



ORGANIZATIONAL AMBIDEXTERITY AND ACCOUNTING ELEMENTS

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1. Introduction.

Ambidextrous people are those who can use both hands with the same ability. Although this characteristic is typical of some people, it can also be found in organizations. In the case of companies, they must have in balance the effort devoted to both exploitation and exploration to be ambidextrous. Exploitation focuses on improving those already existing elements and extracting an economic return from them; while exploration focuses on the search for new ideas in sectors that are not the usual ones.

Over the last two decades, interest in organizational ambidexterity has increased among academics due to its business benefits. Tushman & O'Reilly III (1996) affirmed that ambidexterity is essential for those organizations that want to get a high performance and survive in the long term.

However, papers that aim to analyze ambidexterity use measures that do not usually come entirely from the official accounting documents of the organizations that are easy to obtain, but from databases that are not purely of accounting nature or surveys filled by those in charge. Due to this, the objective of this paper is to test out if the beneficial effects of ambidexterity in terms of performance can be verified using only the accounting elements provided by the Annual Report of these organizations. Or if, on the contrary, it would be necessary to use, partially or totally, measures from other sources despite its difficulty of obtaining, as the rest of the authors have done so far.

To do this, those elements that are necessary for the proper understanding of this work will be theoretically explained; that include organizational ambidexterity, those accounting items and accounts that best reflect ambidexterity, and accounting ratios. Later the methodology that will be used will be explained in more detail, and an empirical study will be carried out using data of Spanish companies to try to fulfill the objective of this paper. The data that will be used to do this part will be obtained from SABI, a database that contains the accounting reports of thousands of Spanish and Portuguese companies. Finally, the conclusion reached with the empirical analysis and the sources used to carry out this paper will be presented.

2. Theoretical framework.

2.1. Ambidexterity.

The first academic to use the term "organizational ambidexterity" was Robert Duncan in 1976. However, this expression was not very popular among academics until two decades later, when Tushman & O'Reilly III (1996) published a study stating that ambidexterity was imperative for organizations if they wanted to have a high performance and to survive in the long term. This is of vital importance mainly in dynamic markets, where the elements with which organizations interact constantly change and those organizations must adapt to them.

It is important to highlight that organizations are constantly involved in seemingly contrary activities, but they must keep them in balance to be able to get a high performance and to be able to survive in the long term: Being efficient but being able to adapt to changes, satisfying current customers but also those clients that will be in the future, etc. In the case of the organizational ambidexterity, it focuses on maintaining both the exploitation and the exploration of the company in balance (March, 1991).

However, one of the biggest problems when analyzing ambidexterity is that the definitions of its parts are so wide and ambiguous that there is a risk that each study can interpret them in a different way. For example, discrepancies may arise when choosing the variables that measure exploitation, exploration, and performance (O'Reilly III & Tushman, 2013). To avoid misunderstandings, ambidexterity will be explained in more depth in the following sections.

2.1.1. Exploitation.

Exploitation is the part of the organizational ambidexterity that focuses mainly on the following two aspects: The first aspect is to keep in use the resources (materials, employees, machinery, etc.) of the organization through its activity in order to obtain profits. These profits will be used to guarantee the continuity of the organization and to be able to invest in other aspects, such as exploration, which will be explained in the next section. The second aspect is to improve those elements (technologies, skills, knowledge, etc.) that already exist in an organization or are closely related to them. Due to this, exploitation is usually related to increasing the efficiency of these elements and improving their functioning, generally through small improvements made by workers in their daily activities (March, 1991). Because these innovations focus on

improving existing elements, the changes are usually not very large, which is the reason why these innovations are usually considered to have incremental character (Jansen, Van Den Bosch, & Volberda, 2006).

However, one of the biggest problems of this kind of innovation is that since it is always centered on the same elements of the organization, the workers acquire too much experience in them. Although on the one hand this experience may be good for refining these elements, this could cause workers to not want to leave their comfort zone. The problem is that in order to generate new ideas it is necessary to leave the comfort that the known offers, and if the workers are really experienced in a certain activity, it will be difficult to convince them to abandon it. It is for all the reasons that have been explained above that focus on incremental innovations tend not to influence radical innovations (Hoang and Rothaermel, 2010).

2.1.2. Exploration.

Exploration is the part of the organizational ambidexterity that focuses on innovations of sectors that are not the usual ones in the organization. This will lead to the discovery of innovations and knowledge that barely have relation with what the organization had before. Due to this, exploration is usually related to the generation or search of new ideas, to the experimentation of alternatives, to high levels of novelty, to risk, to new skills and knowledge, etc. (March, 1991). Because these innovations focus on entirely new elements, they produce large changes that break with the status quo, so these innovations are often considered of radical character (Jansen et al., 2006).

Another positive effect of the exploration is that although the discoveries made are usually not close to the main activity of the company, they can also be used to improve existing elements, generating incremental innovations and improving exploitation (Quintana-García & Benavides-Velasco, 2008).

2.1.3. The importance of balance.

Although there is a great disparity between the different authors when defining what is exactly the organizational ambidexterity (Junni, Sarala, Taras, & Tarba, 2013), most agree with March (1991). This author considers that the organizational ambidexterity is achieved by having the exploitation and exploration of an organization in balance. This

is because he considers this balance the optimal point to have a high performance in the long term, guaranteeing the survival of an organization. However, Cao, Gedajlovic, & Zhang (2009) consider that a combination of large levels of both is important too. This is because if those levels are too low, ambidexterity could not be carried out properly, reason why some authors even consider these higher levels more important than the balance between these two parts.

Returning to the original idea, we could say that those organizations that invest both in exploitation and exploration have a higher long-term performance than those organizations that only invest mainly in one of the two elements (Tushman & O'Reilly III, 1996). The reason for this, according to Levinthal & March (1993), is that if an organization focuses too much on exploitation and ignores exploration, the organization will achieve a great performance in the short term. This great performance will create a false sense that everything is going well, falling into what is known as a "success trap". Because of this, managers will be convinced that they are doing well, continuing without investing in exploration, and letting themselves be driven by inertia. However, by doing this, the organization will remain stagnant, remaining totally unprotected to the changes that will inevitably occur in the long term, which will reduce critically the performance of the organization. In addition, they will be wasting potential opportunities or potential customers, since they only focus on the ones they already have.

On the other hand, if an organization focuses too much on exploration and ignores exploitation, the organization will waste its innovations, becoming inefficient. This is because the rate at which new ideas are generated is so high that the organization is not able to take advantage of its full potential before they are replaced by new ideas. This situation causes that the organizations do not have the opportunity to recover everything what they have invested in each innovation, producing important losses. This is known as "failure trap".

The biggest problem in achieving the ambidexterity in organizations is that they tend to focus more on exploitation, since it is the part that gives relatively safe benefits in the short term. Another reason is that the possible profits of the exploration are long-term and without guarantees that they will occur, so that success is somewhat uncertain. Due to this, failures or inefficiency is quite common in exploration, so managers usually avoid it because they prefer to invest in safer elements (March, 1991).

Due to what was explained in the previous paragraphs, March (1991) considered that the best option for organizations are to invest both in exploitation and exploration.

Thanks to this, organizations would avoid becoming obsolete by investing in radical innovations that would allow them to adapt to the changes that inevitably will happen in the future. In addition, they will be able to take full advantage of them thanks to the refinement of those innovations in the exploitation. However, this can be difficult to achieve, since the resources available to an organization are limited. Because of this, managers must carefully distribute these resources between exploitation and exploration to ensure that they remain in balance (Simsek, Heavey, Veiga, & Souder, 2009).

Most experts on this subject, such as Gibson & Birkinshaw (2004), have confirmed the benefits of ambidexterity in terms of performance. However, some authors such as Ebben & Johnson (2005) questioned it because in some studies they obtained different results. March (1991) himself previously recognized that in some circumstances ambidexterity could be somewhat inefficient, although in dynamic markets it had generally positive effects. Despite that, thanks to the broader and more detailed databases that we have now, we have been able to make better longitudinal studies that have reaffirmed what was initially suspected. For example, Junni et al. (2013) confirmed again the original idea of March (1991) with a multi-method and cross-sectional analysis. Due to this, the mixed results of some previous studies were attributed to an inappropriate methodology or context.

Another discovery by Junni et al. (2013) is that the organizational ambidexterity seems to have a greater effect in those dynamic industries than in those that are more static, confirming the theory of Simsek et al. (2009). One possible explanation for this is that in a dynamic market, organizations become obsolete more quickly, forcing them to innovate continuously not to be left behind (Brown & Eisenhardt, 1997). On the other hand, in those sectors that are more stable, organizations do not need to constantly innovate to keep up with their competitors, since the changes in the market are so infrequent that the organization will take a lot of years to become obsolete (Davis et al., 2009).

2.1.4. Application methods.

It is important to highlight that there is more than one way to apply the organizational ambidexterity to a company, with are the following ones: Sequential, simultaneous, and contextual.

First of all we have the Sequential Ambidexterity, which consists in alternating between exploitation and exploration from time to time inside the organization. However, this modality is criticized by O'Reilly & Tushman III (1996), who believes that by doing this the organization becomes vulnerable to unforeseen events and that the ideal way is to exploit and explore simultaneously.

Second, we have the Simultaneous Ambidexterity, which consists of dividing the organization into different subunits, each one of them focusing on exploitation or exploration. Although each of these subunits can work quite differently from the rest, they all have certain values and elements in common that allow them to act together (O'Reilly III & Tushman, 2008). There is also the possibility of distributing exploitation and exploration between different organizations, creating an alliance. In this way each organization specializes in one of the parts, and since they all act as if they were a single organization, they are mutually benefited (Lavie & Rosenkopf, 2006).

In third and last place we have the Contextual Ambidexterity, in which the individual workers themselves are ambidextrous rather than the structure of the organization. Thanks to this, each of these workers can decide at each moment if it is better to focus on exploitation or exploration. To do this, the organization only has to create an environment of discipline, strength, and confidence to make employees feel comfortable making decisions (Gibson & Birkinshaw, 2004).

2.1.5. Measurement.

One of the problems that ambidexterity has is that being such a general concept it is difficult to have a consensus when specifying which are the most appropriate variables to analyze it. Below we can see a table where several important empirical papers in this field and the variables that have been used in them.

Table 1. Authors and variables used to analyze ambidexterity.

