Spanish listed companies, is under the supervision of the audit commission, due to the independence of the commission. Sometimes the auditing is done by internal auditors, if they have the capabilities to check specifically the effectiveness of the audited unit, and sometimes it can be outsourced to professionals in their field of expertise, for example, CI by outsourced professional CI and strategic consultants.

Thus, the following research questions are posed:

- Firstly, if the CI is being defined correctly in companies, is it CI being audited correctly in Spanish companies?
- Secondly, do the audits (internal or external) performed display a suitable degree of implementation?
- Finally, what factors should we strengthen to implement CI audits in Spanish companies?

The relevance of this investigation is justified from two different perspectives: on the one hand, from the economic-social perspective, that is, the need for competitive companies to be able to address and access global markets. And on the other hand, from the audit perspective, specifically in the development of control mechanisms and systematization that favor effective implementation and sustainment. There is usually an implementation but the difficulties lies in maintaining the function because it is not usually built on indicators of ROI metrics. The importance of the evaluation of the CI has increased in the last decade, according to a survey supported by SCIP in 2006, that reported 30% had not effectiveness measures, and it decreased to 19% in 2016 (Calof, Sewdass, & Arcos, 2017).

With the aim of responding to these research questions, we have applied a mixed methodology. First, we used qualitative methodology through an in-depth review of the existing literature, harmonizing the information obtained with individual interviews and group sessions with specialists in the topic. This first qualitative part of the investigation is non-experimental, transactional and of an exploratory scope. Secondly, we performed a quantitative analysis through an empirical study based on a survey carried out through the Spanish Institute of Internal Auditors (IAI) among internal audit managers of IAI partners.

The factors that have driven the election of the mixed method indicate and justify the search, and respond to these objectives: identification of trends (quantitative variables) and understanding behavior (qualitative variables). From the pre-existing literature review, it follows that the most recent authors have approached studies of intelligence through the use of mixed methodologies (García Alsina & Ortoll, 2012; Jaworski, Macinnins, & Kholi, 2002; and Wright, Pickton, & Calof, 2002) which demonstrates the suitability of studies such as this one. The process involved the collection of data from external and internal sources of the internal audit departments of Spanish companies. In the first place, the information has been obtained through primary (reports from companies and surveys of head of internal audit in the companies of the sector), secondary (scientific and informative articles), and tertiary sources (sector reports). Secondly, and considering that the definition of the CI function has widely been modified for the past 30 years (Fuld, 1991; Herring, 1999), CI departments have been analyzed exhaustively, as have

their methodology and ethics, for the purpose of identifying the key factors and analyzing the existing theoretical models.

### **Audit as guarantor of CI implementation**

The audit has evolved from a tool of control and prevention of deviation from regulation to an activity that adds value to the organization to help it achieve its objectives. This trend has led to areas such as data analysis, optimization of IT technologies, and cybersecurity.

Along this line, the Institute of Internal Audit Research Foundation carried out a study in 2009 on the type of talent needed in audit departments. In this, they highlighted that the profiles foreseen to reinforce the teams were “data analysis,” followed by “information technology” and “cybersecurity,” as opposed to more classic profiles such as “financial control.” It is also about the ability to predict or develop an outlook based on the future dynamics, so it is not one or the other but must be based on data analysis, info tech, security, and outlook.

However, in relation to if audits are carried out within the CI department of the company, the answers showed low results, due to this being a new function and with a normally low budgetary cost. Therefore it does not tend to be included in the audit planning as one of the risk areas to be audited like other areas are, such as purchasing, warehousing, or treasury simply because often the CI departments do not know their contribution to the bottom line that CFOs want to see: how the return on information will improve the return on investment (ROI). In terms of if the company has any kind of assessment procedure for the sources of information before employing them, the results obtained highlight the need to collate sources and for these sources to have passed some kind of trusted filter to guarantee their validity, (Fleisher, 2008). This situation is produced in companies with a greater degree of maturity in their implementation and with distinct sources in unknown environments. For example, when a company is internationalizing, it is necessary to know who the key people in a country are, to make contacts or to do distinct tasks regarding the development of the business. Finally, regarding the subcontracting of the auditing of CI, the majority do not subcontract due to confidentiality issues. A function as private as intelligence should not leave the company unless a legal or ethical regulation, in line with the code of ethics of the organizations involved (Fernández-Fernández, 1999), binds it to do, as is the case with the auditing of annual accounts.

The works of Gilad, who has been previously mentioned, explain the importance of the audit to implementation of CI in a company, moreover the relation between knowledge audit and process management (Liebowitz, Rubenstein-Montano, McCaw, Buchwalter, & Browning, 2000). When analyzing the key aspects dealt with in the theoretical contributions that link auditing to CI, we note that it is imperative to discuss the following:

- the typology of the auditing,
- the audit measures,
- the operation and programming of the auditing,
- the aspects related to the verification of the auditing.

In the following sections, we will analyze the pre-existent academic literature.

### ***The typology of the auditing***

The main aspects which are dealt with in this kind of study (Di Mattia & Blumenstein, 2000); Wood, 2004) make reference to the inclusion of the auditing of CI within the annual planning of work, if they are carried out by in-house staff or subcontractors, what the aspects and processes are that are considered critical when realising the auditing, the challenges, areas for improvement and most relevant findings, the existence of facilitating or preventative factors that enable the function to be more advanced in other countries with competitive environments, and following that, the indicators that are used to measure an appropriate implantation and the existence of standardization through quality certifications that validate the appropriate operating to finally propose an auditing process.

The audits, in line with the studies by Ellis, Barker, Porter, and Pridgeon (1993) and Vasconcelos (2012) are classified as conformance audits, which try to verify the compliance of the regulations, or consultative audits, which try to provide an added value to the organization through the labor of a consultant. Within this, we find the auditing of informational assets, which Botha (2000) applied to the auditing of: (a) information, (b) resources, (c) knowledge, (d) communication, and (e) intelligence.

- *Consultative auditing of information:* This auditing deals with the identifying of and knowledge of informative resources of the company and the extent to which they are used. (Buchanan & Gibb, 1998; Henczel, 2001). In this case, it involves creating an information management system in the company, enhanced by the use of mechanisms that gather the information that can be integrated in its continual management.
- *Consultative auditing of sources of information:* This auditing follows the model developed by Burk and Horton (1998) about Infomap and of Esteban and Navarro (2003), which tries to identify and evaluate the sources of information. This is supported by the staff of the company completing surveys, analyzing its efficiency by means of measuring the cost/benefit, analyzing the resources and synthesizing the findings, and mapping the strengths and weaknesses against the objectives of the

organization. This type of auditing is a diagnosis and evaluation to elaborate a vision of how a company works in relation to its use of information. Therefore, the fluxes of information within the organization are investigated, trying to detect “islands of information” under an assumed premise amongst staff, even more so in times of crises in which information is power.

A first step is to define the type of auditing. It is necessary to know how the company works regarding its use of information, and so this is a first step to then be able to introduce and implement the appropriate information systems.

- *Consultative auditing of knowledge*: In this case, we find ourselves against a typology of auditing that facilitates the diagnosing and perfects the management of the knowledge in the company. Once a problem within an organization has been located, it is related to the knowledge that exists and is required to solve said problem; in some ways, it is about treating the knowledge as another of the company’s assets, joining together the tactical and explicit knowledge (Debenham & Clark, 1996; Levantakis, Helms, & Spruit, 2008).
- *Consultative auditing of communication*: This type of communication auditing pursues the improvement of organizational communication in such a way that one can diagnose how the communication flows within the company and the fluxes of formal and informal information. (Hogard & Ellis, 2006).