Authors.	Exploitation.	Exploration.	Performance.
Auh & Menguc (2005).	Automation, efficiency, and economies of scale [Survey].	R&D for products, innovations, processes, and marketing [Survey].	Sales, benefits, and market share growth [Survey].
Bierly III & Daly (2007).	Improvement in technologies, in	New ideas, creative ideas, sales of new	Financial performance,

	efficiency, and in procedures [Survey].	products, and the use of the latest technologies [Survey].	benefits, and sales growth compared with our competitors [Survey].
Cao, Gedajlovic, & Zhang (2009).	Improvements in production costs, in products and their flexibility, and in existing markets [Survey].	New markets, products and their ranges, and technological fields [Survey].	Increments in profits, market share, sales, reputation, cash flow, operational efficiency, and market share [Survey].
Cao, Simsek, & Zhang (2010).	Improvement of existing product quality, markets size, and flexibility and costs of production [Survey].	New products, markets, technologies, and product range [Survey].	Size of information network, communication, decentralization, and complementarity [Survey].
Gibson & Birkinshaw (2004).	Inefficiency, contradictory objectives, and manager support [Survey].	Possibility of questioning the status quo, and a flexible and fast response system management [Survey].	Level of employee satisfaction with performance, motivation, if all potential is being used, and customer satisfaction [Survey].
Han & Celly (2008).	International products, operations, and subsidiaries [Survey].	R&D, continuous training of workers, new market share, new products, and employees analyzing market trends [Survey].	Growth and profit [Survey].

He & Wong (2004).	Improvement in production costs and flexibility, and product quality [Database].	New markets, technological fields, and product range [Database].	Sales growth rate [Database].
Hughes, Martin, Morgan, & Robson (2010).	Improvement of quality, costs, and production of existing products [Survey].	New products, markets, technologies, and product range [Survey].	Positional advantage [Survey].
Jansen, George, Van den Bosch, & Volberda (2008).	Improvement in existing products, provisions, markets, economies of scale, costs, and service expansion [Survey].	Invention, experimentation, and commercialization of new products. New distribution channels, clients, markets, and opportunities [Survey].	Socialization, rewards, and shared visions of the managers [Survey].
Jansen, Tempelaar, Van den Bosch, & Volberda (2009).	Improvement of products, provisions, service expansion, and economies of scale [Survey].	Demands out of the ordinary and new products, distribution channels, and opportunities [Survey].	Communication, managerial rewards and socialization, rotation, interrelations, and structural separation [Survey].
Jansen et al. (2006).	Improvement of existing provisions, efficiency, products, local products, service ranges, economies of scale, and costs [Survey].	Acceptance of unusual demands. Experimentation, investment, and commercialization of new products. Taking advantage of new customers, opportunities, and distribution channels [Survey].	Average profitability [Survey].

Kyriakopoulos & Moorman (2004).	Improvement of targeting audiences, quality, segmentation, design, marketing, positioning, differentiation, price, and distribution [Database].	New thinking about targeting audiences, quality, segmentation, design, marketing, positioning, differentiation, price, and distribution [Database].	Market share, benefits, and sales compared with competitors [Database].
Lin, McDonough III, Lin, & Lin (2013).	Introduction of improved products in new markets, and application of innovations in existing products [Survey].	Introduction of new products in new markets, and application of radical innovations [Survey].	Profits, revenues, and productivity growth [Survey].
Lin, Yang, & Demirkan (2007).	Total partners [Database].	New partners [Database].	Current asset turnover [Database].
Lubatkin, Simsek, Ling, & Veiga (2006).	Improvement in costs, reliability, quality, automation, and customer satisfaction [Survey].	Ability to explore new technologies, to think outside the box, to expand into new markets and customer segments, to develop creative ways to satisfy customers, and to create innovative products [Survey].	Increase in market share and sales, ROA, and ROE [Survey].
Menguc & Auh (2008).	Production automation, efficiency, and economies of scale [Survey].	R&D, and innovation of products, processes, and marketing [Survey].	ROA, ROI, ROS, cash flow, benefits, sales, market share [Survey].
Mom, Van Den Bosch, & Volberda	Tasks in which employees have experience. Activities	Research of new products, markets, and processes. Evaluation	Internal coordination, permanent teams,

(2009).	related to clients, policies, and existing products. Short term, clear, and routine tasks [Survey].	of new options and sectors. Activities that are flexible, unusual, new, and require new skills [Survey].	and temporary tasks [Survey].
Nemanich & Vera (2009).	Rapid change of activities, incremental improvement decisions, learning among workers, follow-up instructions [Survey].	Implementation, revision, and experimentation of new ideas with the support of the supervisors [Survey].	Transformational leadership [Survey].
Rothaermel, & Alexandre (2009).	Known technologies [Survey].	New technologies [Survey].	ROE, and firm's patents [Survey].
Rothaermel & Deeds (2004).	Exploitation alliances [Database].	Exploration alliances [Database].	Products in development and available in the market [Database].
Russo & Vurro (2010).	Improvement of existed knowledge. Exploitation alliances [Database].	Exploration of new knowledge. Exploration alliances [Database].	Patents granted [Database].
Uotila, Maula, & Zahra (2009).	Exploitation words in the documents of the companies [Database].	Exploration words in the documents of the companies [Database].	Market value [Database].
Venkatraman, Lee, & Iyer (2007).	Similar markets and sales in them [Database].	Different markets and sales in them [Database].	Total revenue [Database].

As can be seen in this table, most authors use surveys filled out by the members of the companies to carry out their studies. Authors such as Lubatkin et al., (2006) say that this is because the availability of objective data in databases is scarce, so many academics are forced to use surveys to obtain this data.

It should be noted that the number of authors who use accounting elements obtained from official accounting reports to do their analysis are scarce too. According to He & Wong (2004), this is because accounting has some limitations, so this type of data is usually avoided. However, some authors do use accounting data to measure performance, such as accounting ratios, to complement the rest of the data.

For this reason, the author of this paper has proposed to use only the accounting elements available in the Annual Report and ratios derived from them to test out if they are sufficient and adequate to verify the benefits of ambidexterity. In case of affirming its usefulness for the study of the ambidexterity, this would facilitate many future investigations, since the Annual Report is an accounting report easily accessible thanks to its public character.

However, before checking their usefulness, they will be explained in the following section those accounting elements that will be used and the reason why they have been selected, so that the reader can have a better understanding of this work.

2.2. Accounting of ambidexterity.

In order to perform an objective measurement of the ambidexterity in the empirical part of this paper, the official accounting data provided by the organizations to the general public through the Annual Report will be used. It is for this reason that it is important to have basic knowledge about accounting in order to have a good understanding of this paper. Due to this, first of all there will be a brief general explanation on accounting, and later will be explained which are the most suitable accounting elements to measure ambidexterity.

Accounting allows the registration of economic transactions of an organization, allowing an easy subsequent analysis of this data in order to make decisions. The conceptual framework that is used in Spain to carry out the accounting is the one published in the Spanish General Accounting Plan (2007). It stipulates that the documents included in the Annual Report must meet the following requirements: Be easily comparable with the documents of other organizations, be useful to form judgments and make decisions, be free of errors, and contain all important information without biases.

Thanks to this, investors can know some information of interest such as the risk of investing in that organization or the possible profitability that they can obtain from investing in it. Initially, the accounting reports were published with the objective of

informing the shareholders, but nowadays they are made periodically and more generally to reach a wider range of people and groups in mind, such as the Treasury, trade union groups, creditors, etc. (Domench, Dallo, Alegría, & Rodríguez, 2015).

2.2.1. Spanish accounting context.

In the last century, most countries used to have different accounting standards from the rest, which was a problem when someone wanted to compare organizations that belonged to different countries. In case of having international investors, organizations were obliged to carry out accounting reports according to the regulations of each country in order to duly inform them of these. This was a waste of time and money that they could not afford if they wanted to be fast and efficient. In addition, this problem was getting bigger due to increasing expansion of globalization and the collaborations of different organizations within the European Union (Domench et al., 2015).

At that time there were two accounting streams that were the main ones: The Anglo-Saxon stream, which focused on informing to facilitate decision-making; and the Continental stream, which focused on protecting creditors. Initially Spain used the Continental stream, but with its incorporation into the European Union, Spain had to adapt its legislation to the ones of the other member countries (De la Peña Gutiérrez, 2008).

According to Domench et al., (2015), in 1995 the European Union became interested in applying the International Accounting Standards of the IASB in its member countries. After a decade of efforts, in 2005, its member states began to be required to apply these standards. This culminated two years later in a new general accounting plan for Spain, which continues to this day.

The Spanish General Accounting Plan (2007) created a conceptual framework for accounting. Among its different sections, in this paper we highlight the Annual Report, which include the following documents: Balance sheet, Income statement, Statement of changes in equity, Cash flow statement, and Notes to the financial statements.

Conceptual frameworks are useful because they facilitate comparability by homogenizing the way of counting, and they solve discrepancies by determining how things should be done. But they also provide a good basis for accountants to choose how to account in case a certain circumstance is not specified. And they are of easy

access to the accountants thanks to the format in which they are presented (Merchante, 2009).

Among the many aspects that are constituted in this new accounting framework, a brief description will be made below of those concepts of the Annual Report that are basic for the understanding of accounting.

On the one hand we have the elements related to the patrimony of the organization:

- **Assets:** Goods or rights that are under the control of the organization due to a past event. In addition to that, it is expected to receive some kind of performance from them.
- **Liabilities:** Debts that were generated in the past in order to receive financing for the organization. They must be paid in the future, generally using assets as method of payment.
- **Equity:** Obtained by subtracting the total value of the liabilities from the total value of the assets. It also includes donations made by members and other similar elements that do not fit into the two previous groups.

And on the other side we have the elements related to the activity of the organization:

- **Profit:** Transactions carried out during that accounting year, which increase the value of equity, generally by increasing the value of assets or decreasing the value of liabilities.
- **Loss:** Transactions carried out during that accounting year, which decrease the value of equity, generally by increasing the value of liabilities or decreasing the value of assets.

Now that these basic concepts in the accounting field have been explained, the following sections will explain those accounting items and accounts that are most closely related to the ambidexterity in order to carry out an adequate analysis of it.

2.2.2. Accounting items related to exploitation.

According to the Spanish General Accounting Plan (2007), the Income Statement allows to register in an orderly manner the losses and profits that have been carried out in the organization throughout the accounting cycle, except for certain exceptions

registered in the equity. In addition, it offers the results of subtracting and adding with each other, and the margins between them too.

This is very important to know if an organization is able to generate profits using its resources, also facilitating the prediction of whether it can also do so in the future. Some of its problems are that it depends on the subjectivity of the accountants in certain aspects, such as the estimation of the deterioration or the residual value of some assets (Miralles, & Sánchez, 2012).