Due to the fact that communicative needs within an organization change and are influenced by the distinct communication systems that the company adopts (from notice boards to mailings or, these days, even WhatsApp groups) or through questionnaires (Downs, 1988).

- *Consultative auditing of intelligence*: One has to take into account that auditing and CI are complementary and present similarities in their processes of realization, as can happen with other processes, for example in investigative journalism, which follows a cycle of work, which in many aspects is very similar. This auditory methodology can be focused on two perspectives (Vasconcelos, 2012): On one hand, it can be understood as the search for experts in the company, of those who have the know-how of key processes in the organization (Fuld, 1991), with the aim of retaining talent, making succession plans, etc. On the other hand, a more extensive vision, in which it is considered as a diagnosis tool for CI and as a guide for its implantation (Gilad, 1989), is especially complex, even in companies with mature functions, to evaluate the



usefulness of the unit and therefore its success, unlike other units which can be measured such as income centers or profit centers (Anthony & Govindarajan, 2006).

### **Measures for the auditing of CI**

The most valued intelligence systems are those that unify quantitative and qualitative measurement criteria and that include all the steps, from the process to the impact of the intelligence generated. This is a complex mission due to the difficulty of the procedure: “The evaluation of CTI is a complex task owing to the complexity of both the CTI process and the ensuing client decision making/policy development process ... Nevertheless ... evaluation can be done, albeit using perceptual measures” (Calof, 2014a, p. 88). We have as examples service quality and customer satisfaction measures.

Amongst the means for evaluating the products, McGonagle and Vella (2002), Barnea (2016), and Krizan (1999) highlighted the following aspects: (a) *time*, e.g., if the product was delivered at the necessary time, with the aim for the intelligence obtained being useful when decision making; (b) *precision*, whereby consideration is taken as to if the sources and data used are exact and mistake free; (c) *objectivity*, e.g., about what is measured, if the conclusions have been drawn without elements of subjectivity; (d) *ease of use*, e.g., if the product of intelligence that is generated explains the conclusions in a comprehensible way; (e) *relevance*, e.g. evaluating if the product obtained fulfills the client’s needs; and (f) *preparation*, e.g., evaluating if the process of intelligence achieves the desired objectives. Among the measures, the following are noteworthy:

- *Time measures*: When the information is sent to the top management of the company (Marin & Poulter, 2004). There is a requirement within intelligence that states it is preferable to have the information, albeit not perfectly complete, within in a time frame, rather than the complete information out of time. Within the types of jobs (a) *ad hoc* and (b) *periodic/recurrent*: Time is the most important factor when taking into account many companies that use the function to contrast information and sources in order to carry out a certain activity: *due diligence* or as a support to a commercial operation.
- *Quality and product precision measures*: It is important that when the function is implanted, the products are perceived to be of quality so that the function is then trusted. Lönnqvist and Pirttimäki (2006) highlighted, above all, the need for the intelligence product to coincide with what the receptors are anticipating. From there, the client of the final product should be able to tell that it is an appropriate intelligence product and should transmit their needs to the CI unit. In fact,

Lönnqvist, in this case with Kemppilä Kemppilä & Lönnqvist, 2003), established different measures of evaluating the success of the intelligence processes within an organization based on the company's application of the report results.

- *Performance measures of team members*: Normally, this is interlocked with the evaluation of staff performance and in the variable retribution of part of their salary. These performance measures involve the incorporation of quantitative and qualitative values that allow for the retention of objective data to evaluate performance, for example, the number of reports sent, the percentage of implementation of the recommendations issued the rating of client satisfaction, etc. In this sense, we can highlight the work of Tamarit (2012) about the application of CI and technological vigilance at the Universidad Politécnica de Valencia. This study established different requirements about documentation, confidentiality, commitment to the management, responsibility, authority, and communication, among others, as indicators to measure adequate performance.
- *Quantitative measures of the units of work need to be underpinned work content validity*: This deals with quantifying the work, and the same problem occurs when evaluating team members, which is the search for objective criteria. Being a supporting task, it is difficult to quantify it in the way in which can be done with other departments such as “market share,” “number of complaints,” “claims received,” and “cost of the OSINT” (Fleisher, 2008), etc. Measures should be used such as the number of reports, number of alerts, operations detected before they take place, etc; the problem comes auditing the intangible (Berner, 2002). Within the measures of control, to know whether or not a department is fulfilling its objectives, it is key to note the methodology of Simon (1998), as cited in García Alsina (2011), that distinguishes between the objective, quantitative measures (HARD) and the subjective, qualitative measures (SOFT).
- *The cost-contribution in the income statement*: This is more important in companies with a special focus on income statements and also those that use transfer pricing. This means that different departments are converted into profit centers in such a way that the cost of the inputs that are necessary for its operation can be measured against the income that the department has achieved. These costs include their staff's salaries, an apportionment of the installations used, software licences, trips and food expenses, etc.

Fleisher and Blenkhorn (2001) go into depth about this in terms of the profitability of the CI unit department, how it is organized and its contact networks, which coincides with what the final product's client was expecting

and in the improvement of the process through learning and Cottrill (1998) turning CI into business knowledge capable to turn into company profit.

One mechanism is the establishing of a pricing system of internal transfers, in which there are “bills” between the intelligence unit and the different units of the company that use their services on the basis of cost plus a margin or at a market price, which is normally difficult to obtain as a reference. This mechanism, which is used between other units (legal consulting, advertising, etc.) is difficult to apply due to the fact that it is not an easy task to value a substitute product in the market. Likewise, due to confidentiality, these tasks do not tend to be subcontracted.

According to Calof et al. (2017), a survey supported by SCIP in 2006 reported that 13% evaluated the intelligence with ROI, and the percentage did not change a lot, at 14% in 2016. In our view, this low percentage is due to the difficulty of estimating the number with enough reliability. The highest score was in “customer satisfaction” with a 53%.

- *Client usability*: if it is useful for the top management (Du Toit, 2003; Henczel, 2000). In this case it is easier to evaluate this in a qualitative and quantitative way, as satisfaction surveys can be used to measure the appropriate management of a task in a qualitative way and combine this with profitability analysis, which has a more quantitative focus. Goitia, Saénz De Lacuesta, and Bilbao (2008) related the process of implementing the CI unit with the capacity to respond to the main risks in its implantation.
- *Contribution and impact to the teams* (Heinrichs & Lim, 2008). In this case, satisfaction is measured by the rest of the teams that, transversally, have worked on the project (Herring & Leavitt, 2011) with the important of the professional stage. Zhou (2010) based this on the coordination between senior management and the employees at all levels for the adequate monitoring and orientation of the organization’s intelligence tasks.

### ***Operating and programming of CI auditing***

We start explaining how is the process of auditing in a company to continue detailing how is the specific process of CI auditing. The process of auditing starts with the work request, that may be by yearly planning of the function, approved by the audit commission, or it may be an ad-hoc job requested by senior management. In regards to the scope of the auditing, this involves choosing the auditing team, the delegation of tasks, and the enunciation of a program of work that will include the tests that will be performed (Reding et al., 2009). Following this, the field work involves meetings with the audited

team, tests being carried out, the collection of supporting documentation, and the access to sources of information. The findings are registered and references to proceed to a closing meeting with recommendations for the audited team where tasks, the responsible staff, and the dates of implantation are set out. This is later sent and distributed in a report.