Due to the scarcity of authors who use accounting elements that come from the Annual Report to measure the exploitation, as we have seen in Table 1, in this work we will choose those elements of the Spanish General Accounting Plan (2007) that are the closest to the definition of exploitation previously given. Exploitation is responsible for carrying out the activity of the company to get a return on the expenses invested in it, and refining the execution of this activity thanks to the experience gained by carrying it out. Taking this into account, the author of this paper have searched the Spanish General Accounting Plan (2007) for those accounting items that best fit the concept of "necessary losses to carry out the exploitation activity", which are the following accounting items:

- Item 4. Supplies: Includes the consumption of raw materials, goods, and any other type of consumables. In addition, this item includes inventories and their deterioration, and those tasks that have been entrusted to other organizations too.
- Item 6. Personnel Expenses: These are the remunerations, early retirements, compensation for dismissal, and Social Security contributions of the employees that are in charge of the organization, and any other social expenses of these workers.
- Item 7. Other operating expenses: These include items carried out by third parties by order of the organization, total or partial losses by defaulting debtors, and taxes or exploitation losses without a specific account for them.
- Item 8. Amortization and depreciation charges on non-current assets: Usually non-current assets lose value throughout their shelf-life due to wear and tear when used on the exploitation with the aim of extracting profits in return, or by becoming obsolete when taking out new models or technologies. This loss of value in exchange for generating profits is also reflected in the accounts and is called "amortization".

Although the Income statement creates reports on the income, expenses, margins, and results of the organization, this information is insufficient. The reason for this is that the amount of resources that have been invested to generate that result is not specified in the Income statement (Domench et al., 2015). Due to this, in the following section dedicated to the accounting of the exploration, the Balance Sheet will be consulted, since this is where the assets, liabilities and equity are registered.

2.2.3. Accounting accounts related to exploration.

Although according to Table 1 most authors do not use accounting elements of the Annual Report to analyze the exploration, some of them as Auh & Menguc (2005), Han & Celly (2008), and Menguc & Auh, (2008) use the Research and Development investment, complementing it with other elements, to measure it. This is due to the fact that the investment in Research and Development is the element that most closely approaches the concept of exploration that has been explained above. Basically the exploration focuses on the generation of new ideas in sectors in which the organization is not familiar.

According to the Spanish General Accounting Plan (2007), those accounts that best reflect the investment in Research and Development are the accounts "*(200) Research*" and "*(201) Development*", as long as two requirements are met. The first of them is that the project that the organization wants to register must have well determined its costs and the rest of its elements. The second requirement is that the project must have a high probability of success, or at least it has to be able to obtain some economic profits in return. If the requirements are not met, this investment in Research and Development are registered as a loss of the accounting cycle in their corresponding accounts (De la Peña Gutiérrez, 2008).

This is a problem when analyzing these data, since the expenses of the more ambiguous R&D projects will be mixed with other losses, making them impossible to differentiate. That is why this paper will focus on those R&D projects that are better determined, since their accounting using these two accounts greatly facilitates their analysis. Next, both accounts and their accounting context will be explained in more detail according to the Spanish General Accounting Plan (2007).

On the one hand, the "*(200) Research*" account includes losses for projects and planned research of a technical or scientific nature with the aim of discovering new

technologies, techniques, knowledge, etc. This account includes those investigations commissioned by other organizations too.

On the other hand, the "*(201) Development*" account includes those losses destined to put into practice the new scientific discoveries until they are incorporated into the production of the organization. Similar to the previous paragraph, this account includes those applications commissioned by other organizations too.

Both accounts are classified as non-current assets, which are assets with a long-term duration, which is usually higher than one year, but it can vary depending on the company. Due to this, they tend to remain in the organization for more than one accounting period, which can be used to extract profits from them if desired (Domench et al., 2015).

In addition, these types of elements are classified as Intangible Assets too. For an asset to be considered intangible, it must meet the following requirements: Not be a monetary item, have no physical appearance, and be identifiable. Being identifiable means that an asset meets one of the following two requirements: It can be sold, delivered, or donated; or that it comes from a right (De la Peña Gutiérrez, 2008).

Although they are basically elements that have no physical appearance, they can have a physical backup in the form of register or documents. Despite the fact that they are immaterial, they can generate benefits and competitive advantages, so they can be classified as non-monetary assets. The problem is that it is difficult to predict its exact value, which makes it difficult to register it accountably (Domench et al., 2015).

All these elements previously mentioned can be consulted in the Balance Sheet. This is a report of accounting character determined by the Spanish General Accounting Plan (2007) that serves to inform the general patrimonial status of the organization at a certain time.

2.3. Accounting ratios.

As stated at the beginning, the main objective of this paper is to analyze whether using only the information provided by the Annual Report is sufficient to analyze the positive effects of ambidexterity on the performance of organizations. This election is due to the fact that the Annual Report presents accounting variables that measure this performance objectively and that are easily accessible to the general public. Although

according to Table 1 most authors have extracted this information from other sources, some authors have partially used information from the Annual Report, such as the accounting ratios. As an example we can find Lubatkin et al., (2006) using ROA and ROE; Menguc & Auh, (2008) using ROA, ROI, and ROS; and Rothaermel & Alexandre, (2009) using ROE.

Taking into account this, in this paper has been decided to use several accounting ratios to make this measurement of organizational performance, since apart from having been used by several authors, its utility in the accounting field is precisely that. However, due to the importance of understanding these accounting ratios for a good understanding of this work, a general explanation of them will be made below and each of the ratios that will be used will be explained individually later.

Today, any investor aims to achieve the highest possible return for a level of risk that is considered acceptable. This is taken into account by the managers of the organization itself, who must choose which is the best way to manage resources; as well as its potential investors, who must decide if invest or lend money to the organization is a good option (Domench et al., 2015).

To carry out these analyzes, investors usually use accounting ratios. These ratios have the objective of using the accounting reports offered by an organization with the objective of being able to discover what their current situation is and trying to predict their future. Thanks to these ratios and their ability to synthesize, it also makes it easier to compare the current situation with the situation of other organizations, identifying their capacity for growth, their future contribution, and the quality of the investment (Bezares & Valderrama, 2002).

This is due to the fact that the ratios facilitate the comprehension of complex data by reducing the number of variables and expressing them as a percentage. This allows seeing more easily their evolution over the years or comparing them with those of other organizations. The reason for this is that comparing the large numbers of a large organization with the small numbers of a small organization can be confusing. But when using percentages the numbers are standardized, being able to compare them better, and the size of the organization is no longer a nuisance when comparing variables as it happened if absolute values were used (Domench et al., 2015).

It should also be noted that the use of ratios also has some limitations that will be explained below:

- If the ratios are analyzed individually, there is a risk of analyzing biased or insufficient information, so it is advisable to use other ratios too to get a better analysis (Bezares & Valderrama, 2002). That is why this data is usually compared with data of other organizations, with data of past years, with its cost, etc. (Merchante, 2009).
- Most of them determine just a single moment of time, which may not be a good representation of the evolution of the organization during its accounting cycle. This is due to the fact that a certain value may have changed due to a specific decision or that the organization is in an unstable situation, causing it not to reflect the usual state of the organization (Bezares & Valderrama, 2002).
- Although the Spanish General Accounting Plan (2007) has made it possible to standardize the accounting of organizations, in some aspects it gives several options on how to account. This can make it difficult to compare two organizations that have chosen two different options, since it can affect the calculation of their ratios.
- If two organizations have accounting cycles that have different duration or that end on a different day, this can increase the difficulty of purchasing ratios by having to make adjustments to compensate for these differences (Bezares & Valderrama, 2002).
- Many companies are engaged in more than one activity or sector, so the information can be segmented between them (Domench et al., 2015).
- The ratios do not take into account the context of the organization, which directly affects it. Depending on the sectors or markets in which the analyzed organizations are located, a certain level of a ratio may have a different meaning depending on it. For example, there can be differences between dynamic and static sectors, since in each one of them the companies can have different economic and financial needs (Bezares & Valderrama, 2002).
- As a general rule, the ratios and their calculation procedure are not homogenized. Because of this, some analysts can name or calculate certain ratios erroneously or in a different way than usual, creating confusion. However, this problem can easily be solved by specifying in the papers which has been the formula that has been used to calculate these accounting ratios and the definition that has been chosen (Merchante, 2009).

Due to this last limitation, this paper has the obligation to explain the definition and formula used in each of the accounting ratios that are going to be analyzed. This will

avoid possible confusions caused by the lack of standardization of these elements in the accounting field.

On the one hand, the reason by which the following 6 accounting ratios have been chosen among all the available ones is because they are the most important ratios according to several accounting books that will be cited below as these ratios are explained. On the other hand, when choosing which is the definition and formula that will be used in each ratio of this paper, it has been decided that it is most convenient to use the same ones that the SABI database uses, which will be explained in more detail below.

2.3.1. Return on assets (ROA).

Generally, all people who interact or have some kind of relationship with an organization are interested in knowing their performance, since their growth and survival will depend on it over the following years. Due to this, the economic profitability ratio or return on assets (ROA), which will be explained in more detail below, is used with the objective of knowing the profitability of the organization's total assets. On the other hand, the financial profitability ratio or return on equity (ROE), which will be explained in the next section, focuses on the financial performance that has been obtained for the owners (Merchante, 2009).

According to Domench et al. (2015), ROA is used to find out how much net income we have obtained in proportion to the total assets that the organization has, with the objective of knowing if it is profitable. Therefore, the formula that is used to calculate this ratio is the following one:

$$\textit{“Return on assets = Net income / Total assets”}$$

Although there is no ideal value for this ratio, it is advisable to be as high as possible, since that means that the organization is efficient and it is obtaining a high profitability. On the other hand, if this value is close to zero or negative, it means that the return that is obtained from the exploitation of the total assets is very low or even that it generates losses. This situation is alarming for the organization and must be solved immediately if the managers want to guarantee its continuity at the long term (Miralles & Sanchez, 2012).

2.3.2. Return on equity (ROE).

According to Domench et al., (2015), return on equity (ROE) is the profit obtained by investors in proportion to the monetary amount contributed to the equity of the organization. According to Miralles & Sánchez (2012), the main stakeholders interested in knowing this value are these shareholders who want to extract profitability from their investment and the owners who have to pay these shareholders. It must also be taken into account while ROA pays both shareholders and lenders, ROE only pays to shareholders. Because of this, the objective of the ROE is to achieve the highest possible percentage of profitability so that shareholders can also obtain the maximum return that they can obtain from their investments. Taking all this into account, the formula that is used to calculate this ratio is the following one:

$$\text{“ROE} = \text{Net income} / \text{Equity”}$$

As for the ideal value of this ratio, a positive figure means that shareholders are making profits for their investments in the organization, while a negative figure means that shareholders are losing money (Miralles & Sánchez, 2012).