Auditing processes are carried out as follows: consultation (questionnaires, interviews), observation (visual observation of the installations), inspection (of records and inventories), checking of receipts (supporting documentation), tracking (according to the traceability of the process), re-implementation (re-calculating and carrying out of parallel tests), analytical process (variations of accounting statements), and confirmation (of data) (Pereda, 1991). From said tests, the archiving of the critical supporting documentation then takes place, especially the documentation that contains recommendations in the relevant unit of the auditing; this can be in either a physical or digital format (López Casuso, 1995). The report of recommendations involves the actions to be taken and the dates for their implementation. The main cause of failure for audits is the lack of corrective actions in the recommendations issued (Burr, 1997). In line with Standard 2400 of the International Standards for the Professional Practice of Internal Auditing, “Communicating Results,” Standard 2420–1 states that “communications must be accurate, objective, clear, concise, constructive, complete, and timely” (Instituto de Auditores Internos, 2009).

Another type of classification about tools is that conducted by Lilis and Lane (2007), which collects two types of approaches for the auditor about strategic areas of the organisation. This comes from a “from the outside in” perspective, in which the company’s priorities are determined, and from there, the auditing of the development of the strategic operations with these priorities proceeds to take place. In this sense, there are the following models: *performance measurement system* (PMS; Medori & Steeple, 2000) or the *seven steps worksheet approach* for identification of *order winners* and *order qualifying* (Platts & Gregory, 2007).

The other perspective of “from the inside out” is about using tools to audit the idiosyncrasies of the company with the aim of boosting their resources and capacities (Barney, 1991), to develop their competencies, and search for opportunities to use them. Connected to this is the model of tools by Hayes, Wheelwright, and Clark (1998), which distinguishes those tools that are used for the external diagnosis (performance evaluations of employees) from those that are used for internal diagnosis (reading and reviewing of internal policies).

### **Aspects of verification**

The usual process of CI auditing (Guía metodológica ERICA, 2012), follows the stages of: awareness, diagnosis, development, evaluation, formalization,

implementation, and continuing with the cited communication of results. For their adequate fulfillment, it is necessary to verify a series of aspects, in particular the precision, objectivity, ease of use, relevance, preparation, and the issuing of reports in the precise moment.

To encourage precision, it is increasingly more usual for companies to apply tools such as the use of business intelligence (data mining, business warehouse, etc.) with the aim of detecting within the user's consumption, behavior patterns that anticipate future behavior, which can be materialized with software for the management of clients, as is the case of customer relationships management (CRM; Akahavan & Salehi, 2013).

García Alsina (2011) and Whittington and Pany (2004) indicated that the basic tools that allow for the objectivity of an auditor emphasize the interviews, questionnaires, inventories, data bases, graphic representations, and the cost/value analysis.

## Methodology

To be able to carry out the investigation, a mixed methodology has been<sup>1</sup> segregated in two phases. In the first phase, the qualitative techniques of investigation have been counted, and in the second phase, an empirical study drawing on the quantitative techniques has been carried out.

In this article, as can be ascertained, quantitative and qualitative data are linked together, much like Tashakkori and Teddlie (1998) indicated, with the aim of solving an issue. In this investigation, we try to establish if the implantation of CI in Spanish companies is being effective.

During the first phase, an exhaustive revision of pre-existing literature on the subject matter has been carried out, harmonizing the information obtained with the information that has been extracted throughout the process of individual interviews and group sessions with specialists in the subject. It should be noted that in this first phase, the professionals that were interviewed gave practical, real, and meaningful cases from the companies they represent. This first phase is characterized as being of an exploratory scope.

Subsequently, in the second phase, the process of elaborating an audit that is applicable to the target population of the study (Spanish companies) took place. The aim of this was to empirically measure if the audits carried out by auditors showed an adequate degree of CI implementation in Spanish companies. A sample of 61 companies answered the online survey, all of which belong to the Spanish Institute of Internal Auditors (Instituto de Auditores Internos de España), in spring 2015. The online survey is the predominant procedure for survey data collection (Callegaro, Manfreda, & Vehovar, 2015). Said auditing was implemented by means of a survey directed towards the Spanish Institute of Internal Auditors (IAI). Among the targeted population for the survey were internal audit managers of IAI partners. The auditing was

implemented by a survey coordinated by the Spanish Institute of Internal Auditors (IAI) and manned by internal audit managers. Its result was that all companies have auditing but at different organization levels. Respondents came from a broad range of industries. The most frequently mentioned were finance services (29%), consumer services (17%), electronic and software (11%), telecommunications (9%), transport and aerospace (9%), consumer goods (9%), oil and gas (7%), pharmaceutical (7%), and industry and construction (5%). About the size: 30% <100 millions €, 11% 100–250 millions €, 9% 500–1,000 millions €, 2% 1,000–2,500 millions €, 17% 2,500–10,000 millions €, 19% >10,000 millions €.

We have also studied examples from the audit of CI departments in Spanish companies as Union Fenosa Gas or Renfe (Izquierdo Triana, 2016), Telefónica (Gogova, 2015), or Eulen (Vasconcelos, 2012).

This work came mainly from a doctoral thesis, and in this article, we focus specifically in the findings regarding the audit of the CI. The information was gathered through questionnaires, interviews, and working groups.

The survey was designed based on the hypothesis that there is a correlation between the carrying out of audits and the extent of the development of CI in Spanish companies. It means that the companies which practice CI audits in their CI units have a better implementation of the CI. From hereinafter, this hypothesis will be referred to as H1. The survey revolves around the auditing variables that serve as a foundation to be able to oppose H1. Table 1 provides the contemplated variables in the survey.

As this is a complex survey with 71 possible answers as well as 4 questions with open answers, variables from the model have been selected to study the reliability of the scales that, through literary research, interviews, and focus groups, have been understood as the most relevant explicative variables to then represent the constructs. The reliability of the scales and the causal links have been verified. To do this, Cronbach's alpha model was used.

Cronbach's alpha is a coefficient that allows us to measure the reliability of a scale of measurement from a group of variables that are expected to measure the same theoretical construct or dimension. The measure of reliability through Cronbach's alpha accepts that items (measured on a Likert-type scale) measure the same construct and those they are highly correlated (Carmines & Zeller, 1979); Welch & Comer, 1988). However, the results gathered show some low levels of significance due to the fact that many answers were "don't know/no answer" because only a few numbers of companies carry out intelligence audits. In consequence, H1 about the correlation between audit variables and success in implementing the CI function to date in Spanish companies shows a low level of correlation  $R^2 = 0.2$  due to the low degree of implementation of CI audits and the incipient phase of the matter in the country. However there are a number of factors (inclusion in the universe of audit, scope, diffusion, and stockpiling of

**Table 1.** Contemplated variables in the survey about the audit of CI functions

CD	Auditory.	
AU1	Audit of Competitive Intelligence.	To measure the implementation of the audits, to identify the areas of risk, to value the sources and subcontracting of the function that has established 4 items with a Likert scale of 7 points each.
AU2	Audit Certifications.	A dichotomous variable which takes "1" when it is carried out and "0" when it is not. In the case of "0," this is broken down as 1 item with a Likert scale of 3 points.
AU3	Critical points of the audit	4 items have been established, with a Likert scale of 7 points each.
AU4	Key problems for the completion of the audit.	An open variable has been established in 5 fields.
AU5	Suggestions for the implementation of CI.	An open variable has been established in 1 field.
AU6	International comparative about its implementation.	An open variable has been established in 1 field.
AU7	The auditing process.	5 items have been established, with a Likert scale of 7 points each.
AU8	Control measures and indicators.	8 items have been established, with a Likert scale of 7 points each.
AU9	Aspects to verify throughout the course of the auditing.	7 items have been established, with a Likert scale of 7 points each.
AU10	Key, relevant aspects in the auditing of CI.	10 items have been established, with a Likert scale of 7 points each.

Source: Author's own.

programs to the board) that individually strengthen the development of the CI function.