2.3.3. EBITDA.

EBITDA comes from the acronym "Earnings before interest, taxes, depreciation and amortization") and represents the gross profit obtained thanks to the exploitation of the organization. When analyzing this indicator, we must be careful, since this ratio does not include certain expenses that can lead to misleading interpretations. For example, in case an organization has too many financial expenses, these will not be reflected in this indicator (Miralles & Sánchez, 2012). Its formula is the following one:

$$\text{“EBITDA} = \text{Operating Income} + \text{Depreciation and Amortization”}$$

It has the advantage that it is simple and it is hardly manipulative, but it has some limitations. The first one is that this ratio hides the indebtedness of the organizations by not including some important expenses. And the other one is that it does not take into account corporate tax, which can change unexpectedly (Domench et al., 2015).

2.3.4. Current ratio.

According to Merchante (2009), the financial situation of an organization is usually analyzed in order to check if it can pay the debts that have contracted. If analysts want to focus on the short term, an analysis of liquidity is the best option, which will be explained below; and if analysts want to focus on the long term, the best option is to do a solvency analysis, which will be explained in the next section.

If the organization does not have short-term liquidity, it may be involved in the forced sale of its assets, or in having to waste a business opportunity such as discounts for prompt payment for not having the necessary resources to invest in it. It will also negatively affect creditors who will not be paid when appropriate, and shareholders who will not receive dividends. To try to solve this situation, the organization will be forced to request external funding immediately to be able to pay for those elements that are necessary, which usually does not have low interest rates, worsening its general situation. However, having too much liquidity is also a negative thing, since it means that there is an asset that is not performing everything they should, being a waste that is not generating a return that would benefit the organization. The organization always has to have an adequate level of liquidity at all times (Merchante, 2009).

In order to analyze this liquidity the Current ratio is used, which measures the capacity of the organization to pay the debts registered in the current liabilities using the liquidity generated by the current assets used in the short term (Miralles & Sánchez, 2012). This ratio can be of vital importance to creditors and suppliers, since the organization needs liquidity to be able to pay them. This can be interesting to shareholders who want to collect dividends too, or workers who want to collect their salaries. However, this ratio has some negative aspects, as it only represents the situation at a specific time instead of the entire accounting period (Merchante, 2009). Taking this into account, the formula of this ratio is as follows:

$$\text{“Current Ratio} = \text{Current Assets} / \text{Current Liabilities”}$$

On the other hand, although a large value in this ratio means a high probability of being able to pay the creditors of the organization in the short term, it can also mean that there are current assets that are not at full capacity, which supposes a waste. Due to this, the ideal interval is usually considered between 1,5 and 2 (Miralles & Sánchez, 2012).

2.3.5. Solvency ratio.

According to Miralles & Sánchez (2012), even if an organization has a high liquidity but that organization is not able to get a good profitability of that liquidity, it will eventually fade over time, negatively affecting long-term solvency. On the contrary, even if the organization does not have liquidity at a certain moment, a good structure would allow that organization to overcome that small bump. That is why liquidity is focused on the short term, while solvency is focused on the long term. In addition, solvency is not as influenced by the context or industry of the organization as liquidity, so the comparison with organizations in other industries is easier.

This ratio is used to find out if in case this organization will close at this moment, it would have enough assets to pay all the liabilities owed to its creditors (Miralles & Sánchez, 2012). The formula of this ratio is:

$$\text{“Solvency ratio} = \text{Total assets} / \text{Total liabilities”}$$

According to Domench et al., (2015), a negative ratio means that the solvency of the organization is so low that not even sacrificing all its assets would be able to pay all the debts. Because of this, the ideal ratio has to be higher than 1,5 for the peace of creditors, since that means that the payment of all debts in case of closure are covered. But this ratio does not have to become very high, since that would be a waste of their resources.

2.3.6. Working capital.

An organization must check if it has enough money in cash or any other liquid element to be able to take care of short-term payments. In case of not having it, the organization should sell its own assets or borrow some to acquire liquidity (Miralles & Sánchez, 2012).

The working capital is the part belonging to the current asset that has to be financed using long-term resources that can belong to the own organization or belong to others. The main reason to do this is because with the short-term resources available, the organization does not have enough. It is generally considered that if the organization has more current assets than current liabilities, it will be able to face all the payments that must be made in the short term. Although this statement is not entirely reliable, since many of these current assets could be difficult to sell, or during the following

months there could be unexpected changes in liquidity (Domench et al., 2015). This ratio has the following formula:

$$\textit{“Working Capital = Current Assets - Current Liabilities”}$$

3. Empirical analysis.

3.1. Methodology.

The data obtained to carry out this paper have been obtained from the SABI database, which contains the accounting information of thousands of Spanish and Portuguese companies. Of all the companies available, those with the following criteria have been selected: They must have data available on the accounts *“(200) Research”* and *“(201) Development”* in the year 2017, and they must be Spanish companies. Those companies where accounting errors were detected were also discarded. According to these criteria, the number of companies that met these requirements is 1871.

The accounting data necessary to perform the analysis will be obtained as follows: The value of the exploration will be obtained from the sum of the accounts *“(200) Research”* and *“(201) Development”*. The value of the exploitation will be obtained from the sum of the items *“Supplies”*, *“Personnel expenses”*, *“Other operating expenses”*, and *“Amortization and depreciation charges on non-current assets”*. To measure the value of performance, the following accounting ratios will be used: ROA, ROE, EBTIDA, Current ratio, Solvency ratio, and Working capital. The reasons why these elements have been chosen have been explained in their respective sections of the theoretical framework.

In addition, Lin et al., (2007) created an index that can be used to measure with a single indicator how much is invested in exploration compared to how much is invested in exploitation. In this paper a similar index has been created, which has been called *“Exploration/Exploitation”* and can be obtained by dividing the value of the exploration with the value of the exploitation. This variable will serve to measure more easily the monetary value that has been invested in exploration activities compared to the monetary value that has been invested in the exploitation activities. This will allow checking out more easily what is the ambidexterity degree of the different companies.

On the other hand, to facilitate the analysis of the 1871 companies mentioned above, these will be grouped into several groups according to their level of ambidexterity. To

do this, the following 6 groups will be created: The first one that includes companies with a value in the “*Exploration/Exploitation*” index between 0% and 1.99%; the second one between 2% and 3.99%; the third one between 4% and 5.99%; the fourth one between 6% and 7.99%, the fifth one between 8% and 9.99%, and the sixth one with all those values higher than 10%. The reason why these percentages have been chosen for the intervals is for there to be at least 50 companies per interval, but at the same time those companies are dispersed along several of them, preventing the companies from accumulating in the same interval.

As stated in the introduction, the purpose of this paper is to verify if by using only the official accounting elements provided by the Annual Report of the companies the beneficial effects of ambidexterity in terms of performance can be verified. Or if, on the contrary, it would be necessary to use totally or partially different data from other sources, as the rest of the authors have done up to the moment.

The procedure to carry out the analysis will be as follows: First of all, in each accounting ratio the average of each interval will be graphically presented in order to analyze the general trend. Secondly, the correlation in each of these intervals will be analyzed to try to demonstrate statistically if there is an influence between both variables or the results are mere coincidence.

3.2. Results.

As described in the methodology, due to the large number of companies available, these companies will be divided into different groups in order to analyze the data more easily. Each of these groups represents a different ambidexterity interval, which are represented in the following figure:

Figure 1. Percentage of companies in each interval.

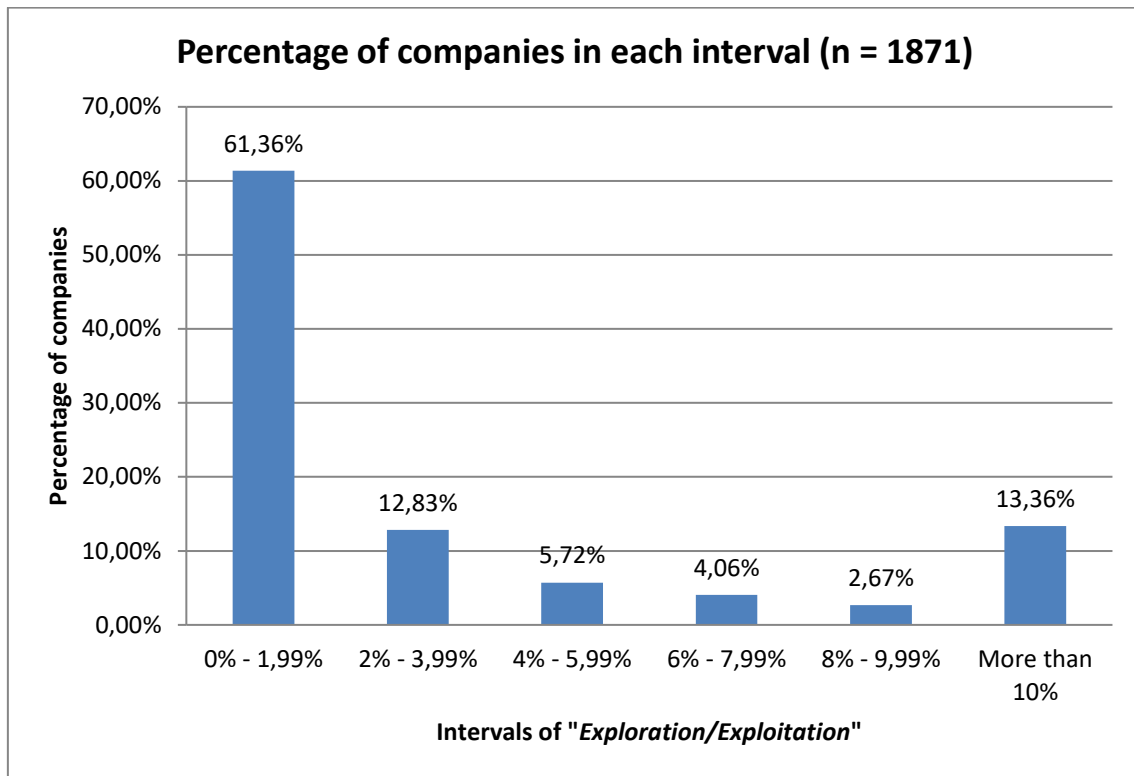


Figure 1 shows how more than half of the companies only invest in exploration as much as 1.99% of what they invest in exploitation. This supposes a really low number in comparison to what ambidexterity says to us that it is the ideal situation: To maintain both exploitation and exploration in balance. In addition, the number of companies belonging to the interval 2% - 3.99% is approximately 5 times smaller than the companies belonging to the interval 0 - 1.99%, and as the "Exploration/Exploitation" variable increases this number is more reduced. Since those intervals belonging to a percentage greater than 10% did not reach 50 companies per interval, the author of this paper has preferred to group these 250 remaining companies in a single interval called "More than 10%".