According to Calof, Arcos, and Sewdass (2017, p. 11), "it appears that intelligence is more formalised and widespread now [2016] than it was in 2006." If the formalization of the intelligence that they said in their article will continue in the future, we think that it will probably help in the future implementation and performance of CI audits because it is easier to audit where there is a procedure and a formal system than when there is not.

Now that the methodology has been defined, this article will now continue to display the results of the analysis, which try to answer the research questions. To do this, the results will be displayed for each one of the variables. The results from the questionnaire are completed with the information that comes from other sources such as interviews and focus groups.

## Results

The results that have been gathered reveal the general lack of knowledge regarding the adequate implementation, planning, and supervision of the functions of CI within the organization of a Spanish company. Displayed in the following are the weaknesses found in the system, which we have grouped into three large groups (types of audit, CI tool, and design and planning). Finally, and based on the results gathered, within the conclusions

sections, we will provide a CI auditing process based on the points for improvement that have been found during this research.

- The first weakness resides in the lack of knowledge of the types of CI auditing and how they work.
  - The results after the questions and interviews about kind, purpose, and procedure show the conclusion of a low usage level of the five types of CI auditing, especially regarding the auditing of information and intelligence. Priority is not given to discovering the sources of information, their guarantees, comparing sources, or evaluating them, especially in processes of internationalization in countries which have not been operated in previously. The sufficient level of maturity does not even exist for intelligence audits that, among other things, evaluate, and even more so, quantify the return on investment. Those audits related to resources and knowledge have a medium-low usage, showing a poor development regarding the classification of information and its compliance, as well as the means to obtain it and turn it into useful intelligence for decision making. Auditing of communication is the most used one, with a medium level of use, and companies with IC departments with a higher degree of maturity show the effort put into responding through reports to the need to reach the decision bodies on time and appropriately. These type of auditing shows higher rates than the rest of aspects, such as a different periodicity, the opportunity within channels, the level of dissemination, or the scope for action to complement information with new requirements, etc.
  - The CI auditing measures: The results of the survey show that the focus of the CI auditing is based on the application of product quality measures and the usability for the client, followed to lesser extent by the contribution to the teams and the measures to produce the information. This is due to the initial state of CI in Spanish companies, which focuses efforts on discovering if the unit is useful to the company or not and if its consumption of resources is worthwhile. It is not necessary to measure these aspects in other units as they have more maturity within the company.
  - Operating and programming: In this regard, the most relevant aspect in the audit, which the survey respondents consider to be key when implementing CI auditing, is to *propose recommendations*. This forms part of what is expected from an audit, which is to generate added value to the organization and propose improvements for the company, which are agreed on with the audited unit and for which a compliance and implementation model is established for the recommendations. Likewise it *verifies the system's compliance with the*



*regulations*. It continues a classic conception of auditing in which it verifies that the established regulations are adhered to.

At the next level, *generating and evaluating alternative solutions* can be found. At this level, its position of being independent from the operative areas and its global vision allow it to provide distinct solutions to those that have been carried out traditionally. This is positively received in companies with a consolidated role.

Following that we find *evaluating the implications and reasons for the failures discovered and establishing priorities*. This is an aspect which is particularly important when establishing the recommendations and the time-frame for their implementation in order to keep proper tracking and to test key control points. This is less important than the previous levels, due to the need to previously establish the key points, which implies a maturity of the process.

A lesser relevance is given by the survey respondents to the *establishing of operational objectives and the defining of the organisational environment*. Where there is good planning and clear objectives, this allows for human resources and the time needed in the process to be optimized. Even if this is a new, or fairly new, function in the company, the time and resources needed should be less than in more consolidated areas. In addition, *the information requirements of the users must be determined*. This is relevant to establish the company's needs and the questions they need to make to provide answers. The *inventory of information resources* must also be performed. This is an aspect that depends on the maturing of the function, since in companies that have been doing the function for longer, the information resources have been inventoried, and the audit is a continuation. However when it is an emerging function, the audit must be started from scratch in order to know what resources the company has and how to organize them. Failures in the system and key control points that affect the flux of information have to be identified. This leads with it a re-engineering of the channelling of the information, detecting filtrations, dead-ends, duplicates of the process, etc.

- Aspects of verification of the CI auditing. The results of the survey show the importance of issuing the CI reports at the right time. Apart from cases where no audit was carried out, issuing the reports at the opportune moment, with the aim of them really being of use during the decision making, is very relevant and highly valued. As is relevance: It is valued if the contribution of the intelligence is useful to the organization, particularly in a stage of implementation during an economic crisis, which involves an optimization of resources. In cycles of growth, the pressure for this relevance is probably less.

Next we find *precision*: the importance of making correct predictions and analysis is noted to increase confidence in the company, and ease of usage. The function of intelligence is new on the business scene, and therefore the lack of awareness of it does not always make it easy to apply. However, in companies with a higher maturity of the function, it is significantly valued.

Something less relevant that we find is *objectivity*. The situation of the function of intelligence, found in environments of senior management, should be positioned as independent in its analysis when compared to other functions, which may have different interests when carrying out a determined project of commercial action, hence, its high rating and preparation, which make reference to the adequate planning of resources, above all when transversal jobs are carried out whereby other units of the organization take a role.

- A second weakness arises from the unawareness the company's technological vigilance service has of the CI tool, as can be seen in Figure 1.
  - The main certification of technological vigilance and CI in Spain is the UNE166006:2011. However, most companies do not use this certification. However, neither this nor any other CI certification are used by companies. Companies do not seem to prioritize having external certification.
  - Regarding the regulations, the Spanish regulation UNE 166006:2011 titled "the Management of Investigation, Development and Innovation: Technological Vigilance Systems and CI," reviews the requirements of surveillance systems, the responsibilities of the management, the management of resources, the carrying out of

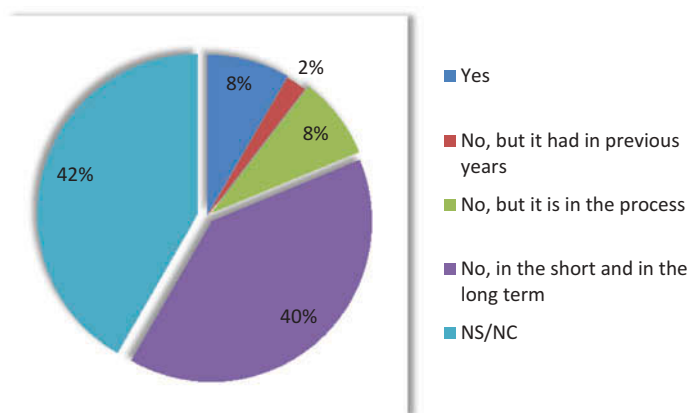


Figure 1. Certification of technological vigilance and CI.

- technological vigilance/CI, the contracting of services of surveillance systems, and the mediation, analysis, and improvement of the system.
- The companies that have a higher implementation correspond to the sectors of electronics and software. A lower degree of implementation is presented, mainly in terms of functions that deal with reserved matters and those that barely subcontract services, apart from in SMEs, due to the cost savings if performed as an occasional service.
- 
- A third weakness has been identified thanks to the survey, and that is the design and planning of tasks. We have been able to verify that the unawareness of the function and its position within the organization, what is audited, who does the audit and why that is most relevant, and the cost of the opportunity in comparison to auditing other units is immediately reflected in the income statements.
    - Among the distinct aspects proposed in order to improve the intelligence unit, which come from audits that have been carried out, those that stand out are those related to resources (personal, technological and economical), organization (competencies), and the intelligence culture.
    - The aspects relating to the critical points at the time of planning the audit and those which need the most attention paid to during the auditing process are in [Table 2](#).
    - Albeit there has been progress in the implementation of CI in Spanish companies, these are still falling behind other countries such as France, Japan, Germany, the United States, and Sweden. The causes for this are distinct in each case.