Taking into account the above, we can conclude that the majority of Spanish companies barely invest in Research and Development compared to what they invest in carrying out the activity of exploitation of the organization. In other words, Spanish managers are much more focused on the short-term benefits that the activity of exploitation provides them now, than the long-term benefits that the research of new elements will provide them in the future. This way of acting, although it may be apparently profitable during the first years, as soon as changes appear in the market, those companies will become obsolete. The recommendation made in this paper is that

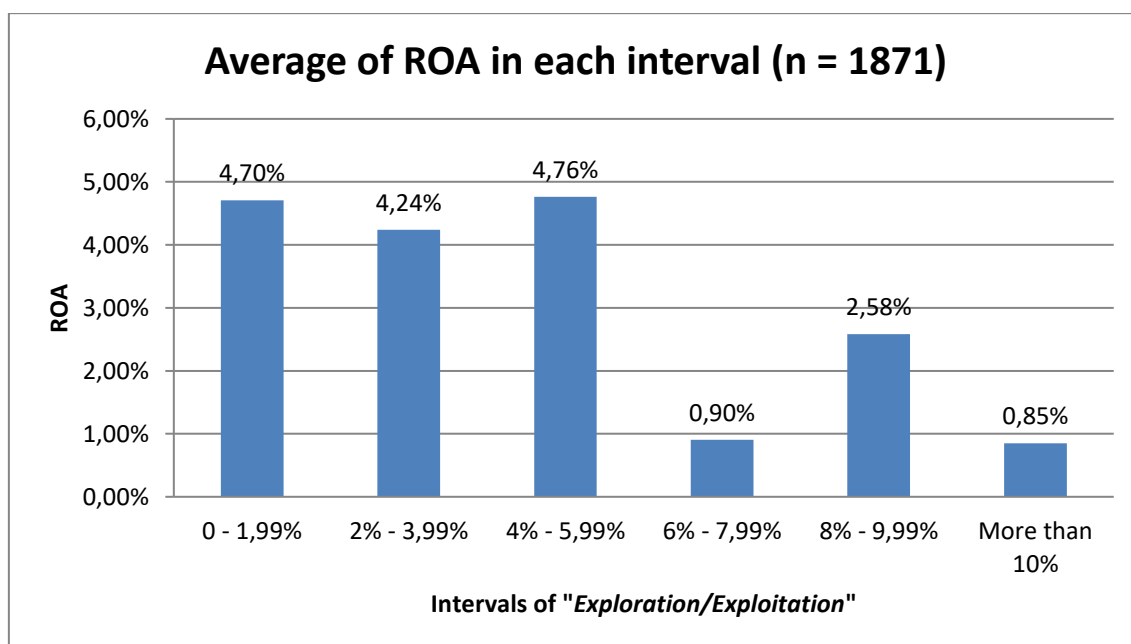
Spanish companies should invest more in the field of exploration if they want to remain competitive both nationally and internationally.

Once analyzed the number of companies belonging to each interval, what will be done next is to perform a similar analysis using the accounting ratios that have been explained in the theoretical framework.

3.2.1. Return on assets (ROA).

The first ratio to be analyzed is ROA, which is used to analyze the economic profitability of the total assets. In the following figure we can see the average of ROA in each of the “*Exploration/Exploitation*” intervals:

Figure 2. Average of ROA in each interval.

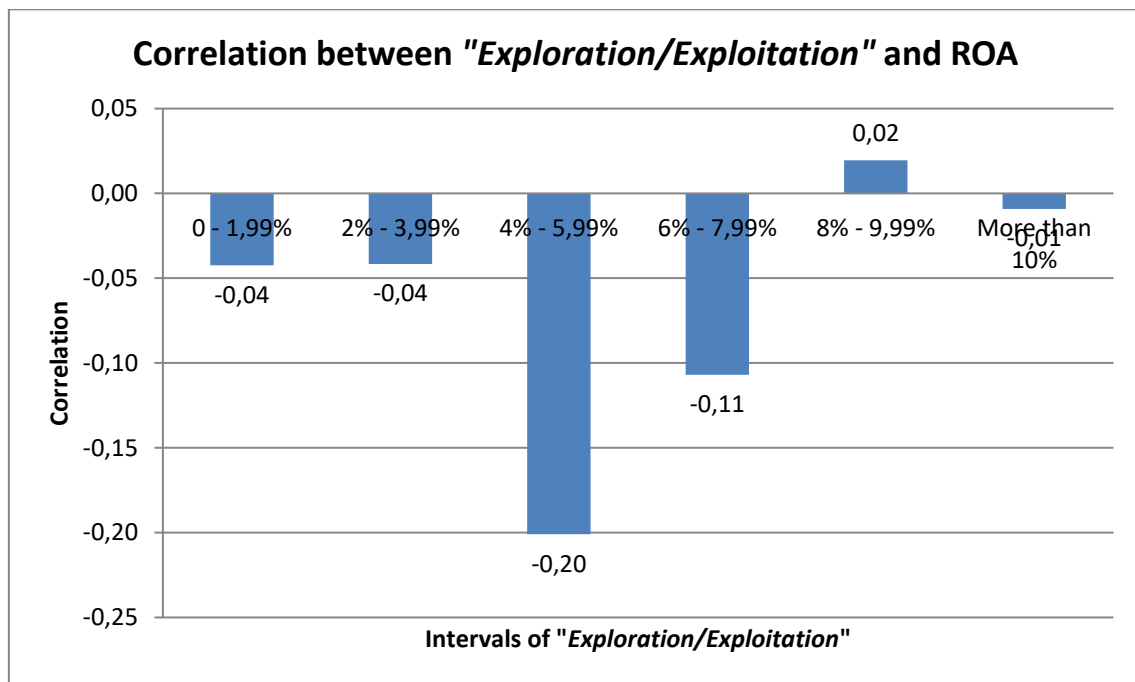


From Figure 2 we can see how those companies that invest in exploration less than 5,99% of what they invest in exploitation have on average a higher ROA than the rest. In the first three intervals we can observe how they obtain a percentage higher than 4%, which means that the companies belonging to these groups have a relatively good profitability and efficiency. On the other hand, the 3 remaining intervals obtain results quite close to 0, which is worrisome since that means that the performance is very reduced or even negative. In the latter case it is important for the companies involved to make the relevant changes to increase profitability or these companies could see their continuity in danger.

A possible explanation of the situation that is described in the previous paragraph is that the interval 4%-5,99% is the point of balance between exploitation and exploration, and that is why it obtains the highest average of all the intervals (4,76%). Because of this, the intervals with a higher percentage of “*Exploration/Exploitation*” have a worse ROA score, since they invest too much in exploration but do not recover that investment by focusing less on exploiting it. And the first two intervals, although they do not invest enough in research, thanks to the short-term benefits of the exploitation, they have a relatively good ROA value, even at the expense of long-term performance when they will become stagnant.

However, below is going to present a figure with the correlation of each interval to verify mathematically whether these arguments really have a solid basis or if it is mere coincidence.

Figure 3. Correlation between *Exploration / Exploitation* and ROA.

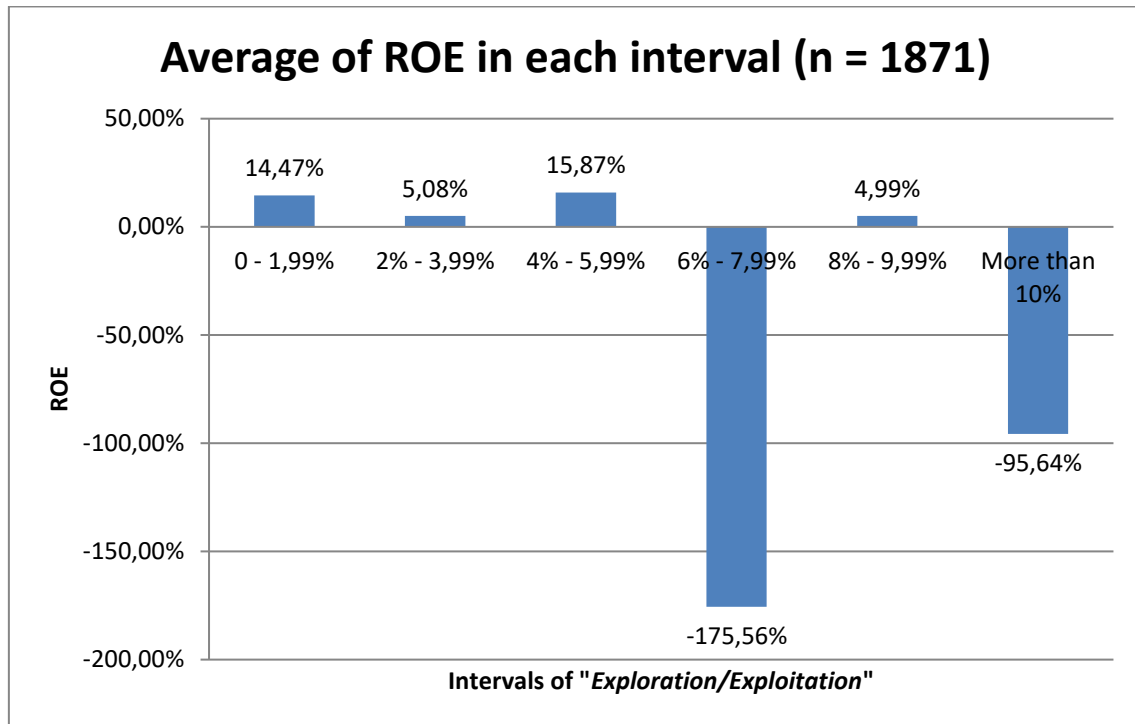


As we can see in Figure 3, the correlation in most intervals is very close to 0, which means that the influence of one variable with the other is not proven. However, in the “*Exploration/Exploitation*” percentages between 4% and 7,99% we can observe how the correlation stands out slightly above the rest, reaching up to -0,20. Although this percentage of correlation is not high enough to demonstrate the influence between the two variables, its negative value would explain why from this point onwards the “*Exploration/Exploitation*” value decreases the average of ROA in Figure 2.