The main conclusions out of this table show the difficulties in the planning of the task that reduce the priority of this audit in comparison to other units. As can be seen, the key aspect is the cultural of the organization issue in its distinct variables: educational, entrepreneurial, social, etc., and the treatment of the information that goes along with that. Some of these factors are replicable, for example the development of software systems or regulatory modifications. Some are more difficult to replicate in the medium term, such as the social culture and the feeling of belonging to the environment; these require time and distinct events to achieve similar levels.

## Conclusions

The results gathered through auditing the CI process in Spanish companies respond to the research objectives that were outlined relating to three issues.

**Table 2.** Critical aspects when planning.

Critical aspects	Problems in the realization	Suggestions for improvements	Wider implementation in other countries
Response time.	Lack of cultural knowledge of the organization about the situation.	Explicit support from the organization.	For the composition of its textile industry.
Archiving the documentation.	Confidentiality of information.	Measuring the profitability of the unit (ROI).	Rating of the information and its use.
Sources of information.	Lack of involvement of senior managers.	Use of adequate technological tools.	For social culture and for the benefit of the society involved.
Goodness and integrity of the analysis made.	Problems accessing the information.	Professionalism and specialization in this.	For a higher level of development in investigation and development and its focus on continual improvement.
Verifying of information gathered.	Environment does not favor inter-departmental collaboration.	Improve the provision of resources and the elaboration of processes.	Long-term strategic vision.
Cost benefit utility	Unified criteria for data and analysis quality.	Assigning of the functions to a specific area of the organization.	For the availability of human and technological resources and the stake of these countries for CI.
Defined diffusion criteria.	Lack of rigor when dealing with information.	Mainstreaming of the function.	With a higher degree of development and internationalization, a greater need for CI studies.
Safety Compliance.	Its prioritization over other areas that handle cash.	Utmost numerical rigor in the reports.	Educational, academic, and editorial culture about the matter.
Production of reports	New CI departments.	Continue the updating of reports and tasks.	A degree of progress towards the trust of its usage.
Internal legal and regulatory compliance.	Lack of interest in this area as a priority.	Sharing the company's strategy and explaining it as a point of reference.	Influence of the legal structure of the managing of information and the level of awareness in the organizations.

Source: Author's own, produced from the survey results.

Firstly, our goal was to determine if CI is being audited correctly in Spanish companies.

The results show that the labor of the CI auditing is important to ensure that the implementation of the function in the organization is carried out in a lesser way than is expressed in the following:

- Spain, after China and Italy, became in 2013 the third country in the world by number of quality certificates (NP ISO Survey, 2013). However the majority of the companies do not consider it necessary to be certified

in auditing standards of CI such as the Spanish regulation for “the Management of Investigation, Development and Innovation: technological vigilance Systems and CI,” UNE 166006:2011 or another external certification is done by CI professional or strategic consultants. They are not concerned about the issue as they are in other areas. To have certificates and references could be a special help for companies that start to operate in CI to add value.

- External audits are not carried out due to confidentiality and critical aspects of the field, which is why they end up being completed by internal auditors.

Leading on from the previous points, by devolving the labor to internal auditors, this function does not tend to be included in the realm of auditing as opposed to other areas which are considered to be more critical, this marks a recognition of the need to be able to be audited.

Secondly, an analysis was made to see whether or not the CI auditing performed displays a suitable degree of implementation. The results show that the extent of the auditory work is centered in communication, resources, and quality, and that is worlds away from how CI is considered on an international level.

- The scope of the auditory work in CI is in initial phases, more centred on the auditing of communication and resources than intelligence. The audits that are performed pay particular attention to the management of time, confidentiality of information, the recruitment of sources of information, the reasons for the failures discovered, defining the organizational environment, and the identification and mapping of the fluxes of information.
- The focus of the audits in CI is based on the measures of product control and usability for the client. With this being an initial function, Spanish companies are worried about if it is useful or not in terms of the company and the resources it consumes. There is a need for the perception of economic profitability, be it direct, indirect, or in its reputation, for these departments that are involved in the organization, and how this should be expressed when part of these functions are separated and not systematised within the organization.
- At an international level, the development of CI in companies in countries at a similar economic level to Spain is far greater, for example in Japan, Germany, France, and Sweden, amongst others. In this sense, foreign companies that operate in Spain via subsidiary companies are found to have a higher development of the function and CI auditing that they have inherited from their parent company. Although they tend to

dedicate themselves to the task of information gathering more than that of analysis which their parent company continues to do.

Finally, the third issue was to detect the factors that we should strengthen in order to implement CI audits in Spanish companies as a way of strengthening and legitimizing CI units. In the following, we can see that the results reveal that it is necessary to implement auditing programs focused on evaluating the improvement of CI culture, involving senior management, dealing with information, and pinpointing recommendations for improvement.

- Key aspects for the implementation of CI auditing include: proposing recommendations and verifying the system's compliance with the regulations followed in terms of generating and evaluating alternative solutions. Moreover, we find evaluating the implications and reasons for the failures discovered and establishing priorities and testing key control points.
- It is clear that it is necessary to perform auditing programs. This shows that questionnaires and lists of various auditing tests are available, which allow for the audit to be carried out on the matter.
- In an integrated intelligence model, the internal audit is in a good position and the area has a general overview of the company and the relationships between the areas, to check the grade of collaboration within the intelligence pools, which is essential due to the importance of the collaborative efforts with other areas.
- We must also highlight the sending of the reports in the correct moment, as well as their relevance. A greater dissemination of the auditing reports, both to the senior management and the board, via the Auditory Commission or the Executive Committee of the Board, is linked to a greater success of the function. This is because they enable, amongst other things, the potential that intelligence departments have within an organization to be publicized.
- When faced with the indicated problem (intelligence culture, involvement by senior management, dealing with the information, lack of maturity of the function), the aspects should show the profitability of the function in the organization, be that in terms of the resources used versus the results achieved, or the virtues that the use of this information implies for the organization. Once these aspects have been achieved, the auditor can see the smoothing of the way to act as a guarantor for its adequate implementation. As there are certain factors that companies take on, such as anticipating risks and the management of data, these can act as a lever to achieve the implementation of the matter in the organization.

It is necessary to create a sustainable model of CI and the means to measure the effectiveness of CI units and to find solid ROI metrics to convince the top management to trust in the CI unit. However there are other units in the companies that they are not easily measured by ROI metrics: strategy, accounting, marketing, management control, etc., and they are necessary in the companies. If the CI units are properly audited with an audit report that shows that the CI unit is working properly, is useful, and will be reported to the audit committee (made up of members of the board), it will help in the way of strengthening and legitimizing CI units for the top management.

Although the incipient phase of CI in Spain and the low degree of implementation of CI audit forces the audit units to perform audits to internal and not by external resources, there are a number of increasing changing factors: inclusion in the universe of audit, implementation of the audit recommendations, dissemination or the reports to the board, etc., that individually strength the development of the CI function.

*Proposal:* Following on from this, and based on the results and needs of the study, a CI auditing process is attached, as can be seen in [Figure 2](#). It is related to the conclusions because it tries to add a proposal of CI auditing process. It was built in 2016 on the basis of the studies of implementation of a CI unit in two important Spanish companies: Renfe (Railway Operator) and Unión Fenosa Gas (Oil & Gas) (Izquierdo Triana, 2016). In addition to the traditional phases of auditing, which do not differ much from the audit cycle (planning of the audit, gathering of information, its analysis, sending of the report with recommendations), the following aspects have been added to the CI auditing models:

- This process starts with risk control to then integrate this in the auditing, with both areas already having been validated by the companies and they facilitate the labour of CI. Both auditing and risks are forward-looking labors which, through ex-post audits, try to anticipate future behavior with the aim of establishing prevention mechanisms and risk mitigation.
- In an environment with so much excess information, the analyst can feel overwhelmed with data. This process in turn addsto the cleaning and encoding of data. This means that the quality of data is maintained, integrating the categories as they are, and furthermore the incorrect or missing data is eliminated and correlations in these are identified. Likewise the federation of sources has the aim of accessing the information stored in different data bases, avoiding duplications and providing traceability to the searches.

As key performance indicators (KPI) of the process, we can use the following:

- The number of recommendations that come from the CI process;
- The number of recommendations that come from the CI process compared to the total of auditing recommendations;
- The number of reduction of inherent risks in the risk and threads matrix of the company to levels which now are accepted by the organization based on the recommendations<sup>2</sup>;
- Efficiency: The amount of money coming from income or cost reduction as a consequence of the CI recommendations against the return of investment. See Figure 2.

Finally, it should be highlighted that an adequate implementation of CI within Spanish companies could represent a very relevant improvement in competitiveness. With the proper metrics in place to evaluate it over time, we hope to measure this by putting the process provided into place and by continuing a process of continuous improvement in such an extensive discipline.

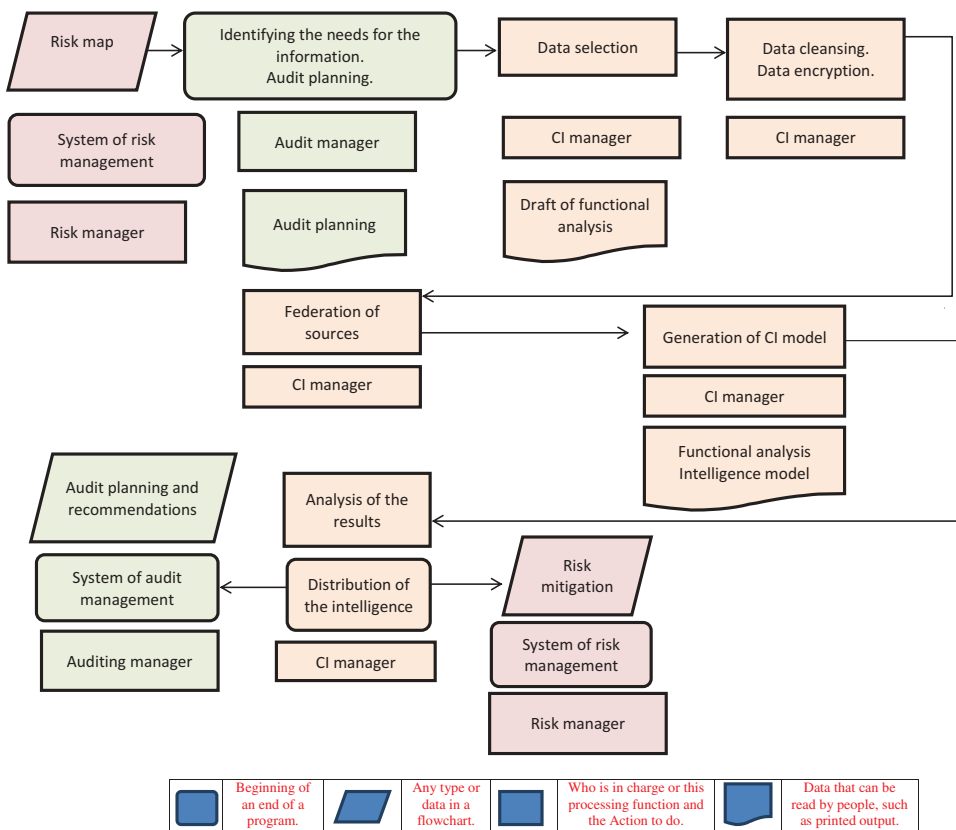


Figure 2. Process of CI auditing.



## Notes

1. Recent studies of competitive intelligence have chosen mixed methodologies (Correia & Wilson, 2001; García Alsina, 2011; Jaworski et al., 2002; Wright et al., 2002). Delivering a sustainable model requires mixing qualitative techniques (interview, business case of real implementations) with quantitative techniques from the survey.
2. CI departments have identified and defined actions as part of the function of defending the organization's assets, and this involves knowing its threads and risks to be able to establish measures to alleviate or reduce them to a level which the organization can tolerate.

## Notes on contributors

**Héctor Izquierdo Triana** holds a Ph.D. in Economics, degrees in Law, Economics, and Business Administration (ICADE, Universidad Pontificia Comillas), and an Executive MBA (IE Business School), first in his class at IE Business School. He is Associate Professor at IE Business School and ICADE. With rich experience working in 25 countries, in sectors such as energy, railroad transportation, and government administration, and in positions as Director, Member of the Steering Committee or Member of the Board, he learned about CI and its implementation in different countries and businesses, combining his practical experience with the academic.

**José Luis Fernández** holds a Ph.D. in Philosophy (Universidad Pontificia Comillas) and an MBA (ICADE, Universidad Pontificia Comillas). He is an Ordinary Professor at ICADE and Director of the Chair of Economic and Business Ethics. He is Member of the Board of Directors of the European Ethics Network. His professional career includes, amongst other positions, that of Vice-Chancellor of Foreign Relations and University Extension of the Universidad Pontificia Comillas and President of Ethics, Economics, and Management, Spanish Association for the Ethics of Economics and Organizations (EBEN-España).

**Eva Ballesté** holds a Ph.D. in Economic and Business Sciences from the National University of Distance Education (UNED) as well as an Executive Master in Financial Management (IE Business School) and Master in Management Accounting and Control Systems (Copenhagen Business School). Professor Ballesté has solid professional experience in the administration, management, and strategy of companies such as Alstom, Grupo Puentes, Endesa France, and Amitech.

## References

- Akahavan, P., & Salehi, S. (2013). Critical factors of business intelligence: (Case of an it-based company). *World Applied Sciences Journal*, 22(9), 1344–1351.
- Anthony, R., & Govindarajan, V. (2006). *Management control systems*. New York, NY: McGraw-Hill Education.
- Arcos, R. (2010). *La lógica de la excepción cultural, entre la geoeconomía y la diversidad cultural*. Madrid, Spain: Cátedra.
- Attaway Morris, C. (1999, December). Comparative Intelligence. *Internal Auditor*. Retrieved from <https://www.highbeam.com/doc/1G1-58451891.html>
- Barnea, A. (2016). Study on competitive intelligence in Israel: 2016 update. *Journal of Intelligence Studies in Business*, 6(2), 5–16.