2.3.2. Return on equity (ROE).

ROE is the profitability obtained in proportion to the financing contributed to the equity of the company. In the following figure we can observe the average of ROE in the different intervals previously named:

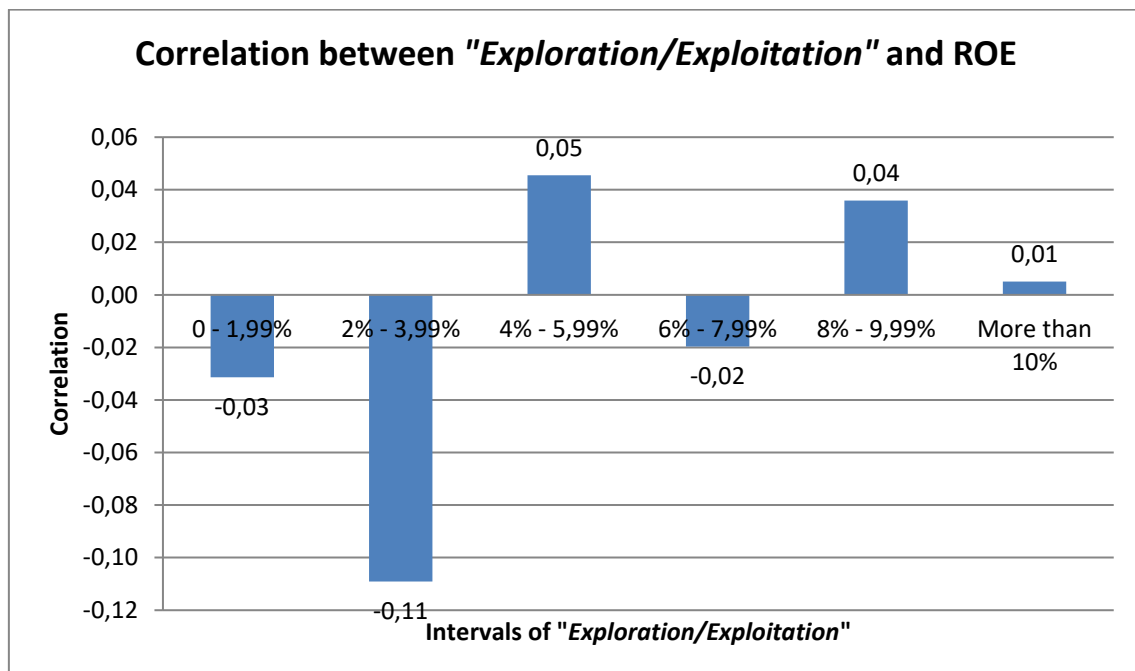
Figure 4. Average of ROE in each interval.



The most striking aspect of Figure 4 is the very low values obtained by the fourth and sixth intervals. This is due to two companies that have unusually low ROE values (-13838% and -32530%), causing the average to decrease a lot. However, if those two values are eliminated, in those two intervals the average of ROE is positive too.

Regarding the rest of the intervals, these have positive values, and therefore, this is where the companies with the highest financial returns are, and where shareholders are probably more interested in investing. The highest of these is the third interval with an ROE of 15,87%, which can be inferred that this is the most balanced interval in terms of ambidexterity to have a high performance in ROE. To support these statements, we will perform the calculation of the correlation of each of these intervals, which are shown in the following figure:

Figure 5. Correlation between Exploration / Exploitation and ROE.

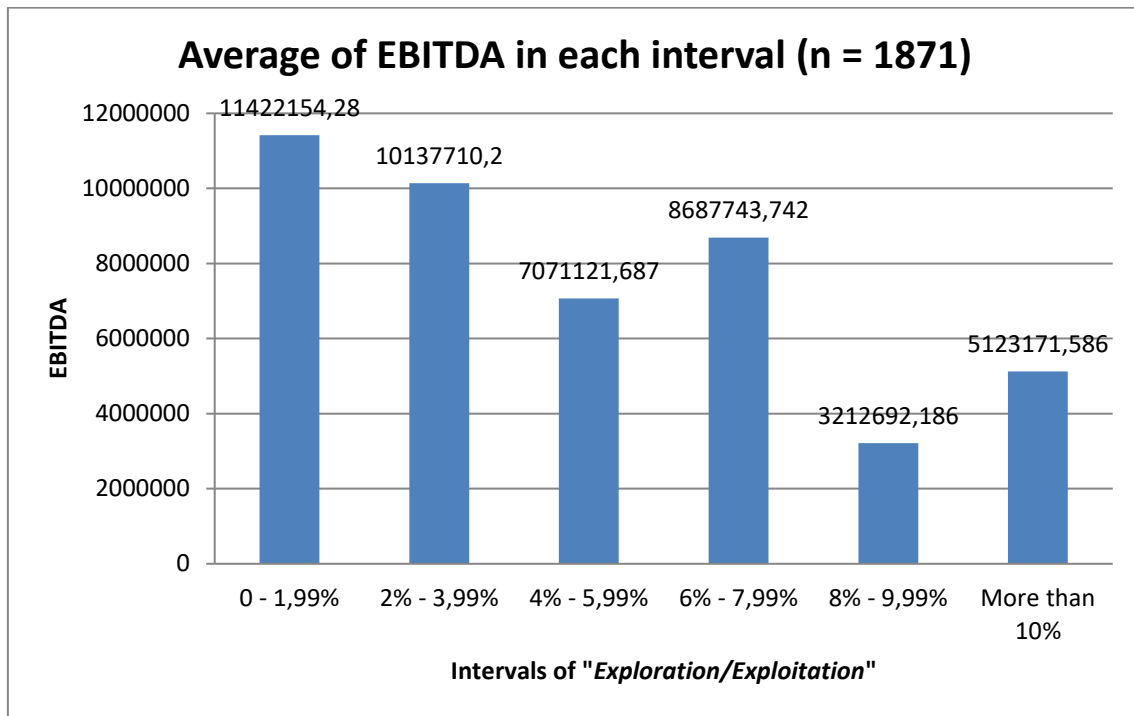


As can be seen in Figure 5, all the intervals have a correlation close to 0, so it seems that there is no correlation between having a good degree of ambidexterity and ROE. These results could be due to the accounting limitations of the Annual Report or that one is not affected by the other.

2.3.3. EBITDA.

EBITDA is basically the gross profit obtained thanks to the exploitation of the organization. Below you can see a figure with the average of EBITDA in the different intervals:

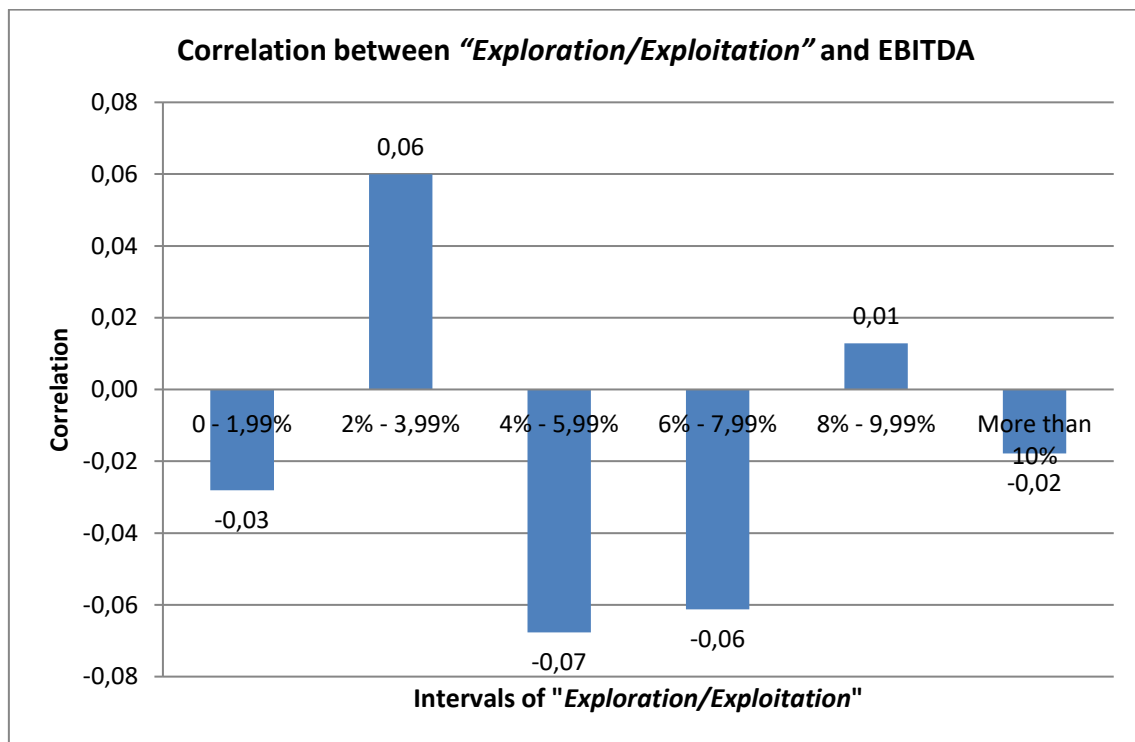
Figure 6. Average of EBITDA in each interval.



As can be seen in the Figure 6, all the intervals have a positive result that starts in the first interval with the highest value, and goes down as the percentage of "Exploration/Exploitation" increases. At first glance it might seem that the best option for a company is to belong to the first interval, which is the best result, but taking into account that this ratio does not include some important expenses, companies in that range could be highly indebted and not be reflected in this figure.

Next, a figure showing the degree of correlation between ambidexterity and EBITDA will be shown:

Figure 7. Correlation between "Exploration/Exploitation" and EBITDA.