- Barney, J. (1991). Firm resources and sustained competitive advantage. *Journal of Management*, 17(1), 99–120. doi:10.1177/014920639101700108
- Berner, S. (2002) *Auditing the intangible*. Retrieved from [http://www.samberner.com/documents/KM/info\\_audit.pdf](http://www.samberner.com/documents/KM/info_audit.pdf)
- Botha, H. (2000). *The information audit: principles and guidelines* (Master's dissertation). University of Pretoria, Pretoria, South Africa.
- Buchanan, S., & Gibb, F. (1998). The information audit: An integrated strategic approach. *International Journal of Information Management*, 18(1), 29–47. doi:10.1016/S0268-4012(97)00038-8
- Bulger, N. J. (2016). The evolving role of intelligence: Migrating from traditional competitive intelligence to integrated intelligence. *The International Journal of Intelligence, Security, and Public Affairs*, 18(1), 57–84.
- Burk, C., & Horton, F. (1998). *InfoMap: A complete guide to discovering corporate information management resources*. Englewood Cliffs, NJ: Prentice-Hall.
- Burr, J. (1997). Keys to a successful internal audit. *Quality Progress*, 30(4), 75–80.
- Callegaro, M., Manfreda, K., & Vehovar, V. (2015). *Web survey methodology*. London, UK: Sage Publications.
- Calof, J. (2014a). Evaluating the impact and value of competitive intelligence from the users perspective—The case of the National Research Council's technical intelligence unit. *Journal of Intelligence Studies in Business*, 4(2), 79–90.
- Calof, J. (2014b). Want a good return for your CI dollar? Consider event intelligence. *Competitive Intelligence Magazine*, 17(4), 40–45.
- Calof, J., Arcos, R., & Sewdass, N. (2017). Competitive intelligence practices of European firms. *Technology Analysis & Strategic Management*. Advance online publication. doi:10.1080/09537325.2017.1337890
- Calof, J., Sewdass, N., & Arcos, R. (2017). Competitive intelligence: A 10-year global development. *Competitive Intelligence*, 20, 21–26.
- Calof, J., & Smith, J. (2010). The integrative domain of foresight and competitive intelligence and its impact on R&D management. *R&D Management*, 40(1), 31–39. doi:10.1111/j.1467-9310.2009.00579.x
- Calof, J. L., & Breakspear, A. (1999). *Competitive intelligence practices of Canadian technology firms*. Ottawa, Canada: National Research Council/Canadian Institute of Scientific and Technical Information.
- Carmines, E. G., & Zeller, R. A. (1979). *Reliability and validity assessment*. Series: Quantitative Applications in the Social Sciences. Beverly Hills, CA: Sage Publications.
- Cekuls, A. (2010). *Competitive intelligence model in Latvian enterprises*. Amsterdam, The Netherlands: Elsevier.
- Chi, Y. Y., & Yan, P. C. (2011, July). *The supporting actor in enterprise executives' decision-making: A competitive intelligence perspective*. Paper presented at the 11th International DSI and the 16th APDSI Joint Meeting, Taipei, Taiwan.
- Colakoglu, T. (2011). The problematic of competitive intelligence: How to evaluate and develop competitive intelligence? *Procedia-Social and Behavioral Sciences*, 24, 1615–1623. doi:10.1016/j.sbspro.2011.09.075
- Correia, Z., & Wilson, T. D. (2001) Factors influencing environmental scanning in the organizational context. *Information Research*. Retrieved from <http://InformationR.net/ir/7-1/paper121.html>
- Cottrill, K. (1998). Turning competitive intelligence into business knowledge. *Journal of Business Strategy*, 19, 27–30. doi:10.1108/eb039948
- Debenham, J., & Clark, J. (1996). The knowledge audit. *Robotics and Computer Integrated Manufacturing Journal*, 11, 201–211. doi:10.1016/0736-5845(94)90035-3

- DELOITTE. (2012). *Análisis sobre la situación actual de las empresas españolas no cotizadas en relación con el Buen Gobierno*. Retrieved from [https://www2.deloitte.com/content/dam/Deloitte/es/Documents/governance-riskcompliance/Deloitte\\_ES\\_GRC\\_Gobierno-Corporativo-Estudio-Deloitte-ESADE-Gobierno-Corporativo.pdf](https://www2.deloitte.com/content/dam/Deloitte/es/Documents/governance-riskcompliance/Deloitte_ES_GRC_Gobierno-Corporativo-Estudio-Deloitte-ESADE-Gobierno-Corporativo.pdf)
- Di Mattia, S., & Blumenstein, L. (2000). In search of the information audit: Essential tool or cumbersome process? *Library Journal*, 125(4), 48–50.
- Downs, C. (1988). *Communication audits*. London, UK: Harper Collins.
- Du Toit, A. S. A. (2003). Competitive intelligence in the knowledge economy: What is in it for South African manufacturing enterprises? *International Journal of Information Management*, 23(2), 111–120. doi:10.1016/S0268-4012(02)00103-2
- Du Toit, A. S. A. (2015). Competitive intelligence research: An investigation of trends in the literature. *Journal of Intelligence Studies in Business*, 5(2), 14–21.
- Dubois, C. (1995). The information audit: Its contribution to decision making. *Library Management*, 16(7), 20–24. doi:10.1108/01435129510093746
- Ellis, D., Barker, R., Porter, S., & Pridgeon, C. (1993). Information audits, Communications audits and information zapping: A review and survey. *International Journal of Information Management*, 13, 134–151. doi:10.1016/0268-4012(93)90079-J
- ERICA. (2012). *Guía metodológica de práctica de la vigilancia tecnológica e inteligencia competitiva, (Proyecto Piloto de Transferencia y Desarrollo de Capacidades Regionales en Vigilancia Tecnológica e Inteligencia Competitiva)*. Valencia, Spain and Medellín, Colombia: Author.
- Esteban, M. A., & Navarro, D. (2003). Gestión del conocimiento y servicios de inteligencia: La dimensión estratégica de la información. *El Profesional de la Información*, 12(4), 269–281. doi:10.1076/epri.12.4.269.16905
- Fernández-Fernández, J. L. (1999). Ethics and the board of directors in Spain: The Olivencia code of good governance. *Journal of Business Ethics*, 22(3), 233–247. doi:10.1023/A:1006290615353
- Fleisher, C. (2008). OSINT: Its implications for business/competitive intelligence analyses and analysts. *Inteligencia Y Seguridad. Revista De Análisis Y Prospectiva*, 4, 115–141.
- Fleisher, C., & Blenkhorn, D. L. (2001). *Managing frontiers in competitive intelligence*. London, UK: Westport, Quorum Books. London.
- Fuld, L. M. (1991). A recipe for business intelligence success. *Journal of Business Strategy*, 12(1), 12–17. doi:10.1108/eb060093
- Gaidelys, V. (2010). The role of competitive intelligence in the course of business process, economics and management. *Economics and Management*, 15, 1057–1064.
- García Alsina, M. (2011). *Contribución de la Inteligencia Competitiva en el proceso de adaptación EEES: el caso de las universidades españolas* (Doctoral thesis). Universidad Oberta de Catalunya, Barcelona, Spain.
- García Alsina, M., & Ortoll, E. (2012). *La inteligencia competitiva. Evolución histórica y fundamentos teóricos*. Gijón, Spain: Ediciones Trea.
- Gilad, B. (1989). The role of organized competitive intelligence in corporate strategy. *Columbia Journal of World Business*, 24(4), 29–35.
- Gogova, S. (2015). *Inteligencia Competitiva*. Madrid, Spain: Ediciones Díaz de Santos.
- Goitia, S., Saénz De Lacuesta, S., & Bilbao, M. (2008). Implantación de sistemas de información empresarial. *El Profesional de la Información*, 17, 540–545. doi:10.3145/epi.2008.sep.08
- Groom, J. R., & David, F. (2001). Competitive intelligence activity among small firms. *SAM Advanced Management Journal*, 66(1), 12–29.
- Hayes, R., Wheelwright, S., & Clark, K. (1998). *Dynamic manufacturing: Creating the learning organization*. New York, NY: Free Press.

- Heinrichs, J. H., & Lim, J. (2008, May). Impact of marketing model application and competitive intelligence utilization on strategic response capability. *Journal of Strategic Marketing*, 16(2), 91–110. doi:10.1080/09652540801981488
- Henczel, S. (2000). The information audit as a first step towards effective knowledge management: An opportunity for the special librarian. *International Journal of Special Libraries*, 34(3–4), 210–226.
- Henczel, S. (2001). *The information audit: A practical guide*. Munich, Germany: K. G. Saur.
- Herring, J. (1999). Key intelligence topics: A process to identify and define intelligence needs. *Competitive Intelligence Review*, 10(2), 4–14. doi:10.1002/(ISSN)1520-6386
- Herring, J., & Leavitt, J. A. (2011). The roadmap to a world-class competitive intelligence program. *Competitive Intelligence*, 14(1), 9–28.
- Hogard, E., & Ellis, R. (2006, April). Evaluation and communication. Using a communication audit to evaluate organizational communication. *Evaluation Review*, 30(2), 171–187. doi:10.1177/0193841X05278789
- Instituto de Auditores Internos de España. (2009). *Revisión del Marco Internacional para la práctica profesional de la Auditoría Interna*. Madrid, Spain: Author.
- Izquierdo Triana, H. (2016). *La inteligencia competitiva en las empresas españolas en la actualidad: Auditoría de su implantación como herramienta estratégica* (Doctoral thesis). Universidad Pontificia Comillas, ICADE, Madrid, Spain.
- Jaworski, B., Macinnins, D., & Kholi, A. (2002). Generating competitive intelligence in organizations. *Journal of Market-Focused Management*, 5(4), 279–307. doi:10.1023/B:JMFM.0000008071.19917.36
- Kahaner, L. (1996). *Competitive intelligence*. New York, NY: Simon & Schuster.
- Kemppilä, S., & Lönnqvist, A. (2003). Subjective productivity measurement. *Journal of American Academy of Business, Cambridge*, 2, 1–8.
- Krizan, L. (1999). *Intelligence esenciales for everyone*. London, UK: Joint Military Intelligence College.
- Lackman, C., Saban, K., & Lanasa, J. (2000). Organizing the competitive intelligence function: A benchmarking study. *Competitive Intelligence Review*, 11(1), 17–27. doi:10.1002/(ISSN)1520-6386
- Levantakis, T., Helms, R., & Spruit, M. (2008). Developing a reference method for knowledge auditing. In T. Yamaguchi (Ed.), *Proceedings of the 7th International Conference on Practical Aspects of Knowledge Management* (pp. 147–159). Berlin, Germany: Springer.
- Liebowitz, J. (2006). *Strategic intelligence: Business intelligence, competitive intelligence and knowledge management*. New York, NY: Auerbach Publications.
- Liebowitz, J., Rubenstein-Montano, B., McCaw, D., Buchwalter, J., & Browning, C. (2000). The knowledge audit. *Knowledge and Process Management*, 7(1), 3–10. doi:10.1002/(SICI)1099-1441(200001/03)7:1<3::AID-KPM72>3.0.CO;2-0
- Lilis, B., & Lane, R. (2007). Auditing the strategic role of operations. *International Journal of Management Review*, 9(3), 191–210. doi:10.1111/j.1468-2370.2007.00209.x
- Lönnqvist, A., & Pirttimäki, V. (2006). The measurement of business intelligence. *Information Systems Management*, 23(1), 32–40. doi:10.1201/1078.10580530/45769.23.1.20061201/91770.4
- López Casuso, A. (1995). Auditoría, independencia y objetividad. *Revista Técnica*, 3ª Época (7), 68–75.
- Marin, J., & Poulter, A. (2004). Dissemination of competitive intelligence. *Journal of Information Science*, 30(2), 165–180. doi:10.1177/0165551504042806
- McGonagle, J. M., & Vella, C. (2002). *Bottom line competitive intelligence* (1st ed.). Westport, CT: Quorum Books.

- Medori, D., & Steeple, D. (2000). A framework for auditing and enhancing performance measurement systems. *International Journal of Operations & Production Management*, 20(5), 520–533. doi:10.1108/01443570010318896
- Nasri, W. (2012). Conceptual models of strategic benefits of competitive intelligence process. *International Journal of Business and Commerce*, 1(6), 25–35.
- NP-ISO Survey. (2013). *Las empresas españolas, terceras del mundo en certificados de Calidad ISO 9001*. Retrived from [http://www.aenor.es/Documentos/Comercial/Archivos/NOTAPREN\\_Tabla\\_AEN\\_6765\\_1.pdf](http://www.aenor.es/Documentos/Comercial/Archivos/NOTAPREN_Tabla_AEN_6765_1.pdf)
- Pereda, J. M. (1991). *Manual de Auditoría y Cuentas Anuales*. Madrid, Spain: Editorial Centro de Estudios Ramón Areces S.A.
- Platts, K., & Gregory, M. (2007). Manufacturing audit in the process of strategy formulation. *International Journal of Operations and Production Management*, 10, 5–26. doi:10.1108/EUM0000000001264
- Reding, K., Sobel, P., Anderson, U., Head, M., Ramamoorti, S., & Salamasick, M. (2009). *Auditoría interna: Servicios de aseguramiento y consulta*. Madrid, Spain: Instituto de Auditores Internos.
- Santos, M., & Correia, A. (2010, September). *Competitive intelligence as a source of competitive advantage: An exploratory study of the Portuguese biotechnology industry*. Paper presented at the 11th European Conference on Knowledge Management, Famalicao, Portugal.
- Sewdass, N., & Du Toit, A. S. A. (2014). Current state of competitive intelligence in South Africa. *International Journal of Information Management*, 34(2), 185–190. doi:10.1016/j.ijinfomgt.2013.10.006
- Sharp, S. (2009). *Competitive intelligence advantage*. NJ: Wiley.
- Simon, N. J. (1998). Managing the CI department: Determining measures of success. *Competitive Intelligence Magazine*, 1(2), 45–48.
- Strategic and Competitive Intelligence Professionals. (2011). *What is competitive intelligence?* Retrieved from <http://www.scip.org>
- Strauss, A. C., & Du Toit, A. S. A. (2010). Competitive intelligence skills needed to enhance South Africa's competitiveness. *New Information Perspectives*, 62(3), 302–320.
- Tamarit, C. (2012). *Aplicación de la inteligencia competitiva y la vigilancia tecnológica en la Universidad Politécnica de Valencia: Creación de un modelo de vigilancia tecnológica en el Centro de Apoyo a la Innovación, la Investigación y la Transferencia de Tecnología* (Final Career Project). Universidad Politécnica de Valencia, Valencia, Spain.
- Tashakkori, A., & Teddlie, C. (1998). *Mixed methodology*. London, UK/Thousand Oaks, CA: Sage Publications.
- Vasconcelos, A. (2012). *Auditoría de Inteligencia*. Gijón, Spain: Ediciones Trea.
- Velasco, F., & Arcos, R. (2012). *Cultura de inteligencia. Un elemento para la reflexión y la colaboración internacional*. Madrid, Spain: Plaza y Valdés.
- Welch, S., & Comer, J. (1998). *Quantitative methods for public administration: Techniques and applications*. Long Grove, IL: Waveland Press.
- West, C. (2001). *Competitive Intelligence*. Basingstoke, UK: Palgrave Macmillan.
- Whittington, O. Y., & Pany, K. (2004). *Principios de auditoría*. Mexico City, Mexico: Ediciones McGraw-Hill.
- Wood, S. (2004). *Information auditing: A guide for information managers*. Middlesex: Freeprint.
- Wright, S., Pickton, D. W., & Calof, J. (2002). Competitive intelligence in UK firms: A typology. *Marketing Intelligence & Planning*, 20(7), 349–360. doi:10.1108/02634500210445400
- Zhou, J. (2010, November). *On the CI monitoring system under the framework of the chain-franchise operation*. Paper presented at the 3rd International Conference on Information Management, Innovation Management and Industrial Engineering, ICIII, Kunming, China.