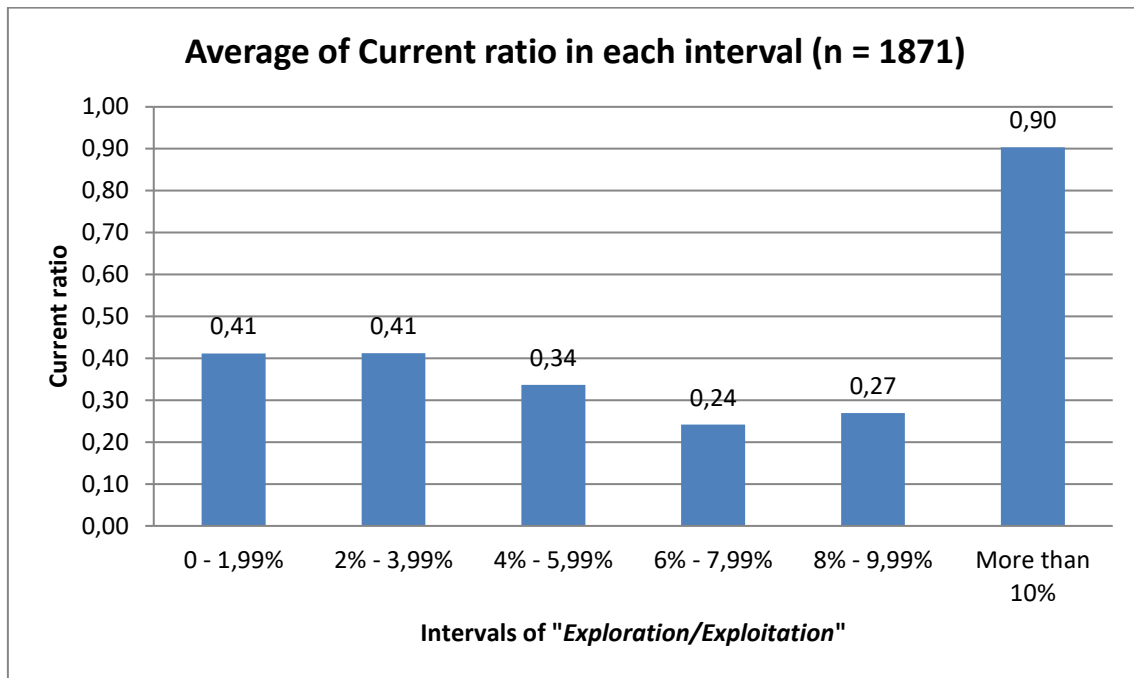


As can be seen in Figure 7, the value of the correlations is less than 0,10, both positively and negatively. Due to this, it can not be affirmed that neither of the two variables has an effect on the other.

2.3.4. Current ratio.

The Current ratio measures the ability of the organization to pay short-term debts with short-term payments. Below you can see the figure with the average of the Current ratio in the different available intervals:

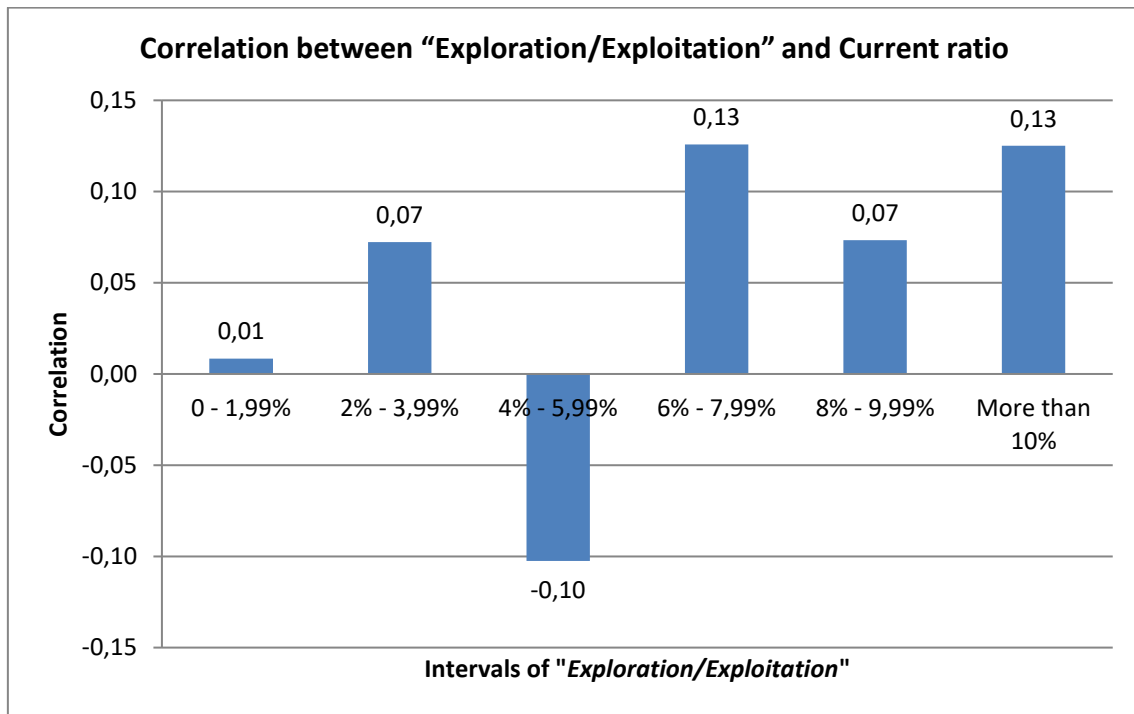
Figure 8. Average of Current ratio in each interval.



As can be seen in Figure 8, although the last interval has the largest value (0,90), no interval reaches the ideal value of 1,5-2; nor to 1, which is the value that would be necessary to pay all short-term debts at this moment. Although if this is a good or a bad thing depends greatly on the context of the organization. A value too high means that the company has too many assets that are underperforming. So a low liquidity could mean that the organization has much of its liquidity invested to get a return, but with the risk that they can not pay cash if they need to make an unexpected large payment. If this were the case, the interval of 6%-7,99% would be the balance point of the ambidexterity to have a high Current ratio, since that is where the value is lower, meaning that it is taking advantage of the company's liquidity. Or it could also be the worst interval, since the company could have low liquidity due to a bad business situation.

To find out if there is a correlation between both variables, the following table has been created:

Figure 9. Correlation between "Exploration/Exploitation" and Current ratio.

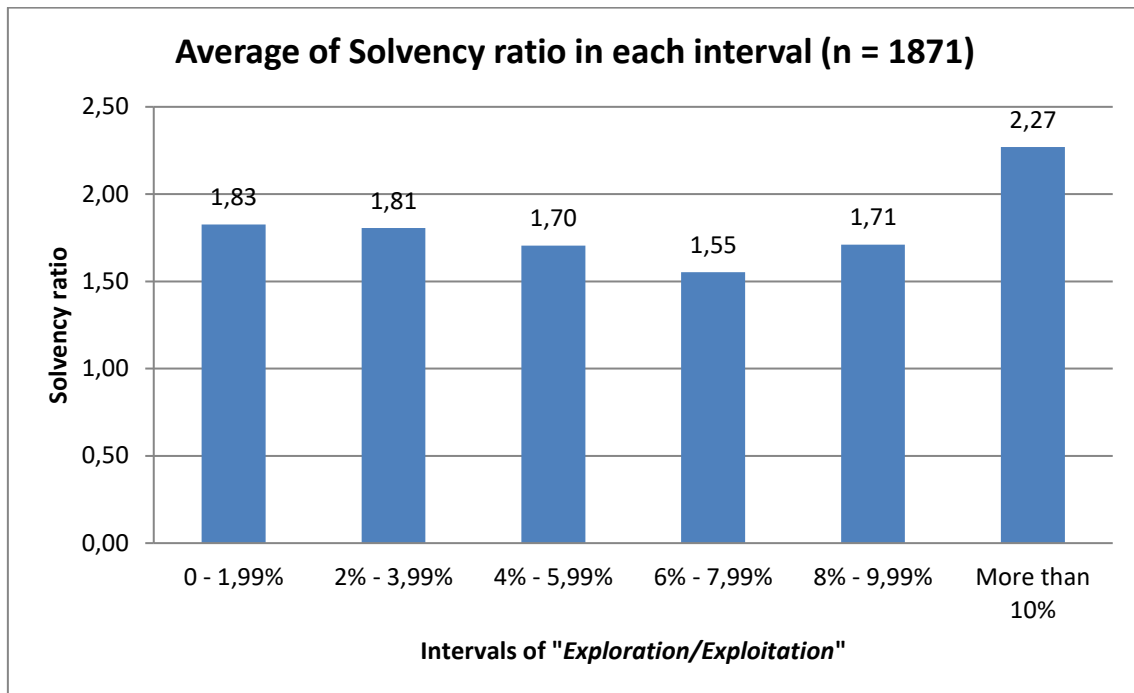


Although most of the intervals in Figure 9 are very close to 0, the third interval with a value of -10 and the fourth and sixth intervals with the value of 0,13 units stand out slightly. Although this value is not high enough to confirm the correlation, this could explain why until the fourth interval liquidity has a downward trend, and from that interval has an upward trend.

2.3.5. Solvency ratio.

This ratio serves to know if an organization at this moment would have enough assets to pay all liabilities. Below we can see a graphic comparison of the values obtained in the different intervals:

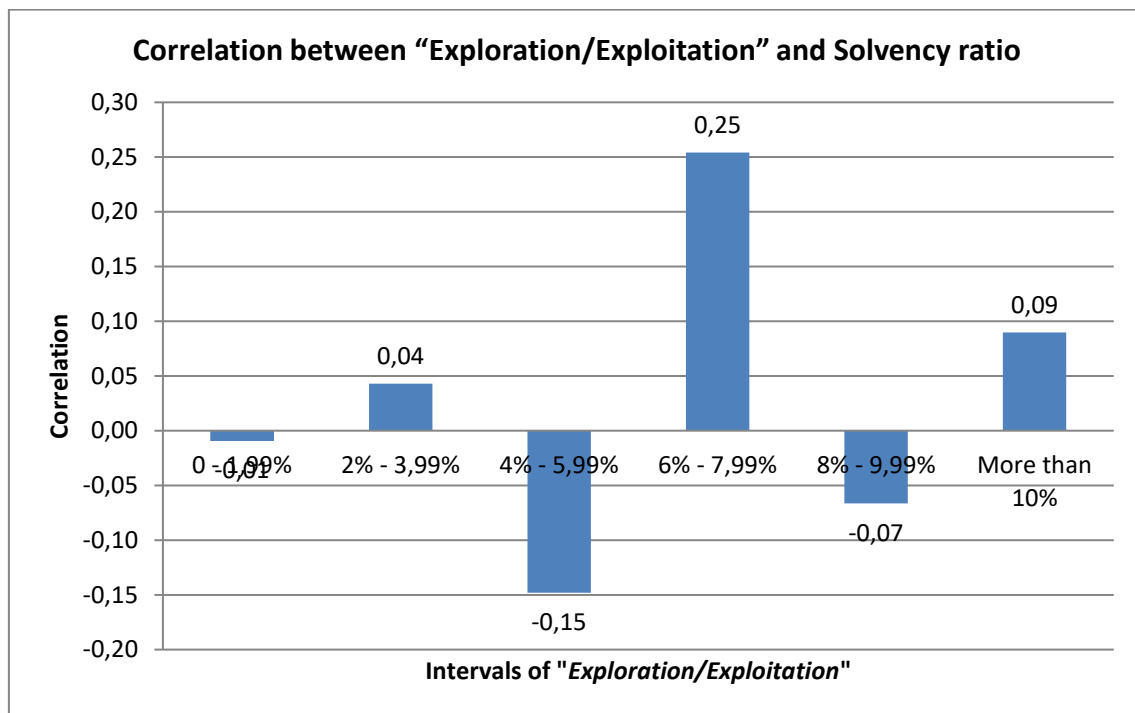
Figure 10. Average of Solvency ratio in each interval.



In the previous graph we can see how in all the intervals the companies have on average more than 1,5 of value, which is considered the ideal value in this ratio. But neither does it become too high for it to be considered a waste of resources, with the highest value being the last interval with a value of 2,27 units. We can observe a slight downward trend with the naked eye as the value of the "Exploration/Exploitation" index increases, which becomes an upward trend from the fourth interval. A possible explanation for this phenomenon is that the solvency value is high in the first interval because that is where the companies are focused on exploitation, so their current solvency is high at the cost of being lower in the future when they face unexpected changes. While the value of the last interval is the highest because that is where the companies invest more than those of the first interval in exploration, so their solvency and long-term survival increase, possibly this being their point of balance if the company wants a high solvency.

Below there is a figure showing the correlation of each of the intervals in this ratio:

Figure 11. Correlation between "Exploration/Exploitation" and Solvency ratio.

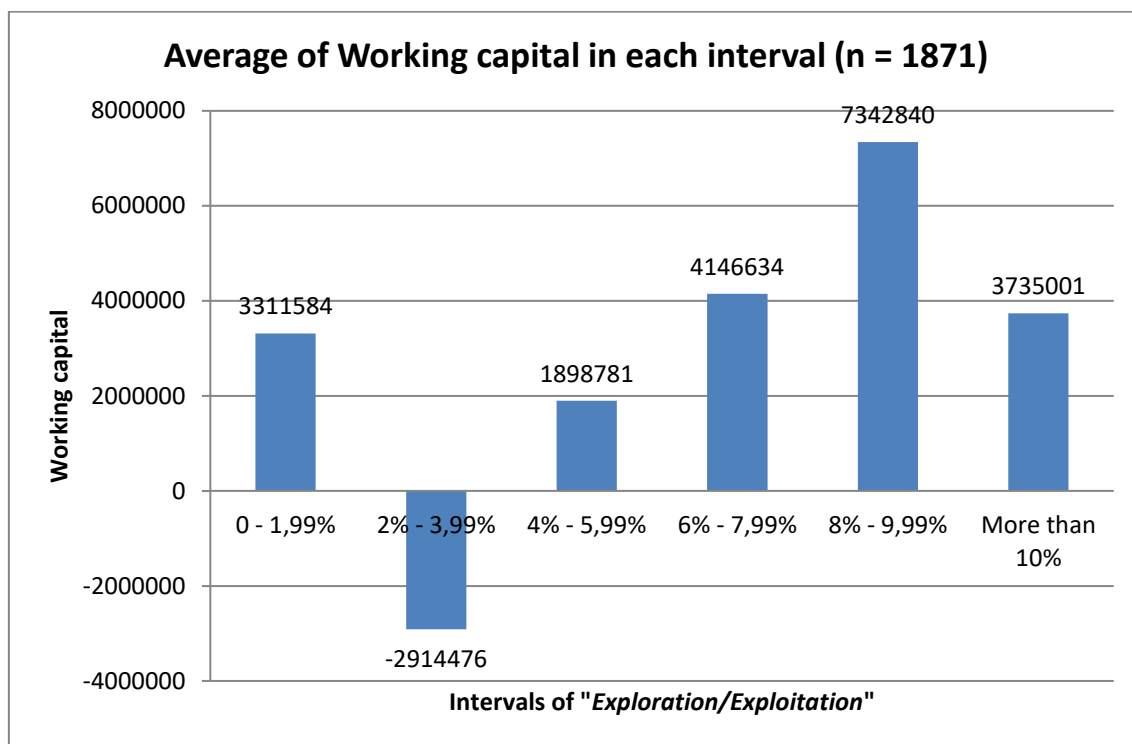


Although you can see how most correlations are low, there are two that stand out above the rest. The first one is the one belonging to the third interval with a value of -0,15, which would explain the slight downward trend of the beginning of the graph prior to this one. The second is the one belonging to the fourth interval with a value of 0,25, explaining the subsequent upward trend in solvency. This value is the highest that has been obtained in this empirical analysis so far, which can mean that in certain conditions ambidexterity has some influence on the solvency of the organizations.

2.3.6. Working capital.

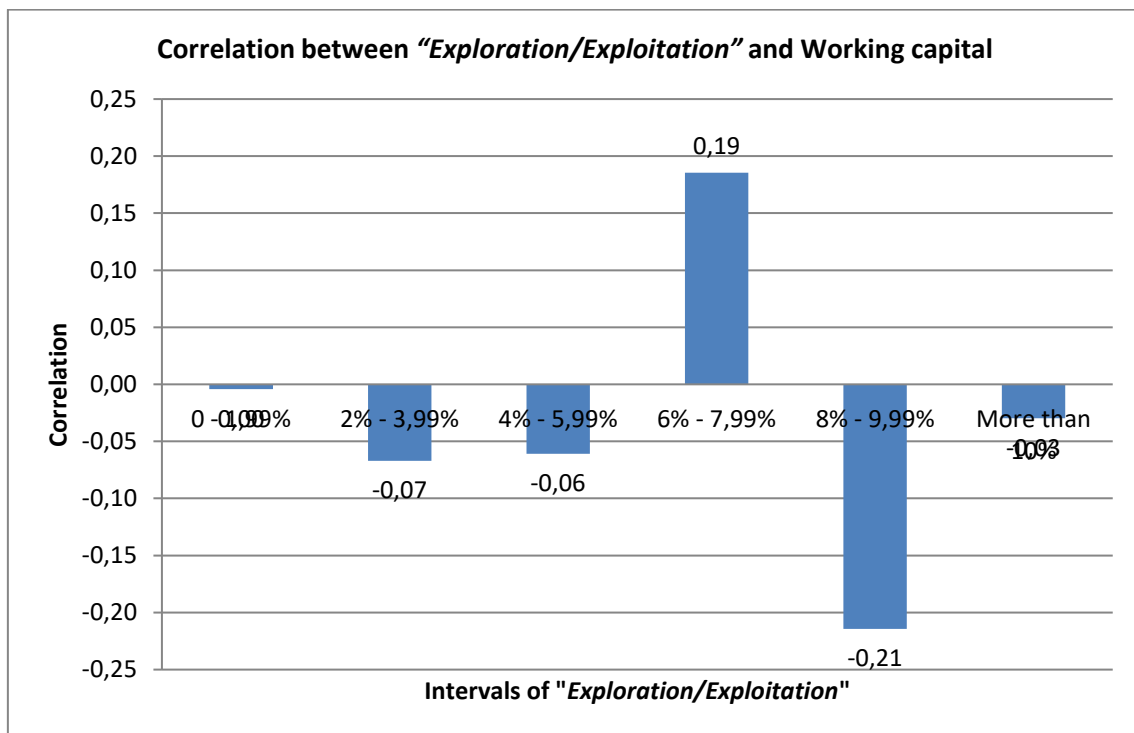
The working capital is the short and long-term financing, that can be both own and foreign, used to pay current assets. Below you can see a graphical comparison on this accounting element:

Figure 12. Average of Working capital in each interval.



In the Figure 12 it can be seen that with the exception of the second interval, all the intervals have a positive working capital that allows financing the current asset. In addition, an upward trend can be observed from the second to the fifth interval, which is where the maximum value is, possibly being the balance point of the ambidexterity to get a high value in Working capital.

Figure 13. Correlation between "Exploration/Exploitation" and Working capital.



Looking at the Figure 13 we can see how although in most intervals the correlation is close to 0, there are two exceptions. The first exception is the fourth interval with a value of 0,19, which would explain the upward trend of the central intervals of the Figure 12. While the second exception is the fifth interval with a value of -0,21, which would explain the reduction of the average of working capital from that interval.

4. Conclusion.

According to a great diversity of authors, ambidextrous organizations obtain a greater performance and higher possibilities of surviving in the long term than the rest by balancing both their exploration and exploitation activities.

However, due to the fact that most of these authors had to resort to conducting surveys or searching databases that had limited accountable information in order to carry out their analyzes, the author of this paper thought that it will be convenient to look for another source of more accessible information. The Annual Report seemed the most appropriate, since it is an accounting report written by the organizations themselves for the general public and easily accessible by everyone.

Taking this into account, the objective assigned to this paper was to verify if using only the accounting elements provided by the Annual Report was enough to perform analyzes that demonstrate the improvements in performance of ambidextrous organizations. For this reason, an empirical analysis of 1871 Spanish companies has been carried out using a database called SABI that collects the Annual Report of thousands of companies.

The first conclusion that can be observed in the analysis is that most companies invest a very low amount in exploration compared to what they invest in exploitation. 61,36% of the companies analyzed invest less than 2%, and only 13,36% of the companies more than 10%. This fact is contrary to what ambidexterity recommends, so this paper recommends to the Spanish managers that they should change this increasing the investment in exploration if they want their companies to survive in the long term.

Regarding the conclusions obtained when empirically analyzing the different accounting ratios, we can say that we have not detected a clear pattern in the comparisons of the means of the different analyzed intervals. The correlations of these same intervals were so close to zero that it was not possible to demonstrate statistically the correlation between the ambidexterity and the different accounting ratios. The only slightly remarkable case is a 0,25 correlation in one of the central solvency intervals, but it is a value too small to be significant enough.

Due to this, this paper reject the idea that the positive effects of ambidexterity can be demonstrated in terms of organizational performance through the elements that can be easily found in the Annual Report or derived from it. In addition, it has been concluded

by default that the elements used by other authors seem to be more suitable to obtain reliable results ambidexterity analysis, despite its difficulty in obtaining.

The possible reason why the final objective could not be demonstrated is probably because the accounting is only good to register direct costs that clearly belong to a certain element. Moreover, there are costs that are registered in other accounts than those used in this paper because they does not have a direct and clear effect on exploration and exploitation, but that have an indirect influence on them. In addition, there is the problem that it is difficult to account those elements that are generated informally in the organization. Due to these problems, this paper has concluded that the accounting and the Annual Report have too many limitations to be able to analyze the ambidexterity entirely from them. Knowing this, the author of this paper recommended to future researchers that if they want to use the Annual Report to study ambidexterity, they must complement the accounting data obtained from it with information from other sources, whether they are other databases or surveys.

Another limitation of this work is that the statistical analysis that has been carried out has not been excessively complex. Because of this, the recommendation for future researchers who want to study this topic in more depth is to perform a longitudinal analysis with regression models. In this way, it will be possible to verify more reliably if there is any influence between the different variables.

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